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LA MONDIALISATION DE L'ARMÉE INDUSTRIELLE DE RÉSERVE CHINOISE: SA FORMATION ET LES IMPACTS SUR LES SALAIRES DANS LES PAYS DÉVELOPPÉS

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THE GLOBALIZATION OF CHINA'S INDUSTRIAL RESERVE ARMY:
its formation and impacts on wages in advanced countries

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To my parents, Nidia and Américo

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GLOSSARY

BLS	Bureau of Labor Statistics
CCP	Chinese Comunist Party
CLB	China Labour Bulletin
CLSY	China Labour Statistical Yearbook
CSY	China Statistical Yearbook
DTT	Deterioration of the terms of trade
EAP	Economically active population
EDA	Electronic design automation tools
FDI	Foreign direct investment
GVC	Global value chain
HOS	Heckscher-Ohlin-Samuelson
HRS	Household responsibility system
HS	Harmonized system
ICs	Integrated circuits
ICT	Information and communication technology
IDMs	Integrated device manufacturers
LED	Light-emitting diodes
LFS	Labor Force Survey
M&A	Mergers and acquisitions
MOA	Ministry of Agriculture
MOHRSS	Ministry of Human Resources and Social Security
O-S-D	Optical-sensitive-discrete
OECD	Organisation for Economic Co-operation and Development
PRC	People's Republic of China
PSU	Public service unit
R&D	Research and development
REC	Reemployment center
RRMW	National Monitoring Survey Report on Rural Migrant Workers
RUUR	Registered urban unemployment rate
SAIC	State Administration for Industry and Commerce
SATS	Semiconductor assembly and test services
SHE	State holding enterprises
SME	Semiconductor manufacturing equipment
SOEs	State-owned enterprises
TiVA	Trade in value-added
TNC	Transnational corporation
TVE	Township and village enterprise

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INTRODUCTION

From the standpoint of Western media, politicians and neoliberal academics, the flooding of US and European consumer markets by manufacturing imports 'made in China' is the most important aspect – at least the most highlighted one – of China's integration in the global capitalist economy as 'factory of the world'. On the one hand, the cheapness of China's manufacturing goods has been claimed to benefit consumers in the center. On the other hand, China competitive edge has been constantly blamed to derive from unfair competition, particularly from currency manipulation. Chinese supposed unfair practices would have severe deleterious effects for advanced countries, materialized in persistent trade deficits, the stealing of good manufacturing jobs and in downward pressures on the wages of blue-collar unskilled workers, and perhaps even on skilled workers' real wages. Growing real wage inequality in the US and unemployment in continental Europe have been associated to China's integration in the global capitalist economy. Moreover, the increased sophistication of China's exports, moving away from products such as textiles and toys to computers and smartphones, has been ringing the alarm of whether skilled workers from central countries would suffer the same fate as the unskilled.

Though we do think that China's integration in the global capitalist economy is related to the deterioration of labor's position in central countries, particularly of unskilled workers, we reject the hegemonic narrative posed above, as at its core lies the argument that these effects are not the result of neoliberal globalization, but rather, in a great extent, of not fully implementing neoliberal policies. It presumes that free trade leads to gains for all nations involved, and even though mainstream economics concede that growing real wage inequality among skilled and unskilled workers would be a result of free trade, the total gains for each nation would more than compensate and thus could be redistributed. All the other effects mentioned, in contrast, are due to lack of liberalization, in the case, of China's exchange market – whose measure of intervention is given by the size of central countries' trade deficit, imposing losses on the latter, excessive downward pressures on the wages of unskilled and any downward pressure on the wages of the skilled – and of continental Europe's labor markets – whose rigidities would be responsible for unemployment.

Politically, inculpating China has demonstrated to be a very convenient strategy for central bourgeoisies. As Chinese imports increasingly compose the basket of goods of the

ordinary worker of advanced economies, it is relatable to her/his day-to-day experience. Diverting the center of attention from class conflicts and from neoliberal policies aiming to dismantle the welfare state, US and European workers are incited to blame their Chinese counterparts for stealing their jobs and for forcing them to accept lower wages. In a less openly xenophobic version of the story and coherently with the neoclassical perspective of international trade being executed by countries themselves, the one to recriminate is presented as the Chinese state.

Notwithstanding, even if 'unfair' Chinese practices would cease to exist, neoclassical economics, through its international trade theory, still accounts free trade between China and advanced countries as the responsible for dwindling real wages among the unskilled workers of the latter. The issue, though, is submitted to a significant reframing. After all, for the mantra that free trade is a win-win situation for all countries to hold, if someone is losing in advanced countries, somebody else must be winning. Uncannily, it is not capital the fortunate one, but workers themselves. The point is that, not being laborers a homogenous group, some workers gain and others lose, whilst the net benefits for the country as a whole are still maintained.

Precisely, the reframing assures that the wage losses of unskilled laborers in advanced countries are presented along with the wage gains of skilled workers, being both the result of free trade with China. Thus, in the developed world, skilled laborers would be those who capture the benefits of free trade. Neoclassical literature also stresses that these gains could be redistributed inside the country, leading all workers to a better position than in autarchy. Nonetheless, insofar as China manipulates its currency and central countries accumulate huge losses from trade, there are no national gains to be redistributed among workers.

Once again, the contraposition of different groups of workers obliterates the struggle between capital and labor. The replacement of the latter dichotomy by a duality within the working class appears to be justified by the observation that income inequality among wage earners has been growing continuously in the US. Notwithstanding, no less veridical is the fact that the labor share on GDP has also been significantly dropping since the 1970s in the US, while many European countries have been experiencing the same stylized fact, even though neoclassical academic literature massively models the trade analysis between China and the developed world on the basis of inequality among workers, picking its two factors of production as unskilled and skilled labor instead of capital and labor.

It is really astonishing the creative effort of mainstream economics to account for this whole story of globalization, relating the ascendency of China as *the* manufacturing export power with unemployment in Europe and unskilled workers' real wage decline in the US without mentioning the word 'profits', particularly the high profits European and US transnational corporations have been doing by producing manufacturing goods in China, which are exported to be consumed in advanced countries. The whole narrative of one of the core processes of neoliberal globalization became a story that takes place between nations and workers, whereas transnational corporations' increasing 'made in China' profits are so irrelevant that one can pass without mentioning.

The objective of the present thesis is to restore the link between China's integration in the global capitalist economy and sluggish real wage growth and increasing precariousness of working conditions in advanced economies through a Marxist interpretation centered on the globalization of China's industrial reserve army. The latter is seen as resulting from an alliance between the Chinese state and capitals from advanced countries in their productive form. This thesis proposes a two-folded analysis of the process of globalization of China's industrial reserve army, contemplating both its introverted and extroverted vectors, recognizing that "the operation of the law of the relative surplus population is global, although it is only at the level of each country that the different strata of the industrial reserve army are analyzable" (CHESNAIS, 2015, our translation)[1].

On the one hand, in its inward vector, we analyze the formation and evolution of wage labor in China, privileging a narrative that relates how primitive accumulation led by the Chinese state has conferred particular features to its industrial reserve army and how the latter structures the Chinese labor market and influences the formation of the wage rate in the country. On the other hand, in its outward vector, we discuss how China's integration on the global capitalist economy in the context of neoliberal globalization, by providing central productive capitals' access to its industrial reserve army has catalyzed the breaking of/effectively broke the link between central consumer markets and industrial production which historically had placed labor in the center in a better position than labor in the periphery to oppose capital. Drawing from Foster, McChesney and Jonna (2011) and Chesnais (2007, 2015) elaborations on the global reserve army, we discuss China's *primus inter pares* position in the latter. The role of China's industrial reserve army for the global

[1] "le jeu de la loi de la surpopulation relative est mondial mais ce n'est qu'au niveau de chaque pays que les différentes strates de l'armée industrielle de réserve sont analysables" (CHESNAIS, 2015).

capitalist economy might in a significant extent not be easily interchangeable with or subsumed by the global South.

China's transition to capitalism led by the party-state and predicated on the formation of wage-labor relations in the country drastically transformed a predominantly agricultural and rural society in direction to an urban and non-agricultural one. Therefore, transition to capitalism was premised in labor transfers away from agriculture and rural activities, generating the hugest migration flow of humankind history. Nevertheless, these transfers have not assumed the shape of the English classic case of proletarianzation described by Marx, through expropriation of land or enclosures, since the de-collectivization of rural land occurred through the re-distribution of equal and small plots to each rural household who detained use rights, but not property rights which accrued to the collectives (i.e. local governments). Initially favoring peasants, state policies led to the specialization of household production with commercial aims, resulting in a productivity shock that translated in significant increases on rural household real income. However, since the second half of the 1980s, the party-state aimed at extracting the rising surplus product of peasants, resulting in the stagnation of the low real income of rural households. The double effect of this policy was, on the one hand, the proletarianization of a significant and growing part of rural household members; on the other hand, the opening of the road for capital's entrance in agriculture. In this sense, China's huge industrial reserve army was a creature of the party-state.

Despite the fact that Maoist China was a highly homogeneous society in the countryside and in urban areas, it was extremely marked by the rural-urban divide, which was sustained by the system of household registration (*hukou*). This system prevented rural to urban migration and the change from agricultural to non-agricultural activities without the official permission of the state. It was effective because it denied access to work, housing, the system of health and education for one outside its locality of register. The maintenance of the *hukou* in the context of the privatization of the economy meant the denial of all the above mentioned except work and in-work housing. Private enterprises were eager for employing rural migrant workers as they were legally unprotected and had no social security entitlements; eventually even the state started massively employing these laborers.

Rural migrant workers became the backbone of China's labor force. The rural migrant worker couldn't afford staying in urban areas if unemployed, and migrated across the country wherever capital would go, besides periodically coming back to the countryside in seasons of

high demand for agricultural labor as during peak harvesting. Meanwhile, the state attacked urban workers by breaking the iron rice bowl and producing massive lay-offs, increasing the urban industrial reserve army, while privatization of non-strategic state-owned enterprises and TVEs gave critical mass for the formation of indigenous capitals, physiologically connected to the state bureaucracy.

Just as capital knows very well how to appropriate differences in gender, race, religion, and so on, to divide and rule laborers, the Chinese party-state has leveraged the rural-urban divide as the central foundation for the creation of China's segmented labor market. Structuring this labor market from its base lies the rural household. The behavior of its real income repercusses throughout the scale of wage rates. For almost one decade and a half, the Chinese state was successful in repressing rural households' real income from agricultural activities to grow, keeping the real wage rates of migrant workers low and stagnant. Though, as class struggle intensified in the countryside and urban areas, this has changed, and since around mid-2000s, real wages of migrant workers have been growing quickly.

Over the last decades of fast paced capital accumulation based on the dwindling share of labor on GDP, the Chinese industrial reserve army has passed through significant transformations, from being mainly predicated on the latent component, it is now dominated by the floating and stagnant components, the latter also significantly large in rural areas. Nonetheless, rural land has been the social security of rural migrant workers, which they can always come back to, being one of the reasons why fast paced accumulation based in growing inequality and low wages has been consistent with China's poverty reduction, not producing the dead-weight of the industrial reserve army, the pauper.

The Chinese party-state not only created a vast industrial reserve army of cheap labor-power, but simultaneously devised the conditions for foreign capitals to access it and make higher than average profits. If advanced countries' capitals were to enter China, as long hoped for, they should: *i*) enter in their productive form; *ii*) in designated and restricted areas without access to its domestic consumer market, through the state creation of special economic zones destined to be platforms of exportation; *iii*) transfer technology through joint-ventures with Chinese capitals as condition to access its domestic market. However, China's attractiveness for international productive capitals from the center was not just the product of the cheapness of its unskilled labor-power, but also by its high productivity. The latter results from a combination of factors that goes from the previous socialization of its labor force, particularly in terms of education and discipline, to systemic efficiency parameters that derive from the

whole of its productive structure, to which the Chinese state has been committed to the development, such as the provision of infrastructure and the support for the establishment of chains of suppliers and logistics.

Through a set of incentives, the Chinese state invited and more than welcomed central countries' capitals to substantially increase their profitability by exploiting its enormous cheap and highly productive labor force, as long as they complied with the mentioned conditions. In this sense, an alliance was established between the Chinese state and central capitals that led China to become the factory of the world, for it provided advanced countries' capitals increased profitability through two crucial outcomes: by immediate and drastically reducing unit labor costs and by making China's industrial reserve army global, tilting the balance of power back home towards capital.

The dramatic and immediate cost reductions capital obtained by off-shoring and outsourcing industrial production to China occurred essentially in wage-goods industries, first in those with low organic composition of capital, such as textiles, footwear and toys, and subsequently in labor intensive productive stages of industries with high technology and organic composition of capital, as the assembling of electronics and IT/communications products, boosting the development of global value chains. Delocalization of industrial production to China was manifested in strong deflationary pressures in international manufacturing prices for those goods in which the country became a prominent base of production (KAPLINSKY, 2005). These manufacturing goods were also subjected to the deterioration of the terms of trade that peripheral countries have secularly experienced, subverting the prescriptions based on the Prebisch-Singer hypothesis that industrialization in the periphery would remedy the deterioration of the terms of trade that afflicted these nations.

The transfer of a substantial part of Northern industrial production and employment to China, particularly the industries and segments of production which absorbed more labor, has lead industrial prices to segment in two different clusters: one composed by intermediate goods (or productive modules contained in the latter) and consumption goods that hold global brands produced in advanced countries, especially in the US, Japan and Germany; and those which are largely produced in China, with the terms of trade benefiting the former. Nonetheless, in the neoliberal era, the cheapening of wage goods in the center, achieved either through the central-periphery division of labor having China as central piece, or through increases in productivity, was not manifested in real wage growth in advanced countries.

In terms of secular trend, *grosso modo*, from the last decades of the 19th century to the 1970s, the cheapening of commodities composing the basket of goods of workers in central countries achieved through the role played by the periphery[2] in the international division of labor – as well as through productivity increases in advanced countries – was accompanied by real wage growth in the center. Coupled with low and stagnant peripheral real wages, also associated with the existence of large industrial reserve armies, many Marxists and heterodox economists conferred theoretical status to these stylized facts, assuming them as invariable and defining traits of the center-periphery junction, of the global capitalist economy as an imperialist system.

Nonetheless, the state of the balance of power between classes cannot be taken as perennial and – although more durable – not even institutions, which was implicit in the assumption/belief that laborers in the center could indefinitely keep ripping off material gains from capitalists. In the same sense, the existence of a vast industrial reserve army cannot be presumed to enable capitalists to indefinitely reduce workers' existence to the bare minimum, providing absolute hindrances to the success of workers' clashes over wages and the development of institutions which sustain these conquests, as class struggle has relative autonomy from capital accumulation and the capitalist state has a major role in regulating capital-labor relations.

Although industrialization in some peripheral countries is not a novelty of the neoliberal era, China's vast industrial reserve army and the party-state commitment to provide enhanced conditions for international productive capitals to access it have promoted a re-articulation on the international division of labor that undermined the material conditions that historically had put labor in the center in a better position to oppose capital vis-à-vis labor in the periphery. China's vast industrial reserve army has furnished the critical mass to break the traditional link between industrial production and consumer's markets in advanced countries, exposing unskilled workers from advanced countries to competition among workers abroad and replenishing national industrial reserve armies, which weakened labor bargaining power in the center.

The globalization of China's industrial reserve army through the alliance of the Chinese party-state and advanced countries' capitals was felt by *i*) direct competition among workers, unmaking large parcel of the center's industrial proletariat, and through divide and

[2] Though, this was not the only role of the periphery in the traditional international division of labor.

rule strategies of transnational corporations, which kept in check the pretensions of those workers who remained employed in the offshorable/outsourceable sectors – particularly affecting the traditionally more unionized and organized sectors of the working class of advanced countries, i.e. manufacturing workers –; and by *ii*) remolding advanced countries' labor forces, through drastic changes in the employment structure towards services, in the context of institutional changes that regulated capital-labor relations, which led to the replenishment of their national industrial reserve armies, not only through unemployment but also by the widespread use of partial and temporary labor. As a result, the cheapening of manufacturing goods produced in China destined to supply the consumer markets of advance economies was not translated in real wage growth.

The concept of industrial reserve army is global by its inception (PRADELLA, 2015) and, in as much as the periphery is concerned, global competition among Southern workers and the 'race to the bottom' have always existed. This does not mean that central countries laborers' have never competed among each other or with Southern laborers through migration or industrial delocalization. Nevertheless, there is a qualitative change/deepening in the global dimension of the industrial reserve army as the link that tied central consumer markets and industrial production throughout the history of global capitalism – and that was leveraged by Northern workers in their struggle to retain for themselves part of the astonishingly growing wealth they created for central capitalist classes – was finally broken by China's integration in the global capitalist economy. If the latter's effect presupposed neoliberal globalization, it also enhanced it by creating the material conditions for the long term offensive being led by capital over labor in central countries.

In this context, the present thesis is divided in two parts, with three chapters each. Part one contemplates the 'inward vector' of the globalization of China's industrial reserve army, or its formation and the process of proletarianization in the country as creatures of the party-state. Chapter one is dedicated to analyzing the evolution of the employment structure in the country from the onset of the 'reform and opening' to mid-2010s, with particular emphasis in the sub-period that began in the 1990s.

Chapter two explores the way in which the Chinese industrial reserve army, produced and reproduced through the rural-urban divide, influences the formation of the wage rate in the country, as well as the evolution of class struggle over wages and state policies responding to it, which taken together provide an explanation for the broad patterns of wage behavior in the country. In these two chapters, whenever possible, we identify in the official Chinese

statistical categories of employment the different components of the industrial reserve army, discussing their underlying formation and development.

Closing the first part of this thesis, chapter three analyzes how China's constitution as factory of the world was expressed in terms of the evolution of manufacturing employment, particularly in export zones, and how wage hikes since the mid-2000s have been translated into rising labor compensation costs in dollars.

The second part of this thesis is dedicated to analyze the 'outward vector' of the globalization of China's industrial reserve army and its impacts on wages in advanced countries. Chapter four discusses the traditional neoclassical narrative through the Heckscher-Ohlin-Samuelson model of international trade and the theorem of factor price equalization, along with the major complaint of mainstream economists regarding China's 'unfair trade practices', or the currency manipulation accusation.

Chapter five proposes a Marxist analysis, by firstly denying the core theoretical postulate of neoclassical models of international trade and by bringing to the analysis the role of transnational corporations (TNCs) in promoting industrial delocalization through foreign direct investment (FDI) and outsourcing schemes in the context of global value chains. Considering the internationalization of manufacturing productive processes as a result of TNC's strategies aimed to increase profitability by reducing unit labor costs, the chapter discusses the reasons which conferred China an overwhelming attractiveness to TNCs. China's *primus inter pares* position in the global South for industrial delocalization from the global North is assessed by evidencing the different dimensions in which its role as 'factory of the world' was manifested.

The last chapter of the thesis, chapter 6, is devoted to the effects of the globalization of China's industrial reserve army in wages and working conditions in advanced countries, particularly in the US. Before the analysis proper, the chapter does a brief literature review on how the interrelation between wages in the center and the periphery was postulated in structuralist and Marxist theoretical formulations, until the 1970s, based on the deterioration of the terms of trade and on unequal exchange, respectively. The increasing wage divergence between center and periphery posited by these theories as an inherent trait of their junction is contraposed to the contemporary 'race to the bottom', in which the globalization of China's industrial reserve army has a primary role. The chapter then discusses the effects of China on the terms of trade of manufacturing goods, which tend to benefit consumer markets in central

countries, vis-à-vis the negative impacts of the globalization of the Chinese industrial reserve army on manufacturing employment and the bargaining power of laborers in advanced countries – particularly through TNCs' divide and rule strategies – tilting the balance of power back home towards capital and significantly contributing to explain real wage stagnation. Even though the chapter considers empirical literature on these impacts, its primary objective is to provide an interpretation of the effects of the globalization of China's industrial reserve army for advanced economies.

PART I – THE INWARD VECTOR: THE CONSTITUTION OF CHINA'S VAST INDUSTRIAL RESERVE ARMY AND ITS INFLUENCE ON THE FORMATION OF THE CHINESE WAGE RATE

Chapter 1. CHINESE EMPLOYMENT STRUCTURE IN TRANSITION: THE CONSTITUTION OF WAGE LABOR AND CHINA'S VAST INDUSTRIAL RESERVE ARMY AS PRODUCTS OF STATECRAFT

The fast transformations experienced by the Chinese economy since the end of the 1970s, with transition to capitalism, changed dramatically the profile of population and employment in the country. This change in profile is intimately related to the ascension of China as the factory of the world. The massive population shift from agricultural to industrial and service activities, and from rural to urban areas (movements that are not synonyms) were determinant elements for the expansion of the export manufacturing sector in a context of low wages. Nevertheless, at the turn of the century, industrial wages entered in a trajectory of fast growth, which many scholars associated to the exhaustion of the pool of agricultural surplus labor that made possible the enormous migration flow of workers towards the expanding exporting industries.

Urbanization and industrialization, the latter closely associated with massive inflows of FDI aimed at supplying advanced countries' consumer markets, have been the driving forces of the recent Chinese economic development. These structural changes have been widely discussed in the academic literature to explain the high economic growth rates of the last decades, the trends in the employment structure and the dynamics of the functional distribution of income in the country. However, behind such structural transformations lies the fundamental process of working class formation, which is not so clear or self-evident in a significant part of the academic literature.

Thus, the radical changes on the employment structure away from a predominantly agrarian and rural economy occurred in a context in which the allocation of labor in the economy shifted from mainly being directly controlled by the party-state apparatus to be done in a great extent through an emerging labor market. In this sense, the analysis of the employment structure in the post-reform period is unintelligible outside the process of labor market formation in China. Moreover, for there was no indigenous bourgeoisie in Maoist China, the processes of privatization of the economy and the production of free laborers, the essential features in the constitution of the labor market, were brought about by the only one capable of doing so, the Chinese party-state, immersed in the pressures of the capitalist world-economy to transform the country in a new space for capital accumulation.

In the present chapter we aim to provide a statistical analysis of the employment structure in the post-reform period, especially from the 1990s onwards, when China's manufacturing export-oriented sector took off. Behind this analysis lies the story of the formation of China's labor market over the inherited divide between rural and urban laborers, a divide that would be reproduced inside the own urban economy. The chapter is composed by four sections a part of this introduction. The first analyzes the broad trends in the ongoing structural changes that China has been experiencing since the beginning of economic reforms, moving away from a predominantly agrarian and rural economy. As rural migration has been the backbone of these transformations, the section also discusses the *hukou* system and the particular characteristics it has imprinted in China's labor market. Section two discusses China's statistical systems on employment and wages and the different ways in which they treat/translate migration and urbanization. Sections three and four are dedicated respectively to the analyses of the rural and the urban employment structures.

1.1 ONGOING STRUCTURAL CHANGES: RAPIDLY MOVING AWAY FROM AN AGRARIAN AND RURAL ECONOMY IN THE POST-REFORM PERIOD

China's transition to capitalism was accompanied by deep alterations in its population and employment structure. In 1978, China had 402 million employed persons, from an economically active population of 407 million persons (CSY, 2015). Population growth in the last thirty-six years was responsible for almost doubling these figures, as, for 2014, total employment encompassed 773 million laborers, whereas the economically active population, 797 million persons (CSY, 2015).

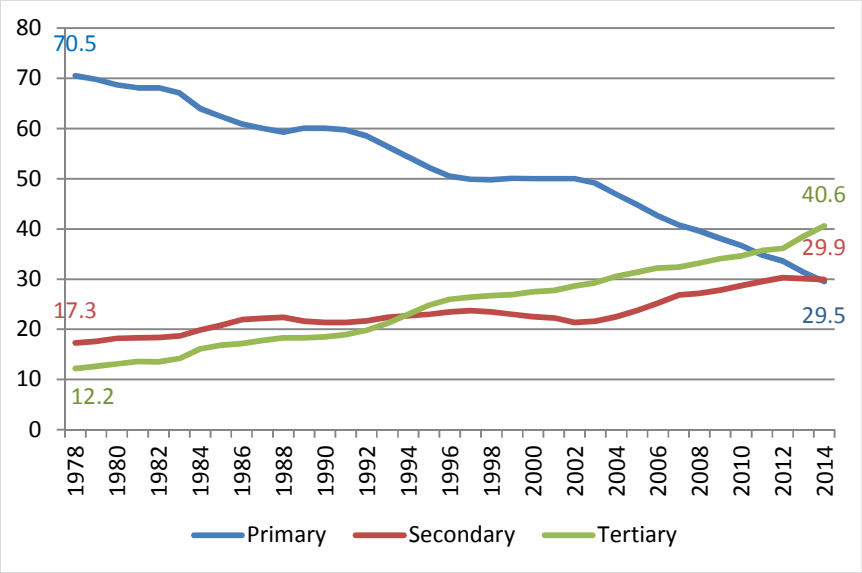
Based on censuses and sample surveys, graph 1.1 shows the percentage of each of the three broad economic sectors on total employment. At the beginning of economic reforms, China was predominantly an agrarian and rural economy, with 70,5% of its workers (283 million) employed in the primary sector in 1978 (CSY, 2015). The secondary sector, although significant, was responsible for only 17,3% of employment (69 million), whilst the tertiary for 12,2% (49 million) (CSY, 2015). More than three decades later, labor transfer between sectors was reflected in an accentuated drop in the participation of agricultural employment on the total, although its reduction in absolute terms began only in 1992.

Regarding labor absorption, the tertiary sector showed to be much more dynamic than the secondary, overpassing it still in 1994 and, subsequently, the primary in 2011. As a result,

in 2014, the service sector was responsible for the biggest share on total employment, with 40,6% (314 million persons), followed by the primary and the secondary, which had almost the same size, holding, respectively, 29,5% (228 million persons) and 29,9% (231 million persons) of the total (CSY, 2015).

Graph 1.1 - Employment structure by broad sectors

(primary sector, secondary sector, tertiary sector, in percentage of total employed persons)



Source: China Statistical Yearbook (2015).
Notes:
(1) The primary sector is composed by agriculture, forestry, husbandry and fishery.
(2) The secondary sector is composed by construction, mining, manufacturing and production and supply of electricity, heat, gas and water.
(3) The tertiary sector is composed by all other activities.

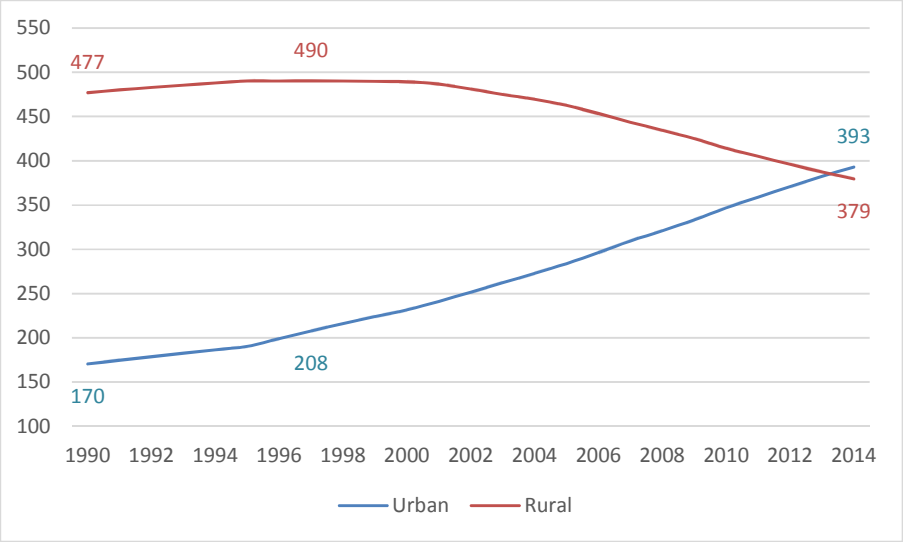
Even though the primary sector's participation on total employment shrank in approximately 58% between 1978 and 2014; its size on total employment is still very high when compared to developed countries, such as the US, where only 1,4% of the workers were employed in agriculture[3] in 2014 (BLS, 2015). In Brazil, an "emerging" economy, the share of agriculture on total employment was 7,7% in 2013 (MATTEI, 2015). It should be noted that these data on the share of agriculture on total employment in China are very controversial. Some authors argue that the figures are underestimated, as Cartier (2011), while others, overestimated, as Ghose (2005) (see Appendix A). Nevertheless, from an international

[3] Own calculation with data provided by the Bureau of Labor Statistics (BLS) from the United States Department of Labor.

comparative perspective, in all the different measures of China's share of employment in agriculture, the ongoing process of labor transfer is far from being exhausted.

Graph 1.2 – Employment evolution in rural and urban areas

(number of employed persons at year-end in urban and rural areas, in millions)



Sources: China Statistical Yearbook (2011, 2015).

Concerning employment distribution between urban and rural areas, it is also clear the drastic shift accruing to urbanization. In 1978, only 95 million persons were employed in urban areas, while 306 million were still in the rural world, representing respectively 23,7% and 76,3% of total employment. As overall employment dramatically grew along with the augmentation of the economic active population, in 2014, there were more laborers in rural areas than in 1978, totaling 379 million persons. Nevertheless, in 2014, employment in rural areas was surpassed by employment in urban areas, where 393 million workers were employed. Graph 1.2 shows the evolution of rural and urban employment between 1990 and 2014[4].

Since 1990, urban employment, which has grown every single year, more than doubled its size. Meanwhile, rural employment experienced a much slower growth in absolute

[4] On the one hand, Wang and Wan (2014) argue that the figures on urban total employment have been underestimated and rural employment data overestimated due to the omission of many migrant workers in urban data. On the other hand, Herd, Koen and Reutersward (2010) highlight that urban statistical areas are broadly defined, encompassing areas that have rural characteristics. Appendix A briefly discusses this question.

terms from 1990 to 1997, when it became relatively stagnant. It was only in the beginning of the 2000s that rural employment in total numbers started to quickly decline, in contrast with the absolute decrease of laborers in agriculture that began in 1992. Therefore, sectorial transfer as shown in graph 1.1 had two vectors: one rural to rural and other rural to urban. The first was consubstantiated though the proliferation of township and village enterprises (TVEs), especially in the 1980s until the middle of the 1990s. Rural employment experienced a great expansion between 1978 and 1990: in the period 1978-1985, it expanded by 20% and from 1985 to 1990 it augmented by 28,7%. Although urbanization took place in the period as a whole, the two last decades experienced the intensification of rural to urban migration, which, notwithstanding, only started to impact rural employment in absolute terms in the 2000s.

1.1.1 Migration and the **hukou** *system*

Migration has been the backbone of structural transformations in post-reform China. Moreover, the conditions in which it has been performed were responsible to the conformation of a segmented labor market and to the booming of the industrial export sector in China:

> China's dominance in manufacturing has made it a major player in the global economy. This China success story is closely intertwined with the migration story: without the epic-scale migration of peasants – which supplies almost infinite low-cost human labor to power the China economic engine – the ascent of China would be totally unthinkable. Cheap migrant labor is what makes 'China price' so unrelenting (Harney, 2008). The last three decades have witnessed the world's 'Great Migration' – an estimated 200–250 million rural residents have moved to cities and towns within China (Chan, 2012a). […] through the special institutional design of the *hukou* system, China has also managed to turn this vast number of rural-urban migrants into the largest army of cheap industrial labor the world has ever seen. (CHAN, 2012, p.187-188)

Despite the intense flows of population from rural to rural and rural to urban areas, the vast majority of migrants are not entitled to be permanent residents of their locations of destination, being denied most of the rights to social welfare that local residents enjoy. This discrimination has its roots in the system of household registration or the *hukou* system. Differently from other countries and from pre-Maoist China, the system of household registration serves only secondarily to the statistical assessment of population distribution between rural and urban households (CHAN &ZHANG, 1999). It was designed by the

People's Republic of China (PRC) to meet different state purposes and, although not from its beginning, it became a tool for controlling such distribution, presenting itself as one of the main institutions of social control available to the Chinese state (CHAN & ZHANG, 1999)[5]. In the *hukou* system, when the person is born, he or she inherits the parents'[6] register of residence in a sole locality, and only with legal authorization, which is still extremely difficult, one can change this register from rural areas to cities and from smaller to larger cities. Many activities can only be performed in a specific location if the person holds the place's regular *hukou*. During the period of rationing, the local *hukou* determined the supplies of meat and staple food that residents would receive (CHAN & ZHANG, 1999).

Along with the *hukou* place of registration, the population is also categorized through these records as agricultural and non-agricultural[7]. One prominent feature of such classification was to establish those who would be entitled to food grain subsidies from the state (non-agricultural *hukou*) and those who would need to be self-providing (YEH, XU & LIU, 2011). In this context, the state managed to control the rural to urban formal migration through a double process of *hukou* conversion, which needed to contemplate both the shift of locality and the change in status from agricultural to non-agricultural, in order for the migrant to become a urban resident with complete rights, being entitled to perform all jobs and to social services provided in urban areas (CHAN & ZHANG, 1999). According to Chan and Zhang (1999), it is in the latter step of conversion that the heavy state control is felt, stipulating policies and quotas to determine not only those eligible to formal migration, but also the allowed quantity.

According to the authors, it was not the system of household registration by itself that ensured the blocking of informal migration from the countryside to the city. It was its

[5] "Like many institutions in mainland China, the *hukou* system is a state tool that serves the state interest and priorities in economic growth (industrialization) and in maintaining public security (political stability). In this context, its main function has been to confine the population within the various state-defined segments and to assure the desired manageability. Judging from policy documents and practice, it is clear that its statistical function of tracking population by residence is only secondary. In fact, the complex *hukou* categories, together with changes made as the system adjusted, have only complicated the task of defining urban and rural populations." (CHAN & ZHANG, 1999, p. 830)

[6] According to Chang and Zhang (1999), until 1998 the children could inherit their *hukou* status only from the mother.

[7] "Since the two classifications are based on different criteria, urban areas contain both non-agricultural and agricultural *hukou* population. Similarly, non-agricultural *hukou* population may exist in urban areas or the country side. While this fine point is noted in studies on urban definitions and related topics, in the general literature the populations are mostly lumped together as simply 'rural' and 'urban'." (CHAN & ZHANG, 1999, p. 822)

operation in a specific political and economic context, in which the state bureaucracy controlled strictly the ensemble of economic activities, a fact that translated into several layers of control hindering population shifts. When all enterprises were collective or state owned, the denial for changing the register of residence was a *de facto* one, since those who tried to illegally migrate could not find jobs in these enterprises or even remain for long periods in cities, for the difficulties of acquiring food outside one's registered area of living (CHAN & ZHANG, 1999). Therefore, informal migration to cities was insignificant as a result of the complementary operation of the set of social institutions existent during the Maoist period.

The control over rural to urban migration, in association with the urban policy of lifelong employment, subsidies and free public services (with better quality than those provided in the countryside) ensured, on the one hand, a high degree of social homogeneity in cities and, on the other hand, a huge chasm in living conditions of rural and urban residents. This profound discrepancy in the standards of living between urban and rural areas was fundamental to the Maoist strategy of industrialization à la USSR, with its focus on the heavy industry, for it relied substantially in extracting surplus from the countryside and agriculture to transfer it to cities and the industry:

> The *hukou* system was not merely a means of limiting rural-urban population and labor mobility, as it has been commonly depicted, but also a system of social control aimed at excluding the rural population from access to state-provided goods, welfare, and entitlements so that the rural population segment remains cheap and easily exploited. (CHAN, 2012, p.188)

With the economy being privatized, the acceptance of irregular migrants has become generalized in private enterprises, with capitalists being very inclined to contract these legally unprotected workers in order to run its labor costs down. From the perspective of the peasantry, the introduction of the household responsibility system – that gave every peasant family the use rights of a small plot of land while the ownership remained collective – and the amelioration of relative prices in favor of agriculture, in the first half of the 1980s, provoked a productivity shock in agriculture that released significant amounts of them to work out of the land. Thus, the economic reforms, in attacking several social institutions that operated jointly with the *hukou* system and making possible the rise in agricultural productivity, impacted

profoundly the flow of informal migration from the countryside to cities. Informal migration ceased to be a negligible flow to become the major population shift in human history.

According to Marx, "the constant flow towards the towns pre-supposes, in the country itself, a constant latent surplus population, the extent of which becomes evident only when its channels of outlet open to exceptional width." (MARX, 1887, p.450). The Chinese Communist Party's (CCP) pursuit of economic reforms provided these two necessary elements to the massive rural to urban migration flow in China: on the one hand, it created a vast pool of relative surplus population in agriculture due to the increase in agrarian productivity; on the other hand, it opened the channels for population outflow, making informal migration possible.

Nevertheless, it is important to note that the opening of such channels was not made by the abolition of the *hukou*, but by its relative loosening and, mainly, by the transformation in the context in which it worked. The permanence of the *hukou* institution was resignified by the emerging social and economic context, acquiring a new functionality for the Chinese process of industrialization. From a *de facto* mechanism of migration control, enabling the State to directly allocate labor in different productive sectors and hindering disordered urbanization and its evils, such as the proliferation of slums; the *hukou*, in distinguishing two categories of citizens, transmuted to be a tool for the emergence and maintenance of a segmented labor market, in which the large scale participation of rural migrant workers[8] is a key element for the country's new strategy of industrialization:

> After some experimentation, as China latched onto a labor intensive, export oriented growth strategy in the mid-1980s, rural labor was allowed en masse to the cities to fill industry's labor demand, which later became a major state industrialization strategy. By the mid-1990s, rural-*hukou* labor had become the backbone labor force of the export industry based on manufacturing. Today rural *hukou* labor also staffs almost all of the low-end services in urban areas. In coastal export centers such as Shenzhen and Dongguan, migrant labor now accounts for by far the greater part (70–80%) of the labor force (Chan, 2009b; Liang,1999). (CHAN, 2012, p.188)

Although migration and urbanization have been at the core of China's economic growth and structural transformation over the post-reform period, official employment and

[8]"'Rural migrant labor' (nongmingong), as the term comes to be known in China, has a specific meaning in the country: it refers to industrial and service workers with rural *hukou.* These village-origin laborers, though working on urban jobs and residing for the most part in towns and cities, are not considered legally to be urban workers." (CHAN, 2012, p.188)

wages statistics fail to proper capture these interrelated phenomena. For more detailed statistics on employment than we presented so far, the major flow of population in the humankind history in a great extent translates into missing data. Therefore, prior to analyze the more specific data on employment, some general considerations on the Chinese statistical systems need to be taken into account in order to have a proper understanding of Chinese statistics and their shortfalls.

1.2 CHINESE STATISTICAL SYSTEMS ON EMPLOYMENT AND WAGES IN FACE OF MIGRATION AND URBANIZATION

Transition to a capitalist economy has made the statistical methods used during the socialist period improper to China's new reality. In order to address this mismatch, over the last three and a half decades several changes have been made not only in the methods applied to collect data, but also in the definitions of statistical categories, which collaterally created ruptures in statistical series, generating data that are not directly comparable. As a result of these changes, presently there are two different statistical systems coexisting side-by-side in China, based on all distinct methods of data collection, definitions and coverture, producing data that in many occasions are conflictive. Particularly, the systems use different definitions of urban areas and urban population, in which rural migrant workers are given diverse treatment.

Aggregated data presented so far come from decennial population censuses and the Sample Survey System on Labor Force (Labor Force Survey, LFS). The LFS is conducted annually and its data revised in light of population censuses (CSY, 2014). Combined, these two sources are the base for annual data on the economically active population, total employment, employment by the three broad economic sectors and urban and rural employment. More specific data on employment and all data on wages come from a totally different system, based on administrative reports and registers for which responsibility is spread between different governmental institutions.

The primary instrument of data collection regarding employment and wages is the annual report system on labor statistics (*The Reporting Form System on Labour Wage Statistics*, as designated by the 2013 China Statistical Yearbook). In such system, every economic unit is responsible for the production of its own numbers, sending them up in a vertical chain "from lower-level statistical bureaus to higher level statistical bureaus" (CSY,

2013)[9], being aggregated in their way until they reach the central government. Economic units are not only enterprises, but also units with independent accounting system, including administrative units such as universities. According to Chan (2007), this data collection system is commonly referred as *baobiao* ("reports and tables").[10]

While *The Reporting Form System on Labour Wage Statistics* covers only urban units, being under the auspicious of the Ministry of Human Resources and Social Security (MOHRSS); data from TVEs come from a separate reporting form system whose responsibility is allocated to the Ministry of Agriculture (MOA). Although TVE data has the same administrative nature of data from urban units – presupposing, a priori, the application of the same definitions of urban and rural areas and population –, it is *i*) not as detailed as data from urban units; *ii*) not collected by the same Ministry, giving possible room for divergences when applying rural and urban categories; and *iii*) not as easily available as urban unit data.

Finally, for employment in private enterprises and self-employed individuals, data are provided by the State Administration for Industry and Commerce (SAIC), which is responsible for the registration of such business. Based on these records, the SAIC provides data to the National Bureau of Statistics, which then publishes the information on China Statistical Yearbook.

1.2.1 Definitions of urban areas

> Enumerating the urban population is simple in theory: there are only two questions to consider – how to define an "urban area", and what proportion of the population within that area should be counted as "urban". Although simple in concept, this is particularly complicated in the case of China. The country's urban population "enigma" (Orleans and Burnham, 1984) concerns the definition of these two elements, and is further complicated by the national system of household registration. (YEH, XU & LIU, 2011, p.2)

Despite the tremendous importance of urbanization in China's economic development since the economic reforms, it is not a trivial endeavor to assess the size of its urban population and employment. To begin with, in the country's complex administrative division,

[9] See Brief Introduction to Chapter 4 on Employment and Wages of China Statistical Yearbook (2013).

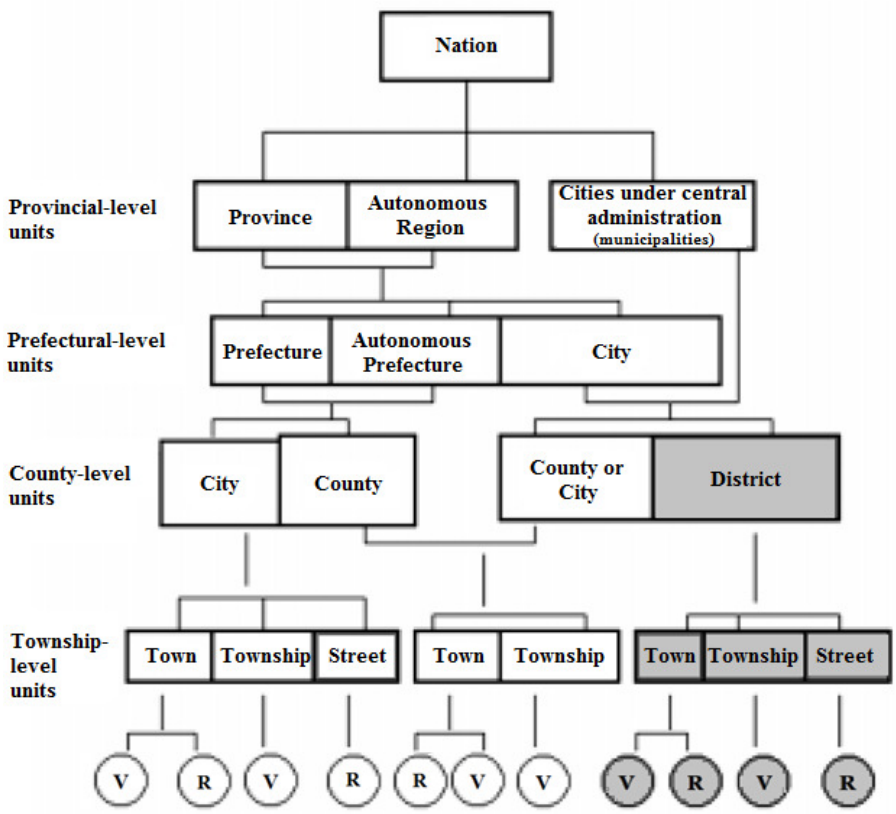
[10] "It was developed to serve the traditional, Soviet-type planned economy characteristic of pre-reform socialist China. Here the statistical system is part of the apparatus of economic planning, which relies heavily on use of quantitative indicators to monitor the economy, society, as well as the performance of local officials. Essentially, the system is closely aligned with the "planning" needs of the government." (CHAN, 2007, p. 389)

the term city is employed to designate different levels of administration, corresponding to regions and sub-regions composed by urban and rural areas (CHAN, 2007). Thus, several regions and sub-regions, with diverse sizes, are administratively classified as provincial-level, prefectural-level and county-level cities, often creating the strange situation in which cities are under the administrative control of other cities (CHAN, 2007). In contrast, small cities (towns) sparsely located inside rural administrative units (counties) are not labeled as cities, except probably for those who function as counties' political centers (county towns), as highlighted by Banister (2005).

Provincial-level cities are also designated as municipalities directly under central government's control. They are four: Beijing, Tianjin, Shanghai and Chongqing. Alongside provinces and autonomous regions, the above mentioned municipalities compose the first administrative level (provincial-level). The second administrative level is the prefectural one, in which autonomous regions and provinces are subdivided, in broad lines, into prefectures, autonomous prefectures and prefectural-level cities. Municipalities and big cities in provinces (prefectural-level cities) are subdivided into districts and counties. The third administrative level, the county one, is composed by counties, autonomous counties, districts and county-level cities. As highlighted before, counties are rural administrative units; whereas districts are administrative units defined as urban areas (composed by the urban nucleus and by adjacent areas). It is inside the administrative boundaries of districts that social services are organized according urban parameters (CHAN, 2007). County-level cities are units with vast agricultural population and agricultural participation and are always under the administration of a prefectural-level (or superior) city, together with provincial government.

The forth administrative level is the township level, where there are sub-districts (streets), towns, townships and county-level "districts", which are the streets belonging to county-level cities (the latter do not have districts, since districts are county-level units). Figure 1.1 shows, in general lines, China's administrative division and the administratively defined concept of urban areas (the grey areas), which is the same concept adopted by the system of annual reports. Nevertheless, this concept is inconsistent with the official statistical definition of urban areas adopted by the NBS in the two last population censuses.

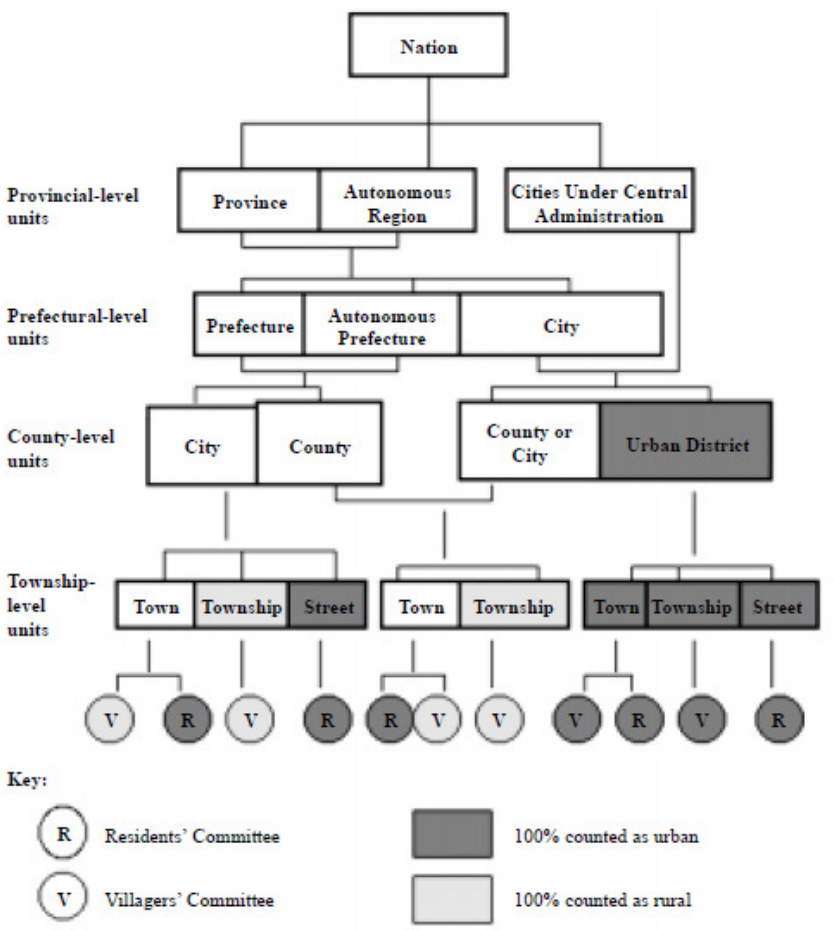
Figure 1.1 – Administrative definition of urban areas adopted in the system of annual reports



Source: Adapted from Chan and Hu (2003, p.53); Majerowicz (2012a, p.68).

Since 1949, six population censuses were conducted in China. The 1953, 1964, 1982 and 1990 censuses had their definitions of urban areas referenced on administrative boundaries, although they were not equal definitions (YEH, XU & LIU, 2011). In the case of the 1990 census, the definition was based in the fifth administrative level, the village level, where towns, townships and streets are divided in residents' and villagers' committees. While streets possess residents' committees and townships, villagers' committees, towns can have one or the other. The 1990 census defined as urban areas all the units inside districts and the township level units that, not being a part of a district, had residents' committee (CHAN & HU, 2003). Even though this was an administrative-based definition, urban areas in the system of annual reports were divergent from those referred in the 1990 census, the former being a subset of the latter, as it can be seen when comparing figures 1.1 and 1.2.

Figure 1.2 – Definition of "urban" areas in the 1990 census



Source: Chan and Hu (2003, p. 53)

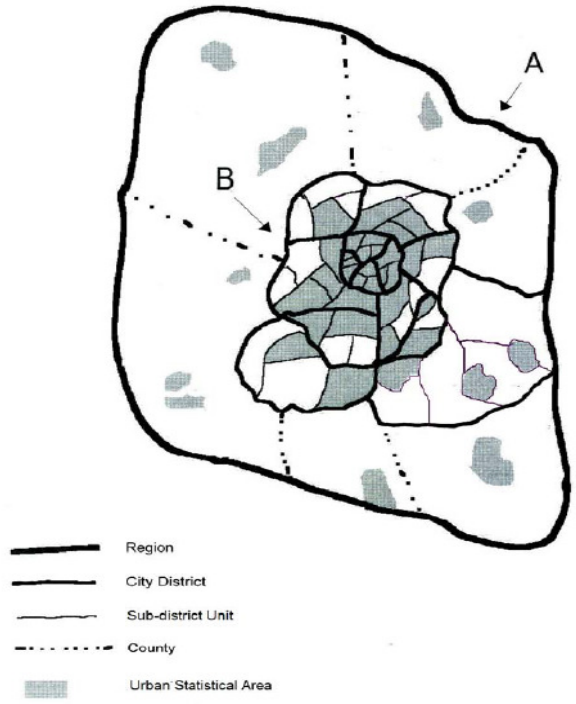
In contrast, in the two last censuses (2000 and 2010), NBS adopted official statistical definitions of urban areas whose criteria moved away from administrative boundaries towards the physical reality of urban spaces. For the 2000 census, urban areas were defined primarily on two criteria: either the average population density, which should exceed 1.500 *de facto* residents by square kilometer, or those areas headquartering local governments along with all their contiguous built-up areas (CHAN & HU, 2003; CHAN, 2007)[11]. In the case of the 2010 census, the criterion of population density was dropped and the contiguous built-up areas were considered by the smallest administrative units, the village-level units (GU *et al.*, 2013, p.5).

[11] For more details on such definition, see Appendix 1 in Chan and Hu (2003).

On the one hand, these latest definitions brought censuses data closer to the reality of the fast process of Chinese urbanization; on the other hand, they exacerbated the incongruence of data produced by the two statistical systems. If as illustrated before, we could say that urban statistics produced by the system of annual reports referred to a geographical subset of urban areas as defined by the 1990 census, from the 2000 census onwards this was no longer true. As a result, more difficulties were imposed to the attempts of reconciling data originated from both systems.

Through Chan's (2007) exemplification of the typical administrative/spatial configuration of Chinese big cities (prefectural-level or superior city), it is possible to better understand the discrepancy between the administrative label of city and the urban definitions adopted by the system of annual reports and the last two censuses (figure 1.3). Delimitation "A" comprehends the entire city (label) as administratively defined. It's important to note that the set of big cities under delimitation "A" corresponds to almost the totality of China's population and economy (CHAN, 2007).

Figure 1.3 – Conceptual structure of a typical large city in China



Source: Chan (2007, p.387)

According to Chan (2007), city boundaries as administratively defined are closer to the concept of region. Boundaries given by "B" contain the administratively defined urban area, formed by the set of districts. Annual data produced by the system of reports refer to this geographical area. Nonetheless, as it is possible to grasp from the grey areas, the areas considered as urban by NBS' statistical definition are "rarely in total congruence with the *administratively defined* urban areas (city districts)" (CHAN, 2007, p.387).

The statistical definition of urban, that has been refined over the last population censuses, achieved an enormous progress relative to the system of annual reports, which counts all population and employment in towns and county-level cities jointly with rural areas' statistics. Not only the recent censuses consider as urban areas outside those administratively defined, but also they dismiss certain areas administratively defined as urban. Therefore, it is important to reinforce that the different geographical coverages of the two main statistical systems create a situation in which it is not even possible to affirm that the urban areas as defined by the annual report system are a geographical subset of urban areas as defined by population censuses. Despite of this limitation, to practical ends, in several moments we will ignore this incongruence, in a manner that urban areas of annual reports will be treated as a geographical subset of urban areas as defined by censuses, aiming to compare data from the two statistical systems.

1.2.2 Definitions of urban population

Besides the geographical difference in the definition of urban areas in the two statistical systems, there is an additional problem, which makes data coming from both even more discrepant: the definition of resident population in urban areas. Specifically, the difference consists in the way in which the two statistical systems treat migrants. The informal/temporary nature of most of the migration flow poses by itself serious challenges to its assessment. When such informal/temporary character of the bulk of migration is entangled with the existence of two parallel statistical systems that do not share some basic definitions, the problem gains all new layers of complexity.

There are two types of migrants, those that get the local *hukou* and those that migrate without managing to get the place of destination's local *hukou*, being a part of the "floating population" (CHAN, 2008). The first ones constitute State's "planned" migration, which include criteria of eligibility and administrative needs. In general, they are qualified laborers

and their families. Migrants with local *hukou* become official residents of the local destination of migration. Nonetheless, this is not the case for the bulk of migrants: “the denial of local urban *hukou* to migrant workers, combined with their plentiful supply and lack of access to legal support, has created a large, easily exploitable, yet highly mobile, and flexible industrial workforce for China’s export economy.” (CHAN, 2012, p.189)

To address this enormous informal/temporary flow of population, the National Bureau of Statistics (NBS) incorporated in censuses and sample surveys the criterion of *de facto* residence for more than a certain amount of time in the same place to determine a person’s residence regardless of her/his register. This change adapted the statistical system to better cope with migration, but does not deal with seasonal or circular migration, which is a relevant flow of population in contemporary China. According to Wu (2014), the censuses also improved their definition of migrants, which in the 1990 census were established as those moving across county-level administrative boundaries, whereas in the 2000 census, as those crossing township-level boundaries.

Notwithstanding, the difference in the general statistics produced by censuses and the specific data generated by the administrative system (based on annual reports) is not migrants without local *hukou*, because the two systems use different definitions of urban areas. As a result, for instance, general data on total urban employment, although more accurate, is not dealing with the same geographical universe that specific data on urban employment or wages are drawn, besides the *de facto/de jure* different procedure of counting.

Regarding the definition of urban population, the difference between the two statistical systems is the way in which they treat migrants. In general lines, the annual report system is based on the *de jure* population (holders of local *hukou*), whereas population censuses consider the *de facto* population. Thus, regarding the system of annual reports, Chan (2007) affirms that “for population statistics, the primary output from this system are the counts based on the country’s *hukou* system, administered by the Ministry of Public Security” (CHAN, 2007, p.389).

However, since 1997, the Ministry of Public Security started to publish data on the population not holding local *hukou* that is registered as “temporary residents”, figuring in the annual statistics (CHAN, 2008). All people that pretend to stay for three or more days in a place where they do not hold local *hukou*, by law, must register in the police and apply for the permission to be a “temporary resident” (CHAN, 2008). “Temporary residents” do not have

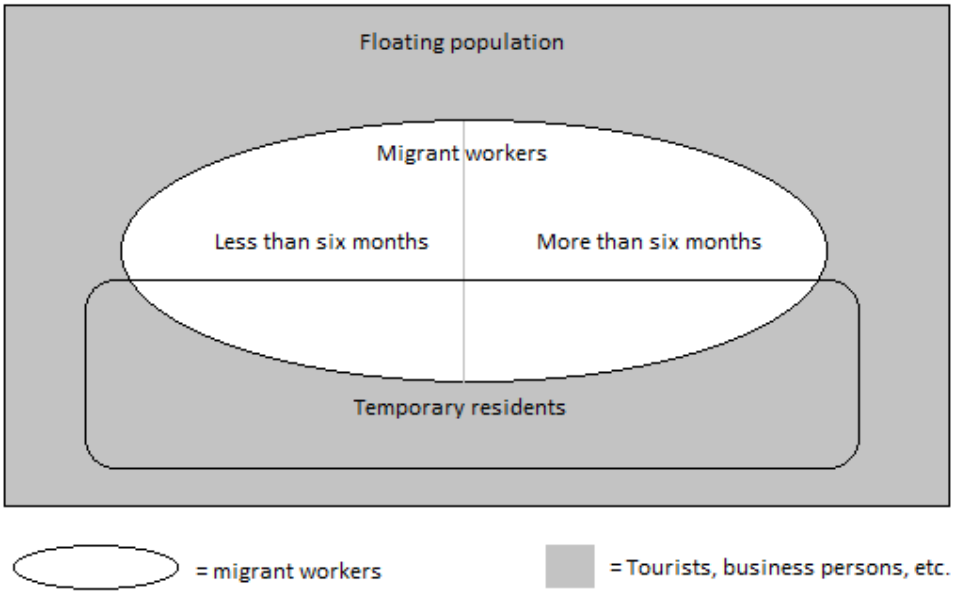
access to social services that are destined to the *de jure* population, and a part of them is constituted by migrant laborers without local *hukou*. Many migrant laborers not holders of local *hukou* do not obtain the permission to become "temporary residents".

The irregular status of a significant parcel of migrant workers and the reduced citizenship rights of temporary residence, in a context in which the main source of data on employment and all data on wages come from enterprises' annual reports, leads to massive underreport of migrant workers' employment. The tendency to fraud accounting numbers in order to boost profits – a tendency, by the way, spread all around the capitalist world – is even worsened by the precarious status of rural migrants in urban areas, having a tremendous impact on national aggregate data. Therefore, as described by Banister (2005), it is very widespread through enterprises the practice of having two sets of books, one for management purposes and other for tax purposes, in which rural migrant workers and their smaller earnings are not reported (sometimes they are left outside the two sets of books). As a result, with the intense process of privatization, urbanization and structural change, post-reform migration in China – the major flow of population in the humankind history – in a great extent translates into missing data.

In contrast, the three last population censuses were based on the *de facto* resident population, which deemed as local those living in a certain place after a determined amount of time. In the 1990 census, the temporal criterion was set in more than a year, whereas in the 2000 and the 2010 censuses[12], more than six months (YEH, XU & LIU, 2011; HU, 2014). Consequently, either residents without local *hukou* living in a specified urban area for six or more months, or people that have local *hukou* in this same urban area but left less than six months prior to the date of the census are counted as urban population of the specific area. Therefore, all migrants not holders of local *hukou* that are less than six months in an urban area are counted as population of their place of register. These are not only the migrants that just arrived and still have not completed the six months, but also (and mainly) those that work part of the year on agriculture, in periods of peak planting and harvesting, and those who move through several cities looking for work.

[12] Although the 2010 census still applied the six months' threshold, "the 2010 census went further to register both the de jure and de facto populations at the same time. In other words, everyone was required to put down the residence place where he or she stayed on the evening of October 31, 2010 (reference date) regardless of his or her household registration place, and his or her hukou registration place regardless of where he or she was that night" (XU, 2014, p.18). Moreover, Xu (2014) highlights that the 2010 census recorded population movements across census' enumeration areas, which were as small as to include around 80 residential addresses or buildings.

Figure 1.4 – Composition of the floating population



Source: Author's own elaboration.

In figure 1.4, each and every person that is in a specific administrative area and does not hold the area's local *hukou* is considered as floating population. It is important to note that this is the widest definition of the term, which in many cases is employed only to designate the rural migrants that seek jobs in cities. Although no subset of the floating population is deemed as regular residents of the locality by the administrative system, part of the floating population appears as temporary residents, including a parcel of migrant workers which may be considered as regular residents by censuses. Only the workers that are in such area for less than six months and without the permit to be "temporary residents" do not appear at all in either the annual administrative system or as residents of the area in population censuses.

1.3 RURAL EMPLOYMENT

Since the beginning of economic reforms, China has entered in a route of structural transformation that would radically change its predominantly agrarian and rural economy. Notwithstanding the same general trends, the reader should be aware that in the present section we present a slightly different series for agricultural employment than the one analyzed before. This series emerges from the contrast of the two statistical systems and bears

problems associated with this procedure, as discussed in section previously. Appendix A scrutinizes the different measures of agricultural employment provided explicitly or implicitly in Chinese statistics and justify our use of the measures presented before and in the present section.

If the trend in agricultural employment is undoubtedly of fast reduction for the period as a whole in terms of contribution to total employment and of absolute shrinkage since the beginning of the 1990s, rural employment proved to be much more resistant in experiencing decline due to the large participation of non-agricultural economic activities in the Chinese countryside. Although we already mentioned the flourishing of TVEs beginning in the first half of the 1980s, the roots of the sectorial diversification of the countryside lie in the Maoist period.

To address matters of national security, the Maoist strategy of industrialization was a geographically decentralized one, promoting the development of industry in urban as well as rural areas, in the latter by means of collective commune and brigade enterprises (posteriorly TVEs). Such strategy legated an important rural industrial base in which the CCP's transitional process efficiently relied on, bearing fruits in the figure of TVEs throughout the post-reform period.

In the beginning of the reforms, the entire rural non-agricultural sector was owned by the collectives. CCP's gradual reformist approach in the conformation of a private indigenous sector meant that these enterprises would remain untouched for some time. Privatization would start outside them, in a bottom-up perspective, letting the creation of new small private-owned business, in the figures of self-employed individuals and, later, of private enterprises. Primitive accumulation by the stripping of assets from collective enterprises which – allied to urban state-owned enterprises (SOEs) privatization – would give the critical mass of capital for the development of an indigenous bourgeoisie was left for a second moment, inaugurated politically by Deng's South Tour in China, in 1992.

1.3.1 Self-employed individuals and private enterprises as Township and Village Enterprises

Commune and brigade enterprises were those enterprises appertaining to commune and brigades, which were administrative units of the countryside. Thus, the label implied they were simultaneously collective and rural enterprises. In 1984, the concept of TVEs was

introduced *in lieu* of commune and brigade enterprises. Surely the new legal terminology was needed to address the changes in the administrative rural system, by which communes and brigades became, respectively, townships and villages (ZHU & ELBERN, 2002). Nonetheless, this was not just a *pro-forma* modification done merely to respect the new nomenclature. Differently from the concept of commune and brigade enterprises, TVEs were not necessarily those enterprises appertaining to township and villages, but rather, located in township and villages. Allowing the legal concept to be opened to other property forms, it was emptied from its ownership dimension and became just 'a locational concept' (HUANG, 2008), having a 'territorial character' (ZHU & ELBERN, 2002).

The document that created the TVEs definition, the "*Report on the Exploration of New Prospects for Commune and Brigade Enterprises*", formulated by the Ministry of Agriculture (MOA) and approved by the Central Committee of the CCP in 1984, also known as document No. 4, provided that TVEs were: *i*) township-owned enterprises; *ii*) village-owned enterprises; *iii*) joint household enterprises owned by members of the township; and *iv*) self-employed individuals (ZHU & ELBERN, 2002). According to Huang (2008), joint household enterprises, or alliance enterprises (lianying), were composed by more than one investor or household and employed more than seven people, being a euphemism for larger private-owned enterprises. Zhu and Elbern (2002) also state that these were private sector enterprises, although they were considered politically as collective ones, for their registration category pertained to the collectives. Nevertheless, the latter authors highlight that what was fundamental in such regulations was the fact that the self-employed were politically understood as composing TVEs.

It was by allowing the development of the so called 'self-employed' individual enterprises (*geti hu*) that the change towards private property began in China's nonagricultural sector, especially in the rural world where most of the population lived. In a large extent, document No.4 was recognizing an already ongoing transformation in rural China brought by the very start of the economic reforms. In December of 1978, when the conclusion of the 3rd Plenum of the Chinese Communist Party's 11th Central Committee marked "the beginning of the official revival of private business", the private sector was regarded as ancillary to the state/collective one (LIU, 2002). The Plenum started by allowing the "individual economy" to develop in rural areas[13].

[13] Discussing the recognition of the "individual economy" in urban areas, Zheng and Yang (2009) highlight the fact that "the Constitution of the People's Republic of China approved by the Fifth National People's Congress

The 'individual economy' has been vastly portrayed in official government publications and statistics by the quite misleading category of self-employed individuals. Many authors have treated the self-employed in China as "entrepreneurs", responsible for the development of highly dynamizing activities. The image behind, or many times explicit, is of the self-made man who starts with little material possessions but great creativity and perseverance that can path his way to 'success', meaning capital accumulation. Yasheng Huang (2008) is an exponent of this conception, who radicalizes it up to the point of affirming that China's development in the 1980s was driven by rural entrepreneurship – which for him includes the self-employed, but is not limited to it. To illustrate his argument, he tells the story of Nian Guangjiu, a farmer who sold sunflower seeds: "He hired hundreds of workers at a time when private-sector employment was supposedly capped at seven workers per firm. In 1981, he started with four employees, and in 1983 he had 103." (HUANG, 2008, p.51). Thus, self-employment is seen as the embryonic stage of tomorrow's prosperous capitalist.

Self-employment or individually-owned enterprises have a peculiar definition in China: they are households or enterprises employing no more than seven persons[14]. Thus, theoretically, part of the self-employed individuals is constituted by employers, while the potential majority, by employees, in direct confrontation with the supposed and widespread idea of the self-employed 'being one's own boss' (Steinmetz and Wright, 1989, p. 974 *apud* LINDER, 1990, p.728) [15]. Nevertheless, it is likely that the bulk of them employ family labor, not hired one, which would give support to Huang's (2013) claim that "the majority of these so-called individual entities actually fit better in the old Marxist and Weberian category of the 'petty bourgeoisie', rather than in 'private entrepreneurs' or 'private enterprises'" (HUANG, 2013, p.356)[16]. Whether they are petty bourgeoisie, and thus small private owners, or not

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in December 1982 definitely provided that the individual economy in cities and the countryside were within legal restrictions and supplements of the socialist public economy" (ZHENG & YANG, 2009, p.4). Nevertheless, SAIC's registers show that in 1981 the number of self-employed establishments was roughly the same in urban and rural areas (HUANG, 2008). Moreover, in 1981, a definition of self-employed individual enterprises (*geti hu*) was provided by the *Directives on Issues Related to Land Used by Urban Collective and Individual Economy,* which seems that by that time they were already allowed in urban areas.

[14] Although these enterprises are legally defined as such, Zhang affirms that "these household-based sideline productions were not labor-hiring enterprises" (ZHANG, 2013, p.8).

[15] For a critical perspective of the self-employed as being petty bourgeoisie or entrepreneurs, applied to US statistics, see Linder and Houghton (1990) who discuss wage labor relations disguised as self-employment.

[16] "[…] the difference is between the small minority who might be called "entrepreneurs" or budding entrepreneurs, such as shop-owners with a storefront, or small eatery or hostel owners, and the great majority, who are "self-employed" artisans, peasant vendors, peddlers, stall keepers, transport service providers with tractor vehicles, pedicabs, or even mule-drawn carts." (HUANG, 2013, p. 358). Curiously, Huang's

needs a further analysis that entails their relation to the market and the control over the labor process, as they might also be wage laborers[17]. Most likely they are composed by both, resulting from a process of class formation based on the differentiation of richer and poorer farmers, which only exceptionally become capitalists like Nian Guangjiu.

The contradiction between the CCP's ideological discourse of commitment to a socialist China with its engagement in promoting a private indigenous sector found its initial solution in the rhetorical formula of the "individual economy" or the self-employed, as "in the early 1980s, the employment size of private businesses was considered ideologically sensitive" (HUANG, 2008, p.100). Even in the definition of rural household businesses or self-employed enterprises, the 1983 n°1 document was careful in establishing that such businesses, with two owners, could have a maximum of five "apprentices" (HUANG, 2008, p.100). Private enterprises were defined as those with eight or more employees and were initially forbidden, although "the reformist leadership never rigidly enforced the seven-employee rule" (HUANG, 2008, p.100)[18]. The ideological role played by the praising of the "individual economy" as a synthesis between the CCP's gradual steps in direction of

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exemplification of "entrepreneurs", the minority of the self-employed, seems to fit better the concept of petty bourgeoisie in Marx than what he identifies in the great majority of the self-employed in China. The activities he describes as constituting the petty bourgeoisie are low-paid, and arguably these "petty bourgeois" are worst-off than wage laborers in China. Linder and Houghton (1990) argue that low-paid self-employed should not be deemed as petty bourgeois: "The second inquiry asks whether all workers who can be classified as marginally self-employed should automatically pass muster as petty bourgeois. Speaking against such a facile equation is the fact that, in many low-paid occupations, the self-reported self-employed earn significantly less than employees (U.S. Bureau of Labor Statistics 1989)— prima facie evidence of macrosocial dependent status inconsistent with membership in the petty bourgeoisie. Similarly, many if not most self-employed occupy that status part-time or intermittently, receiving the bulk of their income as employees (Linder 1983, p. 266; U.S. Bureau of the Census 1989, pp. 91-103, 147-57). These self-reported self-employed account for a disproportionate share of full-time working poor families (Ellwood 1988, p. 92), another fact that underscores the tenuous character of the self-employed as a social class." (LINDER & HOUGHTON, 1990, p.730)

[17] Even when the self-employed are defined as "being one's one boss", it is far from trivial the question of whether these laborers are employees or actual self-employed (or whether they are petty bourgeoisie or proletariat), as they can be selling their labor power to contractors which specify the characteristics of the product and receive piece-rate wages, undermining the independence of the producer over the labor process and constituting a wage labor relation. This can also be obtained by wage advances in the form of 'loans', allowing capital to take control over the labor process from the small simple-commodity producer. These are all questions that we will develop further afterwards, especially when dealing with agricultural employment.

[18] "The reality is that the reformist leadership never rigidly enforced the seven-employee rule. The World Bank TVE study could not find a single known case of private entrepreneurs being punished because they exceeded the seven-person employment rule (Lin, 1990). […] A close reading of the government decrees reveals that the employment restriction was never intended to be prohibitive. In fact, the 1983 rule itself contained deliberately flexible provisions. Local officials were urged not to promote but also not to crack down on those who exceeded the seven-employee rule. The overall tone of the 1983 N°1 document […] was pro private sector rather than restricting its development" (HUANG, 2008, p.100-101).

rehabilitating private property and its denial of the capitalist character of the reforms can be gauged by the own story behind the peculiar definition of self-employment in China:

> This is a very funny and arbitrary definition. It is based on an example by Marx in his Das Kapital in 1865. In his example, he seeks to illustrate the capitalist production and surplus producing process. Marx discusses the need for a certain number of people to be employed before the employer can get the surplus value and accumulate capital. So, he gives a purely hypothetical example in which the employer has to employ eight people in order to extract enough surplus value to make twice the employees' normal living standard, plus the same again to use as capital. In this example, his main presuppositions are that the surplus value rate is 33 percent and a half of the total surplus will be accumulated as capital, and that the employer wants to have a higher living standard, twice that of a normal employee. (Karl Marx, Das Kapital, Chinese version, 1972, Vol.1, 341-342). Obviously if the preconditions changed the conclusion should be changed, too. So, the definition given by China's government document is arbitrary and not based on any economic practice or theoretical reason. (LIU, 2002, p. 2)

The promotion of the "individual economy" from the beginning of the economic reforms is inserted in the broader logic of decollectivization of agriculture obtained through the household responsibility system, implemented between 1978 and 1982. The agricultural productivity shock brought about by its implementation not only made a huge parcel of agricultural labor redundant, but also elevated peasants' real income. At the same time, it established the household as the agrarian economic unit, opening the way and incentivizing those households disposing of larger surpluses to turn it into capital *in lieu* of consuming:

> With the beginning of the agricultural reform in 1978, the collective as production and operating unit dissolved step by step. The collective means of production were sold to or distributed among the households which also had contracts for the sideline production of the collective. The emergence of household economy provided the possibility to set up self-employed individual enterprises7 (ge ti hu). Thus, many joint households enterprises or other types of co-operative enterprises and individual enterprises were set up in the rural areas in this period [1978-1983]. (ZHU & ELBERN, 2002, p.10)

One important fact is that whereas individual businesses were legally recognized, private enterprises were not. According to Zhu and Elbern (2002), the self-employed individuals that grew to employ more than the allowed number had to hide the actual number of employees and devise other ways to keep operating their businesses. One of the common practices was for private enterprises to "carry a red hat", that is, paying for local governments or collective enterprises in exchange to be registered as collective-owned or cooperative

enterprises (ZHU & ELBERN, 2002; HUANG, 2008). It was only in the late 1980s that domestic private enterprises would have a more definite legal status in the Chinese countryside.

It should be noted that the concept of private enterprises in China does not designate the whole of the private sector: "[…] by definition, private enterprises do not have official 'legal person' 法人 status and therefore, in the hierarchical scheme of things inherited from the planned economy, were in the beginning really only half legitimate and not officially recognized 'employing units' (Zhongguo tongji nianjian, 2007: 138; 2011: 4)." (HUANG, 2013, p.353). Being unincorporated private enterprises, with no separation from the natural and the legal person, they are usually small and not compelled to follow and obey labor laws (HUANG, 2013). According to Huang (2013), labor laws are applied only to formal labor relations, which "are defined as occurring between employees-workers and their 'employing units' that have 'legal person status'" (HUANG, 2013, p.353). The employees of these private enterprises are defined as casual laborers, which belong to the legal category of task-oriented labor relations, to whom employers do not need to provide benefits (HUANG, 2013).

Therefore, the forging of the concept of TVEs in the 1980s included both these categories of individually-owned enterprises (or self-employed) and private enterprises, along with collective enterprises – the ancient commune and brigade enterprises. The fact that the SAIC registers self-employed individuals and private enterprises in both rural and urban areas, providing statistics separately, has obscured in most of the academic and journalistic analyses the broad nature of the TVE concept. With further development of privatization in rural China, the label would still encompass rural incorporated domestic enterprises and foreign-owned enterprises. In this thesis, we opted for using MOA's data instead of SAIC's. Appendix B provides a comparison of both sources.

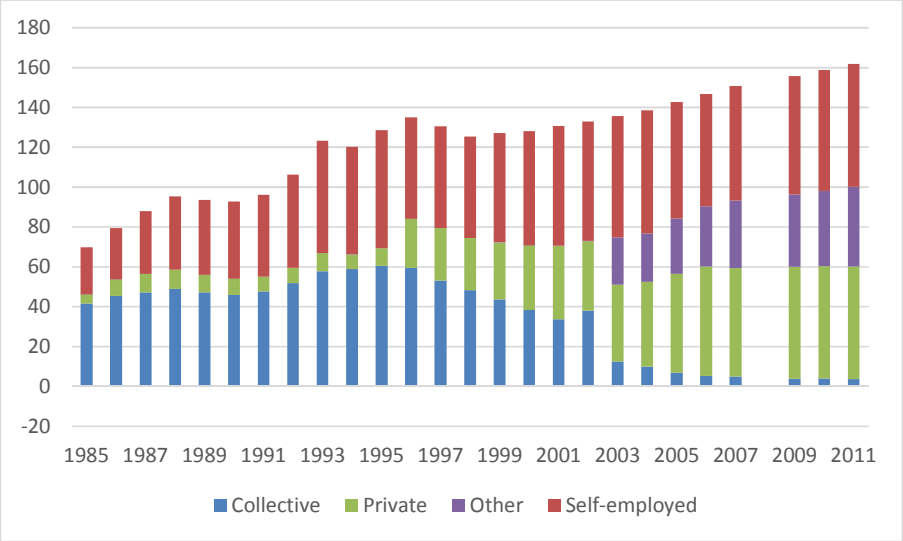
1.3.2 Township and Village Enterprises: the development of the rural non-agricultural sector after the implementation of the household responsibility system

The period that covers the beginning of the reforms until 1996 has been regarded as the golden age of TVEs. From 1985 to 1996, employment in TVEs almost doubled, from 69,8 million to 135,1 million persons, an average annual compound growth rate of 6,2%. In the context of the process of privatization of collective TVEs, which began 1993, TVE total employment suffered first a decline of almost 10 million persons in the biennium 1997-1998,

and then entered in a much slower trajectory of growth, represented by an average annual compound growth rate of 1,9% between 1998 and 2012, when employment grew from 125,4 million to 164,1 million persons.

Graph 1.3 – TVE employment by ownership

(number of employed persons at year-end in collective, private, other and self-employed TVEs, in millions)



Sources: Huang (2008) for the reference years 1985 to 2002, China TVE Statistical Yearbook (2004 to 2008 and 2010 to 2012 editions).
Note:
(1) The category "other" is the sum of cooperative, alliance or joint-household ownership, limited liability corporations, share-holding corporations ltd., TVEs with funds from Hong-Kong, Macao and Taiwan and TVEs with foreign funds.
(2) Self-employed individuals, in the biennium 2003-2004, were composed by engaged persons in individually-owned TVEs; in the biennium 2005-2006, by the sum of engaged persons in individually owned and other TVEs – the latter a category a part directly presented in the 2006 and 2007 China TVE Statistical Yearbook, and not the aggregated series above –; in the period 2007 to 2011, by engaged persons in individual industrial and commercial households. (see Appendix B.2)
(3) Break in the series in 1996 and in 2003.

In the golden age period of TVEs, collective enterprises represented a large share of employment in TVEs. In 1985, they were 60% of the total; while one decade later, they still responded for 47%, representing its historical absolute peak of 60,6 million employed persons. With the process of intense privatization, they were reduced to mere 2,2% of TVE employment in 2011. It should be noted, however, that there is a major break in the series of collective TVEs in 2003, when six new categories of ownership were also made available by MOA, which we aggregated in the label "other": cooperative, alliance (or joint-household

ownership), limited liability corporations, share-holding corporations, TVEs with funds from Hong Kong, Macao and Taiwan and TVEs with foreign funds[19].

Most probably, part of those other enterprises were mixed ownership TVEs, counting with the participation of the collectives. If, on the one hand, foreign funded and domestic incorporated TVEs already existed before the statistical nomenclature change, overestimating collective employment; on the other hand, after the change, only those enterprises 100% owned by township and village governments were considered as collective. Thus, even if these governments have participation or stake control on mixed ownership TVEs, they are counted in other categories, underestimating the collective share on employment from 2003 onwards.

In relation to private enterprises, the initial ban imposed on them kept their participation in TVE employment relatively small between 1985 and 1995. In 1996 there is a sudden increase on employment in this category, from 8,7 million to 24,6 million persons, which probably constitutes a break in the series, mostly explained by the reclassification of part of self-employed as private enterprises[20]. Regardless of the break, the trend in private enterprises becomes a growing one, reflecting both the intense process of privatization of collective TVEs and the creation of new small enterprises. In 2011, private enterprises represented 35% of the total TVE employment.

The most peculiar phenomenon in TVE data is the self-employed individuals, particularly their expressive participation and the changing ways in which they have been statistically and politically treated. Individually-owned TVEs represented a substantial share of TVE employment in the period as a whole. In 1985, they responded for 34%, while in 2011, for 38%. The average size of self-employed individuals between 1985 and 2011 oscillated between 2,1 and 3,4 engaged persons per enterprise[21]. As the household became the economic unit of Chinese agriculture after the household responsibility system, most probably

[19] In the biennium 2005-2006 a seventh new category appeared named other TVEs, directly given by TVE yearbook and not composing the above mentioned aggregation. We treated the brief existence of this category by lumping it together with self-employed TVEs. See Appendix B.2.

[20] As we have discussed, private enterprises would register as collective TVEs, but also were disguised as self-employed. The 1996 up shooting of employment in private TVEs led to a much more pronounced reduction in self-employment than in collective TVEs. From 1995 to 1996, self-employment in TVEs, which included 59,3 million individuals, felt to 50,9 million.

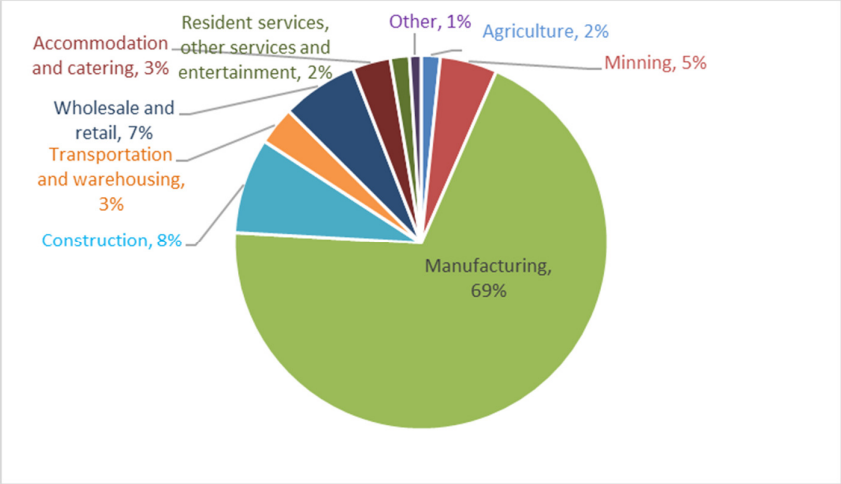
[21] In contrast, private TVEs moved in a range of 7,6 to 18,3 employees and collective, of 26,0 to 52,0 employees.

the average size of self-employed TVEs indicates the use of family labor, a proposition that may not hold in the case of urban areas.

The praised individual economy of the reformist rhetoric of late 1970s and 1980s contrasts sharply with its dismissal from TVEs statistical publications since the second half of the 2000s. In 2007 and from 2009 onwards, self-employed TVEs were excluded from sectorial data. In 2012, they were finally excluded from total TVE employment. In fact, they should be regarded much more as the sideline production of small peasants – with predominance of services and marked by low productivity –, than be taken together as the same phenomenon of rural industrialization, under the label of TVEs, along with the collective heavy and the private sector export rural industries.

Figure 1.5 – Estimated sectorial employment in TVEs excluding the self-employed (2003-2011)

(estimated sectorial employment in percentage of employment in TVEs excluding individually-owned TVEs, in percentage)



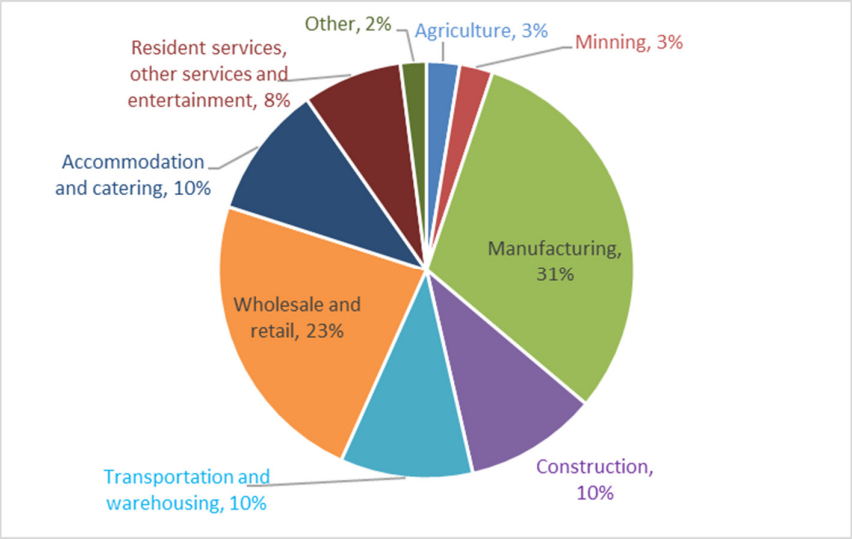
Source: Author's estimates with data from China TVE Statistical Yearbook (several editions). See methodology in Appendix B.3.
Note: Due to rounding, the addition of estimated sectorial employment in TVEs excluding individually-owned enterprises resulted in 101%. We diminished 1 percentage point from "other", which originally was estimated in 2%.

Figures 1.5 and 1.6 show the sectorial composition of employment in TVEs without self-employed and in individually-owned TVEs, respectively, for the period 2003-2011. While the secondary sector corresponded to 82% of the former, with manufacturing

accounting for 69% of its total employment; the service sector dominated the latter, with 53% of its employment, and manufacturing responded for slightly less than one third of the total. It is very likely that their inclusion on TVEs data is linked to the important rhetorical role played by the "individual economy" in the process of agriculture's decollectivization, as its exclusion is probably related to the CCP's ongoing strategy of transitioning from a small commodity producers' agriculture to the large scale land-units of the agribusiness model, a topic treated in chapter 2.

Figure 1.6 – Estimated sectorial employment in self-employed TVEs (2003-2011)

(estimated sectorial employment in percentage of employment in individually-owned TVEs, in percentage)



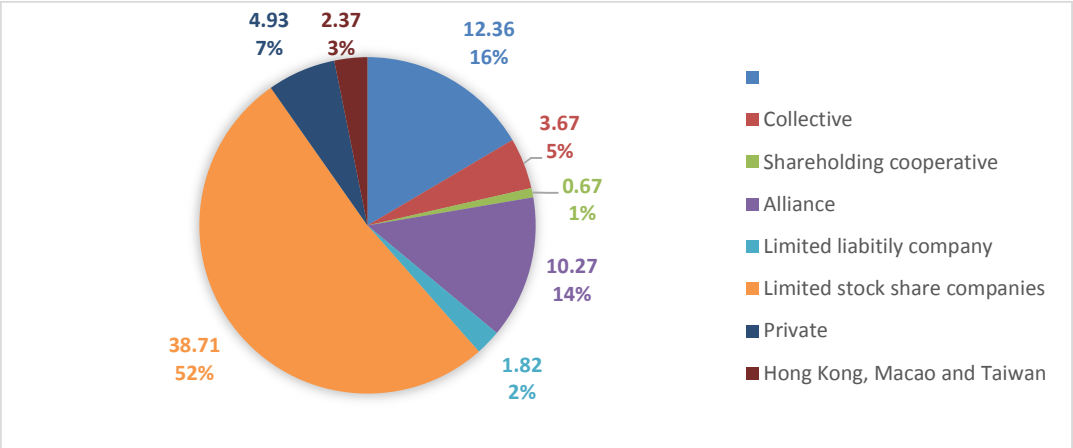
Source: Author's estimates with data from China TVE Statistical Yearbook (several editions). See methodology in Appendix B.3.
Note: Due to rounding, the addition of estimated sectorial employment in individually-owned TVEs resulted in 101%. We diminished 1 percentage point from "other", which originally was estimated in 3%.

If we exclude self-employed TVEs from total TVE employment, in the most recent ownership classification, we can see that private TVEs encompass more than half of TVE employment (graph 1.4), followed by the growing participation of limited liability corporations. The latter leaped from 14% in 2003 to 23% in 2011. Taking both forms of ownership together, their combined participation grew from 66%, in 2003, to 80%, in 2011, responding for the vast majority of TVE employment.

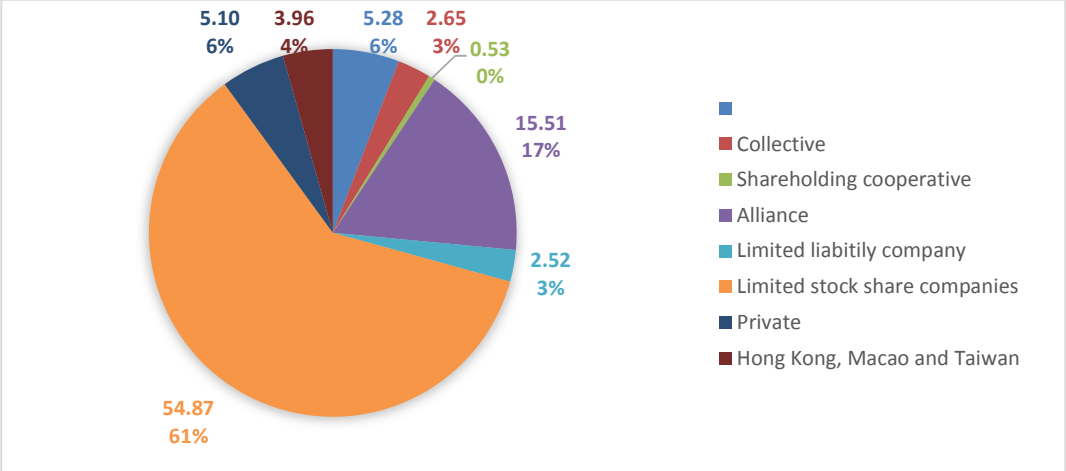
Graph 1.4 – Ownership structure of TVEs employment excluding self-employment

(In 2003, 2006 and 2011, in % of the total TVE employment excluding self-employed)

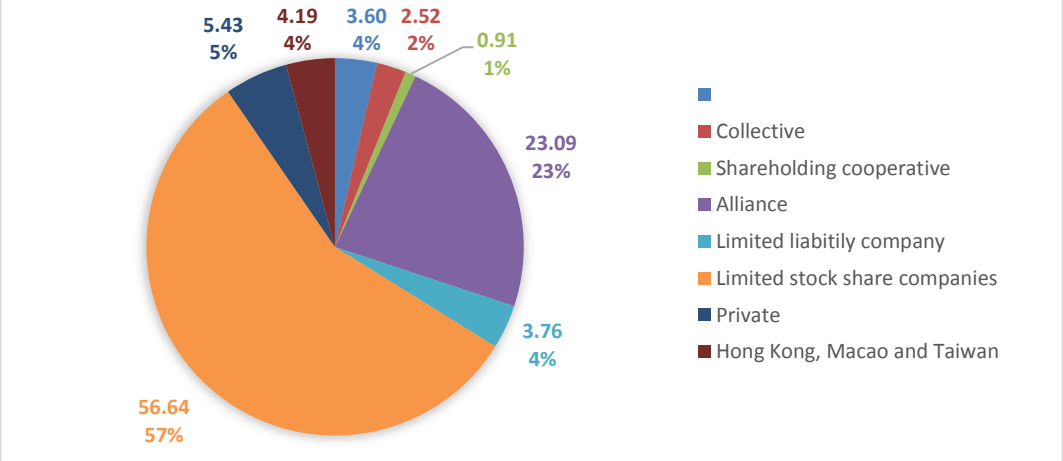
2003: 74,8 million laborers



2006: 90,4 million laborers



2011: 100,1 million laborers



Source: China TVE Statistical Yearbook (2004, 2007 and 2012)

Table 1.1 – Average size of TVEs by ownership (self-employed excluded)

(average number of employed persons per enterprise according to ownership type)

Ownership/ Year	Collective	Cooperative	Alliance	Limited liabitily	Share-holding Corporations	Private	HK, Macao and TW	Foreign
2003	42,3	43,3	24,9	50,6	56,2	15,2	129,7	141,8
2004	41,4	27,6	19,3	46,6	57,2	15,3	135,4	147,0
2005	39,1	23,7	12,0	40,3	57,6	10,8	115,4	142,8
2006	33,7	24,4	15,3	42,9	54,8	11,2	124,9	133,4
2007	34,3	18,5	12,2	40,2	28,8	11,0	54,9	141,1
2009	34,7	14,2	11,5	33,6	31,0	11,9	91,9	112,9
2010	33,5	13,4	10,9	32,0	25,5	11,6	92,3	114,7
2011	26,0	12,4	11,1	27,3	28,9	11,4	95,8	111,7

Source: Author's calculations with data from China TVE Statistical Yearbook (several editions).
Note: "HK" stands for Hong Kong and "TW" for Taiwan.

Whilst private TVEs are small enterprises, limited liability corporations' average size in terms of employment was 3,8 to 2,4 times greater than the former in the 2003-2011 period. In contrast, foreign and Hong Kong, Macao and Taiwan invested TVEs had a small participation on total TVE employment (9% to 10% combined), while their scale exceeded by far any other ownership type of TVE (table 1.1). Finally, even though only township and village governments' wholly owned enterprises were considered as collective – which seems to be also the criterion applied to classify enterprises as 'with foreign funds' and 'with funds from Hong Kong, Macao and Taiwan' –, they were still significant at the beginning of the period, representing 16% of TVE employment in 2003. In 2011, their participation was further reduced to just 4%.

1.3.3 Rural employment structure

After a scrutiny of rural nonagricultural employment under the broad label of TVEs, we propose a three sector composition of China's rural employment structure, with an agricultural sector under the household responsibility system, a formal nonagricultural sector and an informal one[22]. Individually-owned TVEs and private TVEs compose the latter, while all other ownership types of TVEs are regarded as the formal sector. Since it can be argued that there is no rural open unemployment, the difference between total rural employment and

[22] Though it should be noted that around 2% of employment in theses two sectors are in agriculture (see figures 1.5 and 1.6).

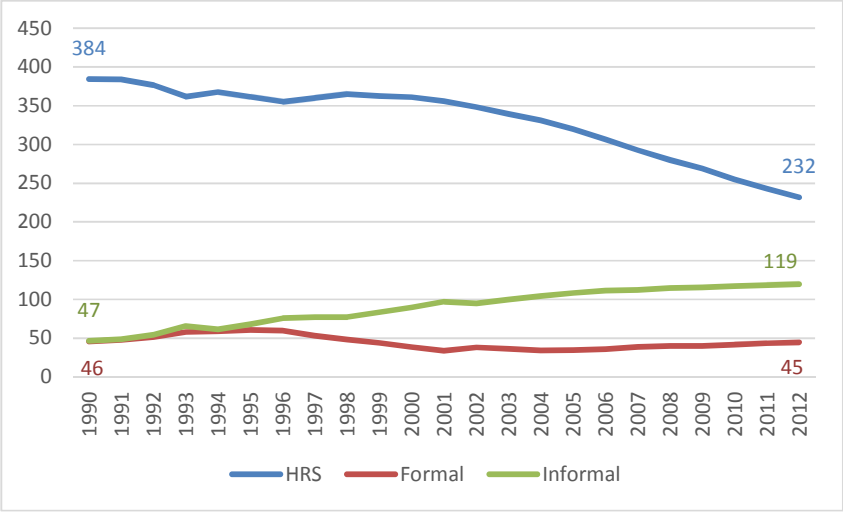
TVEs employment will be considered a proxy of agricultural employment under the rural responsibility system (see Appendix A):

> In rural areas, the household responsibility system guarantees that everybody has his or her share of land, so it is a reasonable assumption that rural overt unemployment according to the International Labor Organization (ILO) definition is almost negligible because these laborers either work in non-agricultural sectors or in agriculture. Therefore, this category of "rural employed persons" can be viewed as the stock of rural laborers as well. (CAI & WANG, 2008: pp.55)

From 1990 to 2012, agricultural employment under the household responsibility system (HRS) has declined in about 150 million persons (graph 1.5). Most of this reduction happened after 2001, not only due to the increase in nonagricultural rural employment, but also by rural to urban migration.

Graph 1.5 – Rural employment structure

(number of employed persons under the household responsibility system, in the formal sector and in the informal sector, in millions)



Source: China Statistical Yearbook (several editions)
Notes:
(1) HRS series was obtaining by discounting TVE employment from total rural employment.
(2) The informal sector is composed by the sum of employment in private TVEs and individually-owned TVEs.
(3) The formal sector is composed by TVE employment excluding private and individually-owned TVEs.
(4) Break in the formal and informal sector series in 1996.

In 2012, the number of rural migrant workers was 263 million, of which 163 million were outside their localities of registration and 99 million inside their place of register in

search of off-farm employment (NBS, 2013 National Monitoring Survey Report on Rural Migrant Workers). Besides the different ways in which statistics treat migrants, the fact that the number of rural migrant workers is substantially higher than the drop on employment in HRS reflects also the characteristics of the second generation of rural migrant workers, who move away from their local places of registration when they are around 15/16 years old, without ever integrating farm employment.

Migration has been responsible not only for the expansion of the urban labor market, but also for boosting nonagricultural rural employment. In 1990, the latter represented 19,4% of rural employment, while in 2012, this figure leaped to 41,4%. Such growth has responded to two simultaneous processes: the own growth of rural nonagricultural employment and the reduction of rural employment in absolute figures. As we discussed, the golden age of TVEs, which ended in 1996, gave room to a trajectory of slow growth in TVE employment in the 21th century. While TVE employment grew 83,3% in the brief amount of time between 1984 and 1988; in the last 22 years, its total employment augmented 77%.

Notwithstanding, the most remarkable characteristic of this growth is that it was completely generated by the informal sector. Until 1995, the formal and the informal sectors augmented together holding the same proportions of nonagricultural employment. Beginning in 1996, they entered in a divergent trend, with the formal sector being drastically reduced until 2001. It was only in the second half of the 2000s that it started recovering, although in a very slowly way. Meanwhile, the informal sector kept growing until 2012, when it represented around 30% of rural employment (72,6% of rural non-agricultural employment), whereas the formal sector, only 11%.

Even though formal employment has only a small share of rural employment, some reservations need to be made regarding its compliance to labor laws. All enterprises that hold the status of legal persons are considered “employing units”, and thus are in the scope of labor laws (HUANG, 2013). For that reason, we are classifying all TVEs other than individually-owned and private enterprises as the formal rural sector; notwithstanding, they commonly are able to evade such laws. Huang (2013) highlights that, in rule, these rural enterprises do not provide benefits to their employees due to the “deeply rooted concept that only urban industrial workers are entitled to benefits, not peasants. And one can rationalize against benefits for peasants on the grounds that they possess land rights, which are tantamount to employment benefits.” (HUANG, 2013, p. 359).

Moreover, labor laws do not cover temporary workers, workers contracted for particular labor tasks and workers without contracts, even if they are in "employing units" (HUANG, 2013). Since persons in rural areas are generally engaged in farming and off-farm employment, it is not difficult to categorize them as temporary or task-based workers: "That is another reason why the rural township and village enterprises simply do not provide employee benefits at all. Those that do provide some measure of benefits (accident insurance, for example) do so only at a much reduced level." (HUANG, 2013, p.359-360)[23].

Although employment under HRS has substantially declined after the turn of the century, it still encompasses a large proportion of rural employment. While nonagricultural rural employment grew in the period as whole due to the informal sector, it lost its dynamism after 1996 and presented a slow growth during the 21st century. The picture of an industrializing countryside of the 1980s, with large scale collective heavy industries, which would be later privatized and joined by a new large scale export private sector, gave room to a scenario where nonagricultural rural employment is dominated by industrial small private enterprises and self-employment individuals occupied mainly in the service sector.

1.4 URBAN EMPLOYMENT

Since 1990, urban employment has experienced a vertiginous growth in China, which led it to surpass rural employment in 2014. Graph 1.6 presents the urban employment structure, composed by urban units, private enterprises[24] and self-employed individuals[25]. Differently from TVEs, urban units do not encompass private enterprises and self-employed individuals. Urban units are formal work units that, in the Maoist period, comprised all urban employment. Work units (*danweis*) were either state-owned or collective-owned, with the former preponderating. It was through the *danwei* that its members had access to social services, as well as urban housing. These work units were also an important mechanism of

[23] Huang (2013) classifies all rural employment as informal, although somewhere else he argued for a three sector model in which agriculture should be separated from the formal and informal sectors (HUANG, 2009)

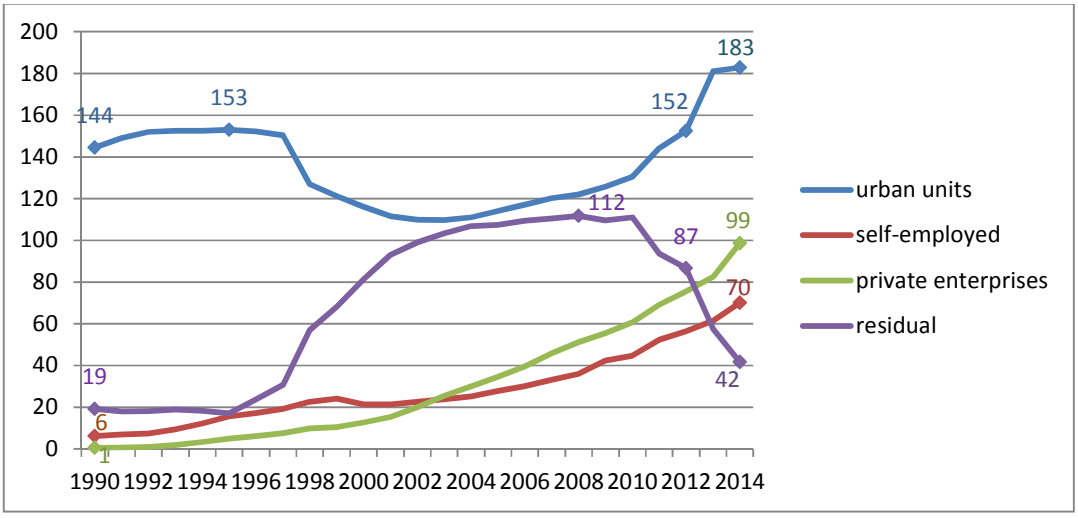
[24] Employment in private enterprises and self-employed individuals encompass "employees" and "employers".

[25] "At present, the boundary between the self-employed business households and private enterprises is not very clear. According to state regulation, the term self-employed business refers to those businesses that employ seven people or less. When a business's employment exceeds this limitation, it should be registered as a private enterprise. However, in practice, many enterprises that have had more than seven employees were registered as self-employed businesses and reported a smaller employment number in order to legitimize this claim. This problem as State Administration for Industry and Commerce to underestimate the employment figures of private enterprises." (WANG & CAI, 2009, p.88)

political and personal control, since they administered labor mobility between units and were involved in important personal life events of its members, such as marriage or studying abroad. It is important to note that these urban units are not only enterprises, but also schools, governmental agencies and other units with independent account systems. In the urban areas, urban units compose all formal employment, while for Huang (2013) they are the only formal employment in the whole Chinese economy.

Graph 1.6 – Urban employment structure

(number of employed persons at year-end in urban units, private enterprises, self-employed individuals and statistical residual, in millions)



Source: China Statistical Yearbook (several editions)
Notes:
(1) Data on urban units' employment is available from 1994 onwards. For the period 1990-1993, China Statistical Yearbook provides data on "staff and workers", which encompassed the great majority of employment in urban units. In 1994, "staff and workers" represented 97,3161% of urban units' employment. We estimated urban units' employment from 1990 to 1993 dividing "staff and workers" employment by the mentioned percentage.
(2) Breaks in urban units' series in 1998 and 2013.

Until 1980, urban units' employment represented 99% of urban employment, the other percent being accounted to self-employed individuals. In the period 1985-1989, the latter was responsible for 4% to 5% of urban employment, while urban units responded for all the rest. It was only in 1990 that private enterprises and an unexplained residual – that will be treated later – started to figure in the statistics of urban employment. Although small figures at the beginning, employment in private enterprises and self-employed individuals grew in absolute terms practically every single year. Self-employed individuals augmented from 6 million, in

1990, to 70 million persons in 2014; whereas private enterprises increased from 1 million to 99 million persons. If in 1990 private enterprises represented only 0,3% of total urban employment and self-employed individuals, 3,6%; the picture was radically changed in 2014, when they represented 25,0% and 17,8% respectively, or 42,8%of all urban employment if taken together.

1.4.1 Formal employment: privatization, lay-offs and the size of the state sector

Regarding formal employment, even though graph 1.6 only shows from 1990 onwards, the first two years of the 1990s belong to a large period of expansion of employment in urban units. From the onset of the reforms, in 1978, to 1990, urban units' employment grew 74,6%. It was only in the aftermath of Deng's South Tour, in 1992, that urban formal employment trajectory would suffer a radical change.

Deng's speech in the South launched politically and ideologically the CCP's decision of privatizing the urban economy, expressed in the rhetoric of "deepening the economic reforms" in direction of a "socialist market economy". Privatizing the urban economy was achieved not only by stimulating the creation of new private sector enterprises[26], but also through the privatization of state and collective assets from the Chinese people in a vast process of primitive accumulation. For that strategy to prosper, an urban labor market needed to be created.

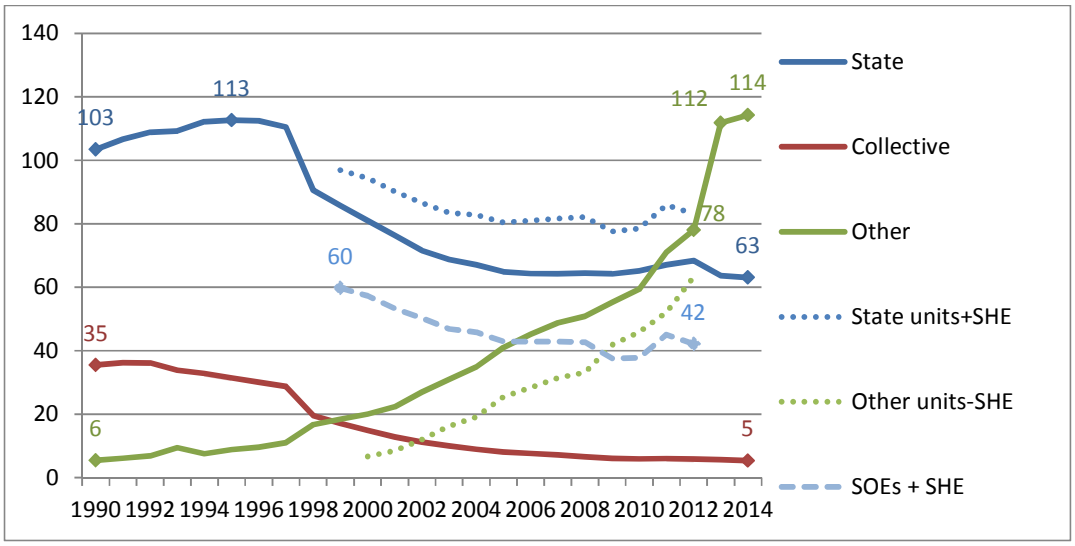
Although at that time temporary contracts were already permitted in new admissions, the watershed in the process of privatization would be the breaking of the "iron rice bowl", in 1994, putting an end to lifelong employment. The prerogative of turning away labor from the production process at any desired moment was crucial to the formation of an urban labor market since: *i*) it immediately supplied masses of laid-off workers that would be looking to sell their labor-power; *ii*) it enabled enterprises to reduce the use of living labor in cyclical downturns and in face of technological changes; and *iii*) it has a fundamental role in disciplining labor. Moreover, the breaking of the iron rice bowl dissociated the provision of social security, housing and schooling from work units, which otherwise would be translated as high labor costs to the private sector.

[26] To differentiate from the statistical Chinese category of 'private enterprise', we use 'private sector' or 'private sector enterprises' in the common Western sense.

Despite the fact that the massive lay-offs started in the aftermath of the breaking of the iron rice bowl, graph 1.7 shows first a virtual stagnation on urban units' employment between 1992 and 1997 and then a sudden and accentuate drop of 23,21 million workers in 1998. Banister (2005) highlights that the laid-off workers kept attached to their former work units, being counted in urban employment until 1997 by the system of annual reports. Their exclusion was made only in 1998, resulting in a break in the urban units' series. Thus, in a great extent, the process of mass lay-offs that was put in motion in the mid-1990s, until 1998, was absorbed in the 1998 data.

Graph 1.7 Urban formal employment by ownership

(number of employed persons at year-end in state units, collective units, other units, state units and state controlled shareholding enterprises, other units excluding state controlled shareholding enterprises, state-owned and controlled shareholding enterprises, in millions)



Source: China Statistical Yearbook (several editions), China Labor Statistical Yearbook (several editions)
Notes:
(1) In the series "state units+SHE", "other units-SHE" and "SOEs + SHE", figures for the period 2010-2012 are based on estimates for employment in SOEs. Employment in SOEs was estimated by applying the share of employment in state-owned units' institutions, agencies and organizations on the EAP in 2009 (5,2%) over the EAP of each year and discounting the result from employment on state-owned units.
(2) "State units+SHE" stands for employment in state-owned units and state holding enterprises, being composed by the sum of employment in state-owned units and "state-owned controlling share holder enterprises" minus employment in SOEs.
(3) "Other units-SHE" stands for employment in other units' minus employment in state holding enterprises.
(4) "SOEs + SHE" stands for employment in "state-owned controlling share holder enterprises", directly given by CSLY.
(5) Series breaks in 1998 and 2013.
(6) See Appendix C for further detail on methodology.

The trajectory of formal employment can be better gauged when we assess its dynamic by ownership (graph 1.7). In 1990, state units represented around 72% of urban units' employment, while collective 25% and other units 2%. The process of "restructuration" of public sector enterprises contemplated both the aspect of changing the ownership structure and the reduction of employment in enterprises, whether they change their ownership or not. "Restructuration" of public sector enterprises continued until around 2002. Between 1997 and 2002, employment in state units felt in 38,81 million persons. Employment in collective units, which was already declining since 1993, felt in 17,61 million persons between 1997 and 2002. Considering 1995 as the year in which the massive lay-offs began, from this year until 2002, employment in public sector units felt in 61,23 million workers, while other urban units grew in 18,06 million employed persons. The net result was a drop of 43 million workers in urban formal employment during the period.

In 2003, formal employment was reduced to 42% of urban employment, as employment in private enterprises, self-employed individuals and especially the residual grew substantially. Beginning in 2004, absolute formal employment started to grow again. Nonetheless, in terms of participation, it kept losing share in the urban total. It was only in the 2010s, when the absolute growth of urban units' employment accelerated, that it started regaining participation, from its lowest of 38% in 2008-2010 to 41% in 2012, when the peak of absolute employment in urban units experienced in 1995 (153 million) was finally recomposed. In 2013, urban units' employment experienced a break due to the reclassification of large TVEs into urban units' data, which explain in a great extent its leap from 152,4 to 181,1 million employed persons, representing 47% of urban employment. In 2014, formal urban employment grew slightly to 182,8 million workers, losing participation in urban employment (46,5%).

Although there were sharp employment reductions in both forms of public ownership for the period as a whole, there were marked differences between them. Employment started decreasing in collective units still in 1993, which reflected their selling out and bankruptcies, being further impacted by the processes of lay-offs that started to be expressed in statistics in 1998. In contrast, state units' employment grew in the first half of the 1990s and only started shrinking in 1998, for the three aforementioned reasons (lay-offs, privatization and bankruptcies). Most important are the different levels of employment in which state and collective units stabilized after the period of "restructuration".

Collective units stabilized in approximately 6 to 5 million employees from 2008 to 2014. The strong pursuit for dismantling the collective sector was successfully achieved in both urban and rural areas (urban units, TVEs and farming), as it became nearly negligible in the Chinese economy. In 2014, collective ownership represented merely 3% of urban units' employment, while in TVEs employment it represented 2% in 2011. It should be noted, however, that these data refer to wholly collective-owned enterprises, meaning that collective shares on other urban units or TVEs, even if large enough to entail collective control, are not taken into account.

In contrast, despite being drastically contracted, employment in state units still sustained a high absolute level, oscillating around 65 million persons in the 2005-2013 period, while showing a slight drop to 63 million in 2014. The permanence of such high level in the post-"restructuration" period is related to two phenomena. First, it should be reminded that state-owned units encompass all governmental agencies and organizations; reflecting, thus, not only state-owned enterprises (SOEs), but also the state bureaucracy and public services. In 1978, employment in the government and public service units (PSU) represented 4% of the Chinese labor force (NAUGHTON, 2007, p.182). It increased to 5% in 1990, and remained in this level throughout the 2000s.

Second, the CCP's policy of privatization of SOEs was led by the leitmotif "attaining the larger, releasing the smaller (juada, fangxiao)" (OECD, 2009, p.4), assuring the state ownership over strategic enterprises. In this process, some key sectors and enterprises were targeted to remain 100% state-owned. Nevertheless, in several cases, to attain state purposes, guaranteeing absolute or relative controlling stake was seen as enough, leading to the corporatization of large SOEs. In 2006, the State Council explicitly defined that in strategic and key industries[27] the objective was to maintain full ownership or absolute control of the targeted enterprises, while for basic and pillar industries[28], absolute or conditional relative control (MATTLIN, 2009).

Notwithstanding, in statistics of state-owned units, only the government, PSUs and non-corporatized state enterprises are counted. State-owned enterprises are defined as "non-

[27] The industries are: defense, power generation and distribution, telecommunications, oil and petrochemical, coal, civil aviation and shipping (State Council *apud* Mattlin, 2009, p.13).

[28] The industries are: machinery, auto, IT, construction, chemicals, base metals, steel, land surveying, R&D (State Council *apud* Mattlin, 2009, p.13).

corporation economic units where the entire assets are owned by the State" (CSY, 2014)[29]. There are enterprises with all assets belonging to the state – as state joint ownership enterprises[30] and state sole funded limited liability corporations – that are not deemed as SOEs, and, thus, not included in state-owned units' data. Mixed ownership enterprises controlled by the state are also excluded. The latter are considered as state holding enterprises (SHE), which are "enterprises where the percentage of State assets (or shares by the State) is larger than any other single share holder of the same enterprise"[31] (CSY, 2014, Industry's Explanatory Notes on Main Statistical Indicators). The category "state-owned and state-holding enterprises" encompass all the above-mentioned enterprises.[32] Thus, if we take into account the state sector in its broader definition, labor absorption has stabilized in around 80 million workers in the post-"restructuration" period (series 'state-units+SHE' of graph 1.7, see methodology in Appendix C).

The opposite side of the process of privatization was, of course, the fast growth of other units. As we have seen in aggregate data on formal employment, however, such growth was much inferior to the shrinkage of the public sector, since it was only in 2012 that formal employment recovered its pre-"restructuration" levels. In 1990, other units employed 6 million workers, whereas at the end of the decade, in 1999, they already had the same size of collective units, with 18 million laborers. Their continuous growth throughout the 2000s made other units surpass employment in state units in 2011, with 71 million vis-à-vis 67 million workers. In 2012, other units' employment represented slightly more than half of urban formal employment, leaping from 78 million to 112 million workers in 2013, as large TVEs were absorbed in the category.

Since state-owned units encompass employment in the government and PSUs – which should be somewhere around 40 million workers in the period 2008-2013[33] –, other units' employment became much bigger than employment in SOEs. Employment in other units exceeded SOEs already in 2004. Even if we consider the broader definition of state sector and

[29] "Not included from this category are solely State-funded corporations in the limited liability corporations" (CSY, 2014, General Survey's Explanatory Notes on Main Statistical Indicators).

[30] Collective joint-ownership enterprises are also not counted in collective-owned units.

[31] "State holding enterprises are a sub-classification of enterprises with mixed ownership" (CSY, 2014, Industry's Explanatory Notes on Main Statistical Indicators)

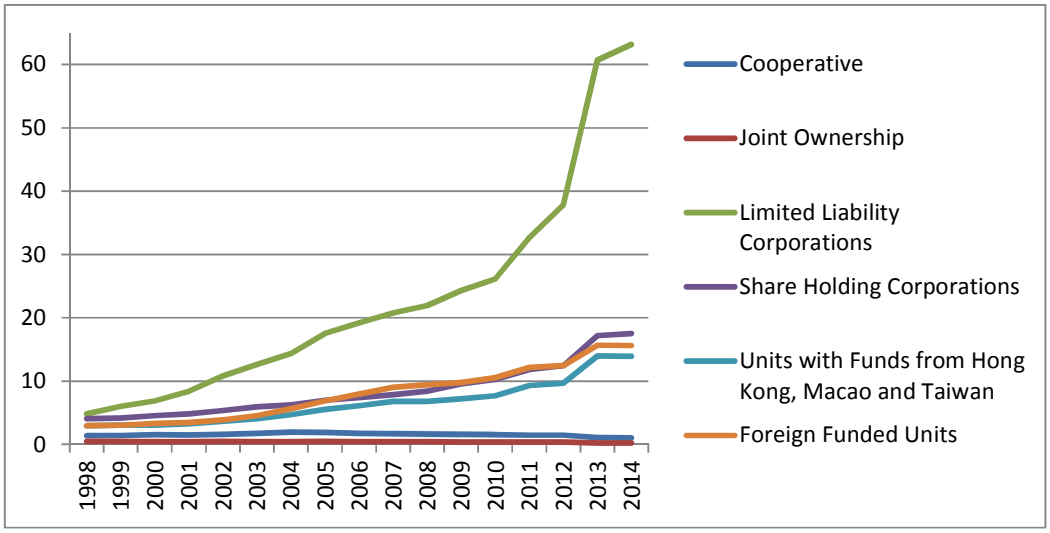
[32] To consider a broader definition of the state sector – including all controlled state enterprises – one needs to sum "state-owned units" and "state-owned and state-holding enterprises" and discount SOEs, since both categories include them.

[33] See Appendix C.

discount SHEs from other units' employment, the latter would have surpassed state-owned and state holding enterprises in 2009. State-owned and controlled shareholding enterprises employment, which represented almost half of urban formal sector in 1999, was reduced to respond for 27,6% in 2012, while other units excluding SHEs grew to 41,6%.

Graph 1.8 – Other units' employment breakdown

(number of employed persons at year-end in cooperative units, joint ownership units, limited liability corporations, shareholding corporations, units with funds from Hong Kong, Macao and Taiwan and foreign funded units, in millions)



Source: China Statistical Yearbook (several editions)
Note: Break in the series in 2013.

Most of employment is these other units came from limited liability corporations, while shareholding corporations, foreign funded units and units with funds from Hong Kong, Macao and Taiwan had approximately the same substantial level of employment. Joint ownership and cooperative units' employment were responsible for an insignificant amount of workers. In 2012, 48% of employment in other units were attributable to limited liability corporations, 15,6% to foreign funded units – which taken together with units with funds from Hong Kong, Macao and Taiwan responded for 28,4% – and 15,2% to shareholding corporations. While the latter four categories ramped up employment in 2013 with inclusion of large TVEs, employment stagnated in all categories in 2014, except for limited liability corporations, which grew from 60,7 million to 63,2 million employed persons, representing 55,3% of other units' employment in 2014.

On the one hand, the formation of an urban labor market required allowing enterprises to fire their employees when desired; on the other hand, it needed a supply of laborers that would be available for the expansion of the new private sector. The laid-off workers would constitute a source of labor to such expansion, though primarily it would be met by the huge flow of rural migrant workers to urban areas. In general, the lost jobs and the new jobs were not observed in the same urban areas. Lay-offs were felt mainly in areas of more ancient industrialization, the "rust belt" in the Northeast of the country, where unemployment became a chronic problem, in particular among older workers. Meanwhile, employment creation, especially in the export manufacturing sector, occurred in the South of the country, the "sun belt", with use of young rural migrant labor-power (LEE, 2007).

1.4.2 Sectorial composition of urban reported employment

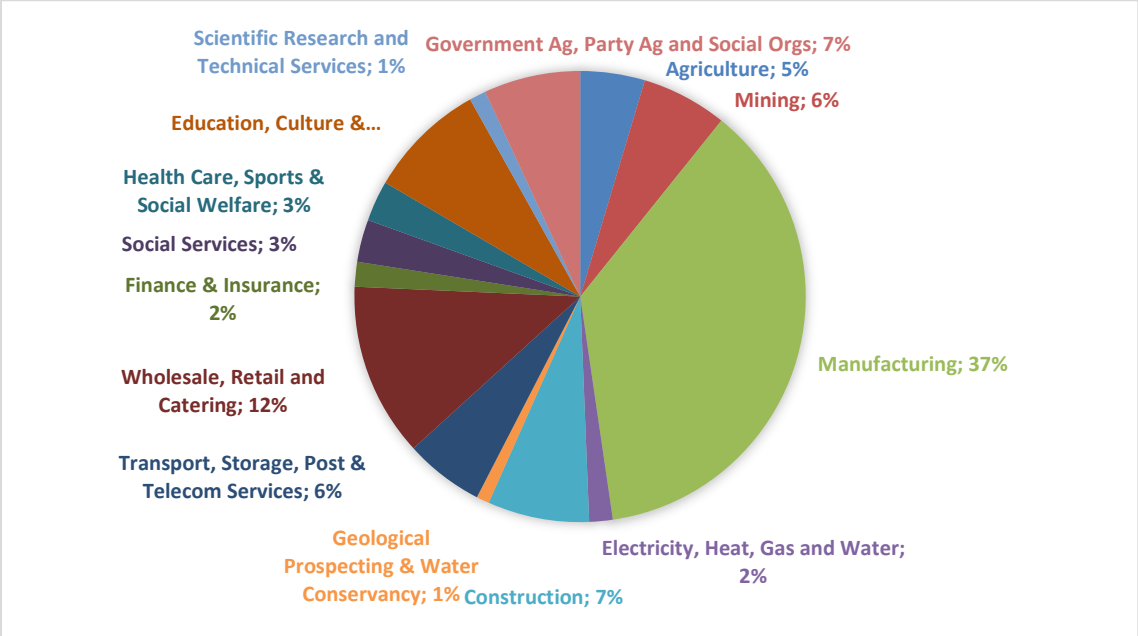
In terms of sectorial composition, formal urban employment is much more diversified than formal TVEs, as one should expect. First, urban units' employment includes all the governmental and party bureaucracy, as well as PSUs. Second, economic sectors that are characterized by the intense use of qualified labor tend to be located near the pool of highly educated labor-power, which is mostly composed by urban *hukou* holders. Finally, the average income of urban households is significantly larger than their rural counterparts. Urban areas concentrate the majority of the extremely rich Chinese, cadres and the better-paid workers, creating demand for a more diversified set of goods and services.

In 1994, in the imminence of "restructuration", slightly more than half of urban formal employment (52%) was in the secondary sector. Manufacturing was the largest sector (37%), followed by wholesale, retail and catering services (12%), education, culture and entertainment (8%), government agencies, party agencies and social organizations (7%) and construction (7%). From the breaking of the iron rice bowl to 1998 – when the laid-off workers still attached to their units were excluded from employment figures – formal employment was reduced in 16,9%, though mass lay-offs hit harder workers in wholesale, retail and catering services (31,5%), manufacturing (30,6%), mining (22,3%) and construction (21,1%). As the productive arm of the state was severely affected, the same was not the case with PSUs and the governmental and party machinery, which needed to serve a growing population. Consequently, in 1998, the secondary sector dropped to represent 46% of urban formal employment. Although the largest sector was still manufacturing (31%), education,

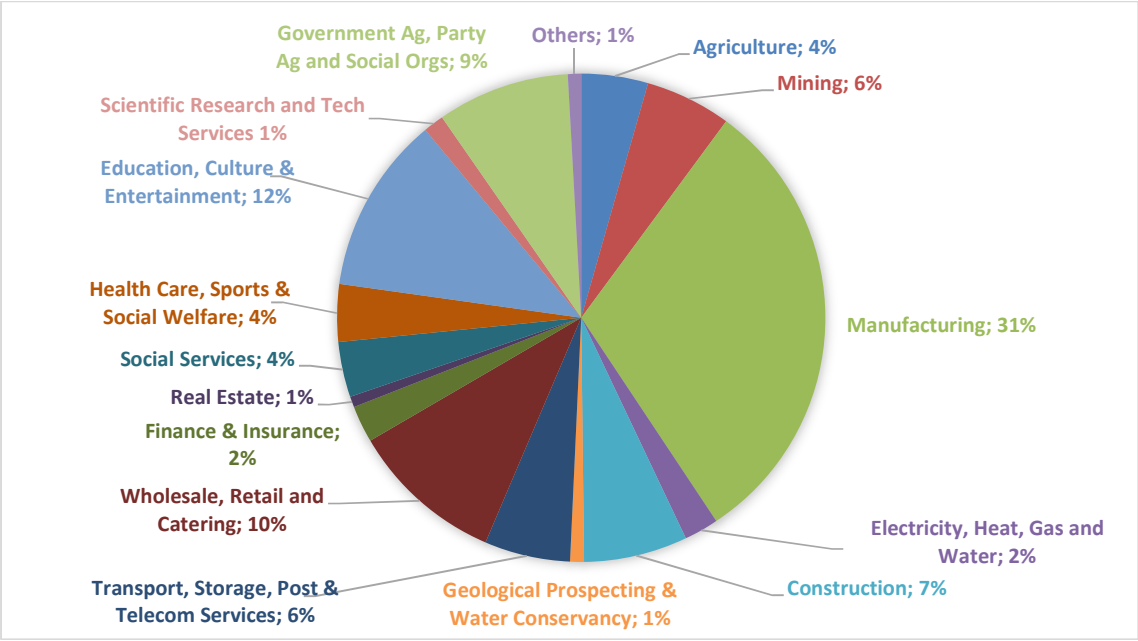
culture and entertainment (12%) surpassed employment in wholesale, trade and catering services (10%).

Graph 1.9 – Urban formal employment by sector (1994 and 1998)

1994: 148,49 million



1998: 123,37 million

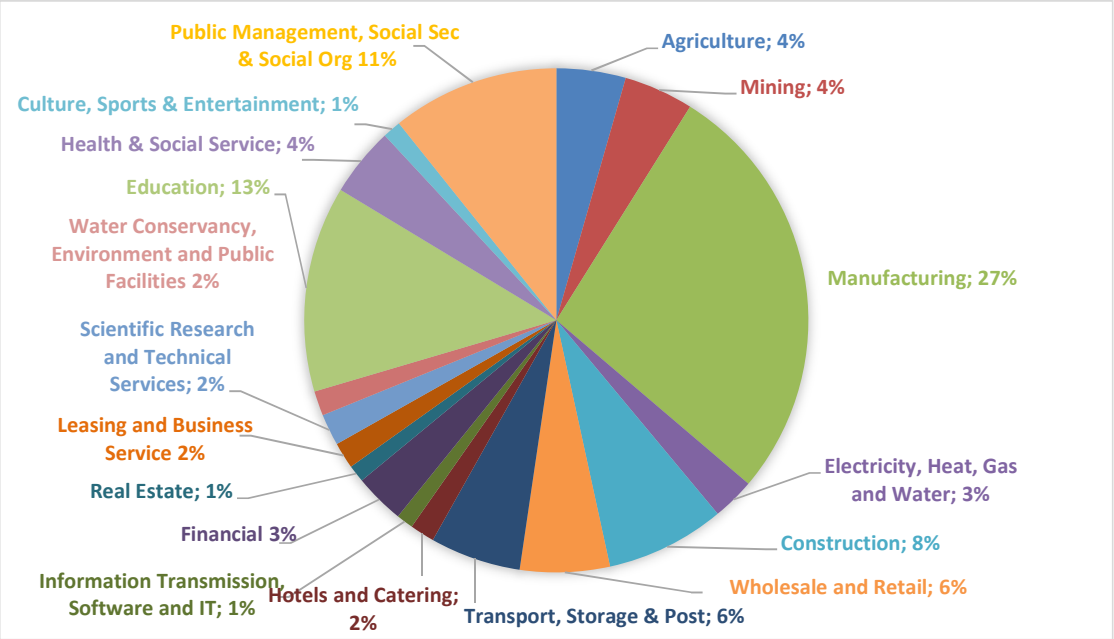


Source: China Statistical Yearbook.
Note: In 1994, real state and others represented 0%, being excluded from presentation.

With the end of the period of "restructuration", in 2003, the secondary sector was further reduced to 42% of urban formal employment. Nevertheless, the former would start to gain participation on formal employment again up to 47% in 2012, but this time being led by the construction sector. From the beginning of the reforms, construction's share on formal urban employment has oscillated around 6%-8%. After 2004, its participation continuously increased, until it reached 13% of urban units' employment in 2012[34]. The already accelerated urbanization process, added to local governments' search for revenues through land leasing to developers, would meet the governmental giant stimulus package of 2009 focused on construction.

Graph 1.10 – Urban formal employment by sector (2003)

2003: 109,70 million



Source: China Statistical Yearbook.
Note: Services to households, repair and other services represented 0%, being excluded from presentation.

All these factors concurred to fuel speculation in real estate and the booming of the construction sector until 2013, provoking over accumulation and inflation of assets' prices. In 2014, when sales of properties dropped[35], prices began to collapse and the number of new

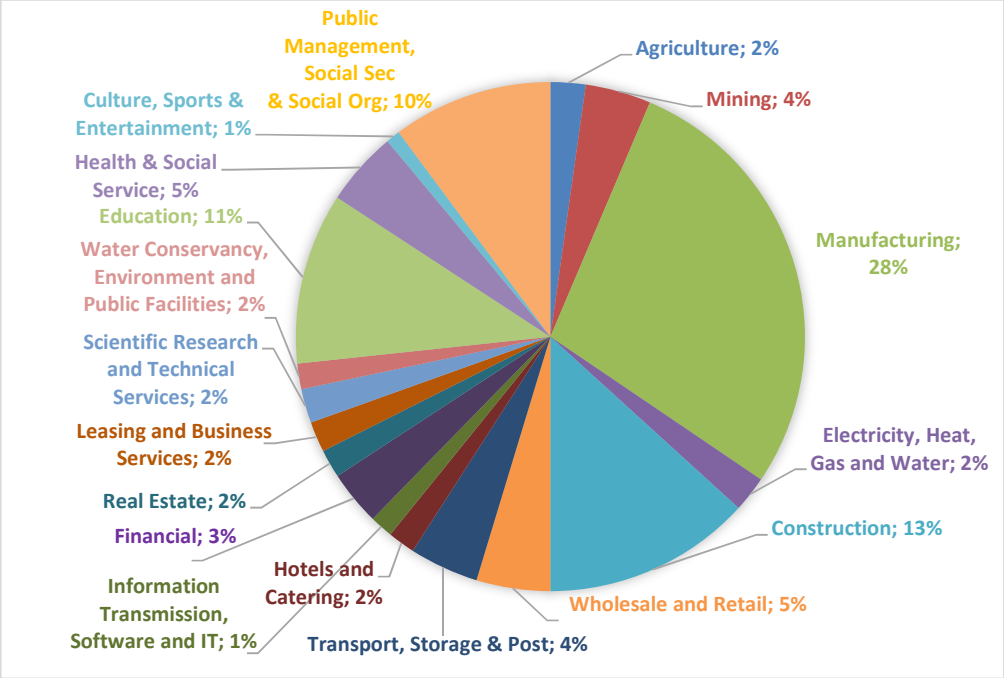
[34] It increased to further 16% in 2013, with the inclusion of large TVES, maintaining such share in 2014.

[35]"Sales fell by 10.8% over the first nine months of 2014, according to the country's National Bureau of Statistics." (HIRST, 2015)

projects to diminish. In the middle of this turbulence, the Chinese state launched its first of a kind massive urbanization plan, aiming to achieve a 60% rate of urbanization by 2020. Further in 2015, the government started cogitating to buy the oversupply of real state and transform it in social housing (HIRST, 2015). From the perspective of employment, the growth of construction's share in the formal urban sector was just the tip of the iceberg, as the sector heavily relied on rural migrant workers, absorbing also older ones made redundant by the manufacturing export sector, from the first generation of rural migrant workers.

Graph 1.11 – Urban formal employment by sector (2012)

2012: 152,36 million

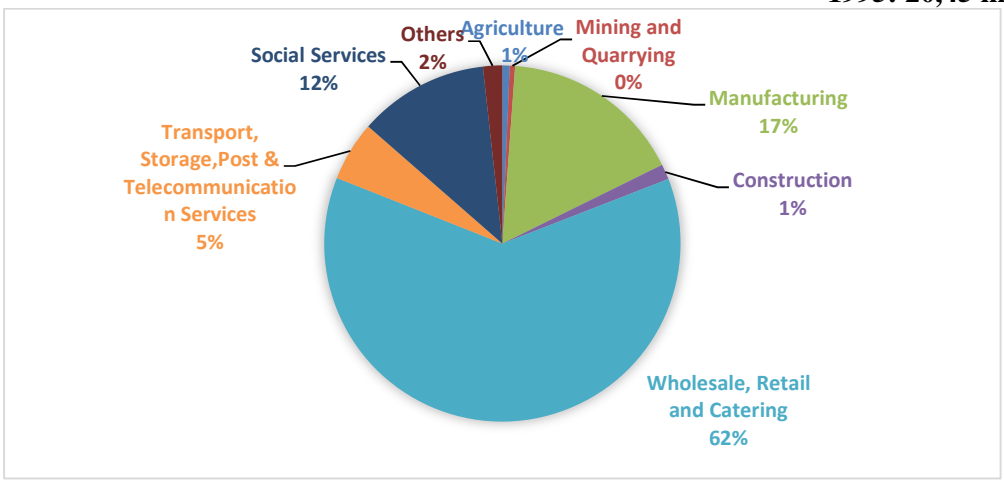


Source: China Statistical Yearbook.
Note: Services to households, repair and other services represented 0%, being excluded from presentation.

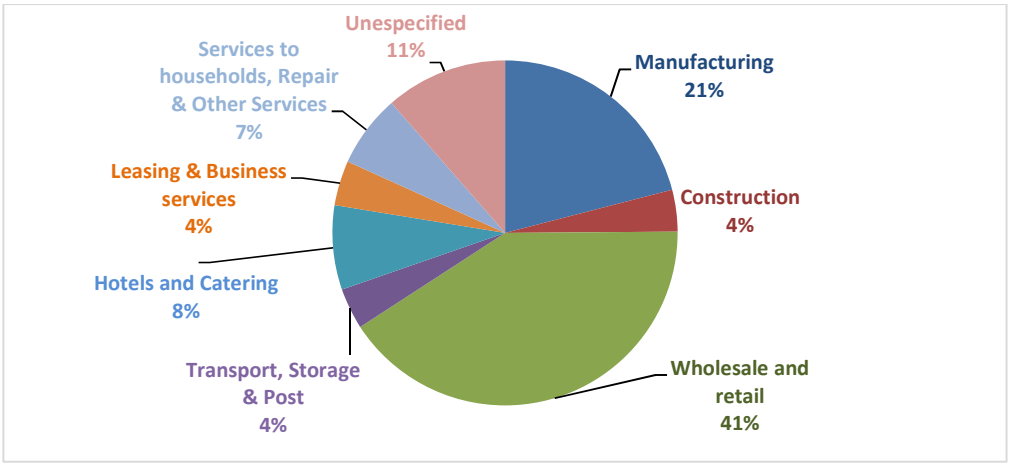
While manufacturing stabilized around 27-28% of employment in the 2003-2012 period, keeping its position as the main sector in the formal urban economy, education, as the second absorber of labor in 2003, would lose its position to construction in 2012. Government and PSUs, as a whole, maintained their large share of participation on formal employment. Worth of noting, the scientific research and technical services sector increased its participation in 1 percentage point – which was 1% during the 1990s –, as well as financial intermediation and, in 2012, real state.

Graph 1.12 – Urban registered informal employment by sector (1995, 2004 and 2013)

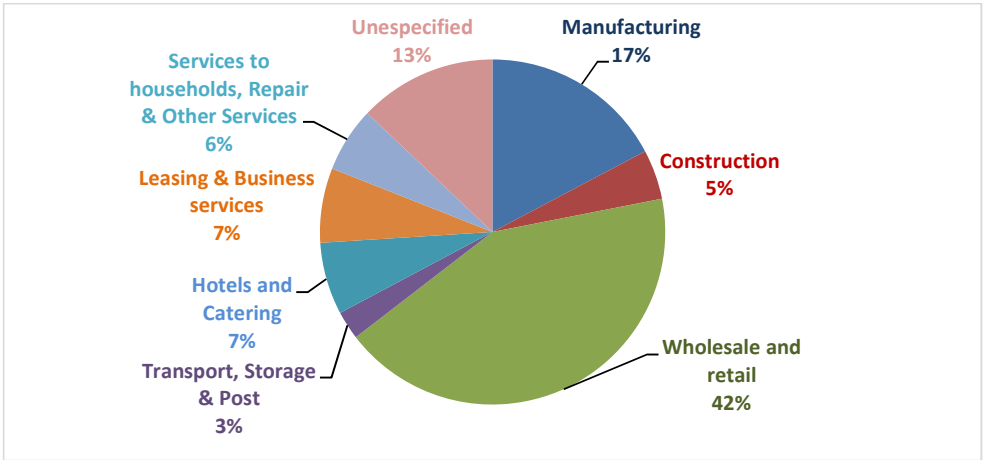
1995: 20,45 million



2004: 55,15 million



2013: 143,846 million



Source: China Statistical Yearbook (several editions).

In contrast, urban private enterprises' and self-employed individuals' employment – the registered part of the urban informal labor market – is predominantly marked by the service sector, even more than self-employed TVEs. In 1995, of the 20,45 million persons registered in urban private enterprises and self-employed individuals, 81% were in services, 62% only in wholesale, retail and catering. Manufacturing was the second sector, with 17%. The tremendous 170% growth on employment in the registered urban informal sector from 1995 to 2004 was accompanied by some changes in its composition. Wholesale and retail kept being the main absorber of labor, responding for 41%, while catering was put together with hotels (8%). Manufacturing grew to 21% and construction from 1% to 4%. Nevertheless, the third main category of workers in participation was unspecified.

Another nine years later, in 2013, and almost the same astonishing growth was experienced by employment in the registered informal segment that reached 143,9 million employed persons, an increase of 161%. The three main sectors were still the same: wholesale and retail (42%), manufacturing (17%) and 'unspecified' (13%). Leasing and business services grew to represent the same share of hotels and catering (7%).

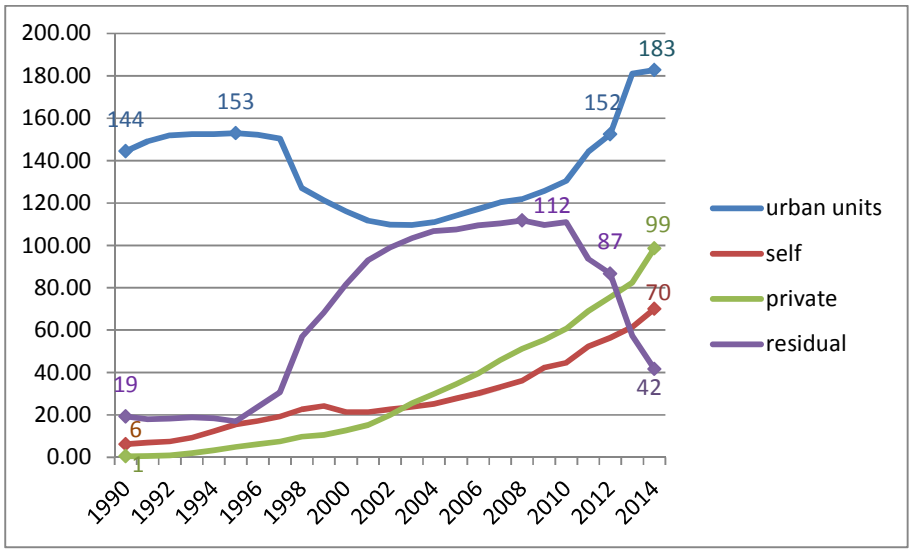
1.4.3 The urban employment statistical residual, migration and informalization

The urban employment statistical residual – a byproduct of data confrontation originated by the different statistical systems – relates to the huge inflow of rural migrant workers that started in the 1990s. Nevertheless, it does not reflect it properly (see appendix A). Until 1995, the urban statistical residual was stable near 20 million employed persons. It began to grow in 1996, although it was only when the laid-off were statistically disconnected from their former work units, in 1998, that the residual entered in a fast paced trajectory of growth until the first years of the 2000s.

After stabilizing near 110 million persons in the second half of the 2000s, the residual started dropping substantially, until it was reduced to 42 million in 2014. Just from 2012 to 2013, the residual felt in 29,2 million persons, which should be in a great extent explained by the incorporation of large TVEs in urban units' data without total urban employment responding for such massive inclusion of workers. The fast growth of employment in urban private enterprises and self-employment, particularly the huge increase between 2013 and 2014, quite probably also reflect the registering of part of these rural migrant workers in the SAIC's offices (even though this does not put them under the coverage of labor laws).

Graph 1.13 – Urban employment structure

(number of employed persons at year-end in urban units, private enterprises, self-employed individuals and statistical residual, in millions)



Source: China Statistical Yearbook (several editions)
Notes:
(1) Data on urban units' employment is available from 1994 onwards. For the period 1990-1993, China Statistical Yearbook provides data on "staff and workers", which encompassed the great majority of employment in urban units. In 1994, "staff and workers" represented 97,3161% of urban units' employment. We estimated urban units' employment from 1990 to 1993 dividing "staff and workers" employment by the mentioned percentage.
(2) Breaks in urban units' series in 1998 and 2013.

According to Morais (2011), laborers in the urban statistical residual, the "others", are:

> [..] workers detected by the population censuses and that are not involved in any registered form of work. Formally, to the secretary of labor of their cities, they are non-existent. In Beijing, for instance, they are the numerous peddlers, street food vendors, owners of small tents that repair clothing and bikes, nannies and domestic female workers, and those who transformed their residences in little food, clothing and utensil shops. The majority is composed by migrants originated from rural areas that are still unregistered. (MORAIS, 2011, p.133, our translation)[36]

Besides these migrant workers in domestic services, street trading and residential shops, as well as all sorts of occupation one can exercise in the streets and households to

[36] "Os "outros" são trabalhadores captados pelo censo populacional e que não estão envolvidos em nenhuma forma registrada de trabalho. Formalmente, para as secretarias de trabalhos das suas cidades, eles não existem. Em Pequim, por exemplo, eles são os numerosos ambulantes de calçadas, vendedores de alimentos nas ruas, donos das barraquinhas que consertam roupas e bicicletas, babás e trabalhadoras domésticas, e aqueles que transformam suas residências em pequenas lojas de comida, roupas e utensílios. A maior parte é composta de migrantes vindos das zonas rurais e ainda sem registro. " (MORAIS, 2011, p.133).

survive, what has been known in the academic literature as "disguised unemployment", it is possible, *grosso modo*, to identify at least two other relevant components in the category "others": workers in towns outside districts and migrant workers in urban units and private enterprises[37]. Regarding workers of towns that do not belong to districts but are deemed as urban by censuses and the LFS, they appear as residual for they are not considered as urban laborers by the administrative system. It is possible that a significant part of workers in towns is being accounted in the statistics of employment in TVEs, and thus counted by the administrative statistical system as rural workers, while they are deemed urban by LFS and censuses. Banister (2005) highlights that many manufacturing export factories have been built outside administrative urban boundaries, in suburban areas, towns and rural areas as a way of being classified as TVEs, taking benefit of reduced social security contributions and labor reporting statistical requirements, that are minimum. In this sense, the inclusion of large scale TVEs in urban unit data might have corrected a significant part of this possible source of bias.

Although the statistical residual has commonly been depicted as irregular urban self-employment or domestic work, it should be noted that just a small share of rural migrant workers in the urban formal sector (i.e. urban units) are reported. According to Banister (2005), even if urban units are required to report migrant workers' employment, only a few of them are actually reported, especially in large-scale manufacturing export factories. The author points out that the 2000 census has estimated 14,6 million rural migrant workers (non-local *hukou* holders) in urban manufacturing (including towns). Nevertheless, the number of rural migrant workers in administrative annual data, in 2002, was only 4,59 million (15% of manufacturing employment in urban units). One of the reasons for such divergence is the different ways in which towns are classified in both statistical systems. Notwithstanding, a series of reasons concur to the underreporting of employed rural migrant workers by enterprises, amongst them: evading taxes, minimizing expenditures in social security and in housing funds administrated by local urban governments, slip past labor legislation on working hours and minimal wage (BANISTER, 2005).

Morais (2011) highlights that while Banister (2005) claims that a small share of rural migrant workers is detected as employed in urban units by annual statistics generated by the administrative system, the vast majority of the academic literature on the Chinese labor

[37] According to Cai and Chan (2009), "Some of these businesses [private enterprises] do not have formal business registrations, and if they are registered, do not frequently report the actual total numbers of employees." (CAI & CHAN, 2009, p.516)

market sustains that migrants without local *hukou* are totally excluded of these numbers, which would only be sensitive to registered migrant workers (MORAIS, 2011, p. 139).

The NBS's National Monitoring Survey Report on Rural Migrant Workers (RRMW) can shed some light in the endemic underreporting of rural migrant workers (table 1.2). In the biennium 2013-2014, 62% of all rural migrant workers had not signed any sort of labor contract (RRMW, 2014). The situation was worst for local migrants[38], of which almost 67% were working without contracts, while the proportion was 59% for rural migrants out of their localities. The champion sector to employ without contracts rural migrant workers outside their localities was the construction sector. In 2012, 75% of rural migrant workers employed outside their place of *hukou* by the construction industry had no contracts, followed by accommodation and catering (62%), wholesale and retail (60%) and manufacturing (49%) (RRMW, 2012).

Table 1.2 – Signing of labor contracts by rural migrant workers, 2013-2014

(all rural migrant workers, rural migrant workers outside their localities and local rural migrant workers with no fixed term contract, one-year contract, more than a year contract and no contract, in percentage)

		No fixed term	One year	More than a year	No contract
2013 all rural migrant workers		13,7	3,2	21,2	61,9
of which:	migrants out	14,3	3,9	23,2	58,6
	local migrants	12,9	2,1	18,2	66,8
2014 all rural migrant workers		13,7	3,1	21,2	62
of which:	migrants out	14,6	3,7	23,1	58,6
	local migrants	12,5	2,3	18,5	66,7

Source: NBS, 2014 National Monitoring Survey Report on Rural Migrant Workers

In the biennium 2013-2014, rural migrant workers with temporary contracts, which are not covered by labor laws, represented 24% of all migrant workers – 27% in the case of migrants outside their localities and 20% to 21% for locals. Only 14% of all migrant workers

[38] At first glance the category "local migrant workers" can seem paradoxical, but we should keep in mind that the *hukou* entails the location as well as the separation of local registered population into agricultural and non-agricultural. Thus, these are the ones who "left the land, but not the village".

had permanent contracts, which if celebrated with an 'employing unit' (i.e. a legal person) would finally mean that the worker is in the scope of the labor laws[39].

On the one hand, we can assume that all those who had no contracts were not reported; on the other hand, the opposite may not be true. It is likely that temporary workers, or a parcel of them, also remain unreported, especially if they are employed through labor dispatching agencies. Finally, even for those who claimed to have signed labor contracts with no fixed term, it might happen, in some cases, that unaware of the proper legal format and requirements for the contract to have juridical value, the worker just signed a sort of agreement or pseudo-contract. One can never cast doubt on the ingenious nature of 'entrepreneurs' when it comes to making higher profits.

The underreporting problem is even worsened if we take in consideration that censuses and LFS, which are much more sensitive to rural migrant workers and are supposed to include all migrant workers living in urban areas for six or more months, also omit a substantial parcel of these laborers. Cai, Du and Wang (2013) affirm that "based on a cross-check with other data sources, urban employment statistics from the labor survey do not include migrant workers sufficiently. In the case of 2009, only 38,96 million of 145,33 million migrant workers were included in urban employment statistics." (CAI, DU & WANG, 2013, p.128). Based on the 2010 census data, Wang and Wan (2014) estimate the amount of rural migrant workers to be 104,79 million laborers, of which 87,72 million would be in urban areas. They subsequently highlight that these are seriously underestimated numbers if contrasted with the migrant workers' monitoring survey conducted by the NBS (table 1.3).

Thus, while the urban employment statistical residual peaked in 2008, with 112 million laborers, and started to quickly decline after 2010, the migrant workers' monitoring survey showed a growing trend in the number of rural migrant workers outside their *hukou*

[39] "To give a concrete illustration of the difference between such informal workers and the formal ones, in a legal case in April 2012, two elderly peasants had worked for a fertilizer factory "private enterprise" for 50 yuan a day. Six months later, the factory was formally incorporated and obtained official "legal person" 法人 status as a limited liability company, becoming a legal "employing unit" 用人单位. The two peasants wished to stay on but were dismissed. They brought a complaint to the local labor arbitration committee 劳动仲裁委员会 on the basis of the 1995 Labor Law and the 2008 Labor Contract Law. But their petition was denied. The reason given was that they had worked under a task-oriented or "casual labor" arrangement, and hence legally fell under the category of "task-oriented labor relations" 劳务关系; therefore, the labor laws, which apply only to the legal category of "[regular] labor relations," were not applicable ("Laowu guanxi," 2012)." (HUANG, 2013, p.354)

localities in the period 2008-2014[40]. Even if after 2010, migration to off-farming employment in their own localities grew faster than migration out of the latter, the absolute number of rural migrant workers going out of their localities still augmented. In 2008, they were 140,41 million laborers, whereas in 2014, 168,21 million.

Table 1.3 – Number of rural migrant workers (2008-2014)

(all rural migrant workers, non-local rural migrant workers, local rural migrant workers, in million, and non-local rural migrant workers, in percentage)

	2008	2009	2010	2011	2012	2013	2014
All rural migrant workers	225,42	229,78	242,23	252,78	262,61	268,94	273,95
Non-local	140,41	145,33	153,35	158,63	163,36	166,1	168,21
Of which: those whose families are still in hometowns	111,82	115,67	122,64	125,84	129,61	130,85	132,43
Of which: those whose families migrate with them	28,59	29,66	30,71	32,79	33,75	35,25	35,78
Local	85,01	84,45	88,88	94,15	99,25	102,84	105,74
Non-local as percentage of total	62,3%	63,2%	63,3%	62,8%	62,2%	61,8%	61,4%

Source: NBS, 2011 National Monitoring Survey Report on Rural Migrant Workers *apud* Li and Peng (2015, p.216, table 9.1), NBS, National Monitoring Survey Report on Rural Migrant Workers (2012, 2013, 2014).

Despite the fact that surely the urban statistical residual and rural to urban migration are related – as LFS and censuses are more sensitive to these workers than administrative data – the residual does not properly translates unregistered migrants because, aside the already mentioned reasons: *i*) many seasonal migrants are counted as rural employment, since their residence in urban areas is inferior to 6 months; *ii*) rural migrants that live in their workplaces are possibly omitted by the LFS and censuses – if they work in formal sector enterprises they are probably in their majority not reported by their employers, not appearing in the system of annual reports; and *iii*) a substantial part of this residual is composed by agricultural employment under the HRS (see appendix A).

Regarding the profile of rural migrant workers (locals and out of locality), in 2013, 83,5% of them was employees, while 16,5% were in self-employment (table 1.5). As expected, rural migrants working as employees were mainly in the secondary sector (65%), whereas self-employed, in the tertiary (82,1%). Distribution of rural migrant workers among

[40] According to the 2014 RRMW, from the rural migrants who were outside their localities of *hukou*, 8,1% were in municipalities, 22,4% in provincial capital cities, 34,2% in prefecture-level cities, 34,9% in small towns, and only 0,4% in "other".

sectors between 2008 and 2014 – regardless of being local/outside or employed/self-employed – showed the predominance of the secondary sector (table 1.4). Manufacturing was the main industry, although in a declining proportion, from 37,2% in 2008 down to 31,3% in 2014; representing a slight absolute increase in rural migrant labor-power's absorption by the sector, from 83,9 million to 85,7 million workers.

Table 1.4 – Sectorial composition of rural migrant workers

(in percentage)

Year/ Sec.	Prim.	Secondary			Tertiary				
		Total	Manuf.	Constr.	**Total**	Wholesale and retail	Transport, Storage and Post	Accomod. and catering	Resident services, repair and other
2008	-	-	37,2	13,8	-	9,0	6,4	5,5	12,2
2009	-	-	36,1	15,2	-	10,0	6,8	6,0	12,7
2010	-	-	36,7	16,1	-	10,0	6,9	6,0	12,7
2011	-	-	36,0	17,7	-	10,1	6,6	5,3	12,2
2012	**0,4**	**57,1**	35,7	18,4	**42,5**	9,8	6,6	5,2	12,2
2013	**0,6**	**56,8**	31,4	22,2	**42,6**	11,3	6,3	5,9	10,6
2014	**0,5**	**56,6**	31,3	22,3	**42,9**	11,4	6,5	6,0	10,2

Source: NBS, National Monitoring Survey Report on Rural Migrant Workers (2012, 2014)

Table 1.5 – Sectorial composition of rural migrant workers by category in 2013

(employed, self-employed, out of location and local rural migrant workers in the secondary and tertiary sectors, in percentage)

Sector/ Category of Rural Migrant Workers		Secondary			Tertiary				
		Total	Manuf.	Constr.	**Total**	Wholesale and retail	Transp., Storage & Post	Accomod. & catering	Resident services, repair & other
Employee	83,5	**65**	35,8	25,6	-	5,5	4,5	5,3	10
self-employed	16,5	-	10,7	5,9	**82,1**	39,6	15,1	8,5	13,1
Migrants out	61,8	**61,8**	35	25,5	-	8,1	4,6	7	9,4
Locals	38,2	-	27,5	20,8	**48,6**	14,8	8,1	4,7	11,9

Source: NBS, National Monitoring Survey Report on Rural Migrant Workers (2013)

As already observed with formal urban employment, construction gained significant share in rural migrant workers' employment. In 2008, it responded for 13,8% of all rural

migrant workers, while six years later, in 2014, its share was 22,3%. In absolute figures, this represented the net absorption of 30 million rural migrant workers, as employment leaped from 31,1 million to 61,1 million laborers. The stabilization of construction's participation in rural migrant employment from 2013 to 2014 is also consistent with the slowdown experienced by the sector due to the falling prices of properties; nevertheless, it still expressed a 1,4 million increase in rural migrant workers' absorption, which was almost the same increase the manufacturing sector experience in the whole 2008-2014 period.

While construction was responsible for an increase of 9,38 million persons in the urban formal sector between 2008 and 2012 – a number that probably includes all the qualified workers, such as engineers and architects, and part of the manual laborers – it led to an augmentation of 17,2 million in the employment of rural migrant workers[41]. According to the ESRC-DFID Research Project (2014), state holding enterprises dominate the sector and monopolize the large-scale projects, but in order to profit from the use of unprotected rural migrant workers without being accountable, "the industry has developed a complex and deliberately opaque hierarchical structure" (THE ESRC-DFID RESEARCH PROJECT, 2014, p.1):

> At the top of the pyramid are usually State-Owned Enterprises, which are the property developers or the dominant construction companies. Lower down the pyramid are contractors, usually privately or collectively owned companies, which supervise various parts of a construction project. But even further down are a multitude of private subcontractors, which focus on particular aspects of the construction project. The recruitment of the large number of manual workers is usually left to the bottom rung of the hierarchy, i.e., the labour subcontractors (most of whom are informal). Most construction workers consider these subcontractors (whether formal or informal) to be their real employer. (THE ESRC-DFID RESEARCH PROJECT, 2014, p.2)

If we assume that many of these subcontractors are registered as private enterprises, the underreporting is also striking. In 2013, 25,5% of rural migrant workers outside their localities, mainly in urban areas, were in the construction sector, totaling 42,3 million workers, whereas the number of engaged persons in urban private enterprises and self-employed individuals in the sector was only 6,7 million.

[41]As we already pointed out, the categories probably overlap in some proportion, although the vast majority of migrant workers are not reported.

Although the absence of labor contracts and the underreporting of rural migrant workers is endemic in the secondary industry – which would put those working in urban areas, statistically, either in the urban residual or in rural employment –, the tertiary sector has been regarded as the locus par excellence of unregistered rural to urban migrant workers. This bias may arise from the fact that migrants in the service sector have more visibility, as many of them work on streets, and those who do not tend to deal with the general public. Also, they constitute a substantial parcel of all rural migrant workers, 43% in 2014.

From 2008 to 2012, the leading service sector in labor absorption of rural migrant workers was "residents services, repair and other services". Accruing to around 12%-13% of all rural migrant workers, the sector grew in the period from 27,5 million up to 32 million workers. In the biennium 2013-2014, the sector decreased to 11% and further to 10%, totaling 28 million workers, when it was surpassed by wholesale and retail, which became the major service sector. Wholesale and retail has been the most dynamic service sector in terms of rural migrant laborers' absorption for the period 2008 to 2014, rising from 20 million to 31 million workers. Meanwhile, transport, storage and service and accommodation and catering had both a modest and stable share of rural migrants' employment – 6%-7% and 5%-6% respectively.

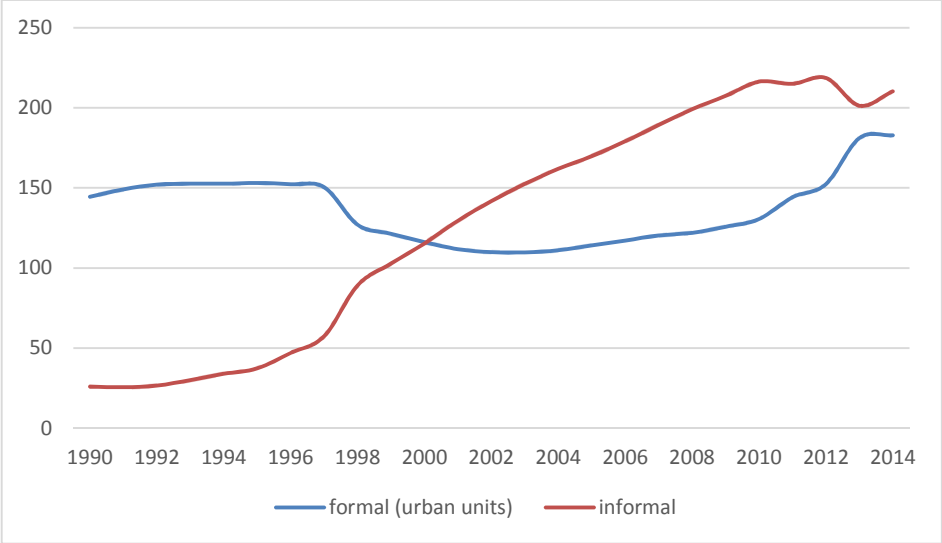
If the profile of rural migrants' employment provides a panorama in which informality is widespread across the different cleavages through which they can be seen – as employees or self-employed, as remaining in rural areas or leaving their localities mainly to urban ones, as workers of the tertiary or the secondary sector –, the informal sector is not restricted to them. With all the problems and distortions caused by contrasting data from both statistical systems, graph 1.14 – in which the informal sector is obtained by discounting urban units' data from urban employment – provides a rough estimate of the dimension of informality in urban China.

The reform of the urban public sector, with the mass lay-offs it entailed, allied to the enormous inflow of rural migrant workers provided huge supplies of unregulated and unprotected labor for the development of the private sector[42]. From 1990 until Deng's South Tour, informal employment stood around 15%. Afterwards, it started gaining participation,

[42]"About 30 percent of the urban-*hukou* labor force falls into this group [informal urban employment], including laid-off state-sector workers who are "re-employed" (zai jiuye) in informal positions, as well as new labor (young people) engaged in temporary work before returning to school or obtaining more permanent employment. Because such workers have local *hukou*, they usually also are eligible to participate in various employment-support programs funded by local governments, such as micro credit loans and the waiver of licensing fees for starting a small business, as well as free vocational training.The bulk of informal urban employees, however, live without local (urban) *hukou* (Hu and Yang, 2001)." (CAI & CHAN, 2009, p. 516)

which accelerated after 1995. In 2001, informal employment had surpassed formal employment. Informalization kept its way through the 2000s and reached a peak of 62,4% of urban employment in 2010. In the 2010s, the pattern changed, and the share of informal employment dropped in almost 9 percentage points until 2014, to 53,5%, in its majority due to the inclusion of large TVEs in urban units' data.

Graph 1.14 – Urban formal and informal sectors



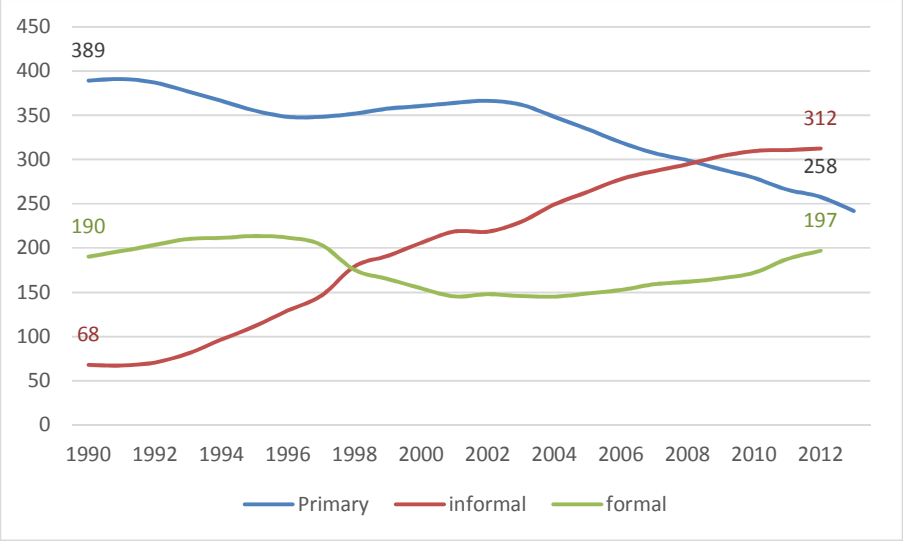
Source: China Statistical Yearbook (several editions)
Notes:
(1) The informal sector was derived from the number of employed persons in urban areas minus the formal sector, i.e. urban units' employment.
(2) Data on urban units' employment is available from 1994 onwards. For the period 1990-1993, China Statistical Yearbook provides data on "staff and workers", which encompassed the great majority of employment in urban units. In 1994, "staff and workers" represented 97,3161% of urban units' employment. We estimated urban units' employment from 1990 to 1993 dividing "staff and workers" employment by the mentioned percentage.
(3) Series breaks in 1998 and 2013.

Nevertheless, as we have seen, informalization is not an exclusive phenomenon of urban China. Summing up our definitions of the formal sector in rural and urban areas, and taking LFS estimates on primary employment as the best official statistics available, we can have a better estimate of the dimension of informality in China, obtained by residual from total employment. Differently from urban and rural residuals, this measure is not affected by the problems originated by the diverse definitions of urban areas and the distinct treatments given to rural migrant workers in the parallel statistical systems. Therefore, it is a more consistent measure of informality. It should be noted that this measure is not equal to the

addition of urban informal employment and rural informal employment, as we had to use some problematic assumptions to construct the two latter (see Appendix A). Graph 1.15 presents China's employment structure comprising the agricultural sector and the non-agricultural formal and informal sectors.

Graph 1.15 – Employment structure by sector

(number of employed persons in the primary sector, the non-agricultural informal sector and the non-agricultural formal sector)



Source: China Statistical Yearbook (several editions), China Labor Statistical Yearbook (several editions)
Notes:
(1) The formal sector encompasses urban units and TVEs employment minus individually-owned and private TVEs.
(2) Data on urban units' employment is available from 1994 onwards. For the period 1990-1993, China Statistical Yearbook provides data on "staff and workers", which encompassed the great majority of employment in urban units. In 1994, "staff and workers" represented 97,3161% of urban units' employment. We estimated urban units' employment from 1990 to 1993 dividing "staff and workers" employment by the mentioned percentage.
(3) The informal sector was obtained by residual, discounting employment in the primary sector and employment in the formal sector from total employed persons.
(4) Series breaks in the formal sector, and therefore also in the informal sector, in 1998.
(5) Both the formal and the informal sectors include very small participations of agricultural employment, though not under the household responsibility system.

In 1990, agricultural employment represented 60% of total employment, whereas formal employment, 29,4%, and informal employment only 10,5%. The increase of productivity in the primary sector, liberating laborers for non-agricultural activities, allied with 'restructuration' of public enterprises fueled the boom of the informal sector. Although formal employment started growing again since the middle of the 2000s, the informal sector

has become the largest absorber of labor in China. In 2012, the latter represented 40,7% of employment in the country, while agriculture responded for 33,6% and the formal sector for 25,7%.

As if the conditions of the laboring classes weren't degrading enough, capitalism would, of course, bring with it unemployment, but, differently from informality, this would be an exclusive urban phenomenon.

1.4.4 Urban unemployment rate

Urban official statistics on unemployment refer to the registered urban unemployment rate (RUUR). According to the definition given by CSY 2014, registered unemployed persons in urban areas "refer to the persons with non-agricultural household registration at certain working ages (16 years old to retirement age), who are capable of working, unemployed and willing to work, and have been registered at the local employment service agencies to apply for a job"[43] (CSY, 2014). Besides the fact that generally rural migrants are not entitled to be registered, many workers who meet the requirements do not register. This was particularly the case with most of the laid-off: "according to NBS (2001), more than 5 million workers were laid off in 2000 (making over 9 million laid-off at the year-end), but only 161.163 were registered for unemployment". (WANG & SUN, 2014, p.43).

The RUUR calculation uses as numerator these registered unemployed workers, and as denominator the unemployed registered persons plus urban employment figures generated by the administrative system:

> **Registered Unemployment Rate in Urban Areas** refers to the ratio of the number of the registered unemployed persons to the sum of the number of persons employed in various units (minus the employed rural labour force, re-employed retirees, and Hong Kong, Macao, Taiwan or foreign employees), laid-off staff and workers in urban units, owners of private enterprises in urban areas, owners of self-employed individuals in urban areas, employees of private enterprises in urban areas, employee of self-employed individuals in urban areas, and the registered unemployed persons in urban areas. (CSY, 2014)

[43] Before 2003, the age ceiling was 55 years old for men and 45 for women; afterwards, 60 for men and 55 for women (WANG & SUN, 2014). Wang and Sun (2014) affirm that while local *hukou* is commonly required for unemployment registration, such requirement has been relaxed after 2008 in most provinces.

The RUUR has been focus of harsh criticism for not counting rural migrant workers and for not fully incorporating in its numerator the laid-off workers from urban units. The latter, which were still counted as employed persons until 1997, were stimulated to retire early or redirected to Reemployment Centers (REC): "The RECs were designed to provide retraining and job-search assistance. Perhaps more crucially, the REC took over the worker's affiliation from the enterprise, paid into the worker's social security and welfare funds, and typically provided a stipend to the worker" (NAUGHTON, 2007, p.186). The laid-off redirected to the RECs could remain attached to them for the maximum of three years. As long as they kept this bond, they were not deemed as unemployed.

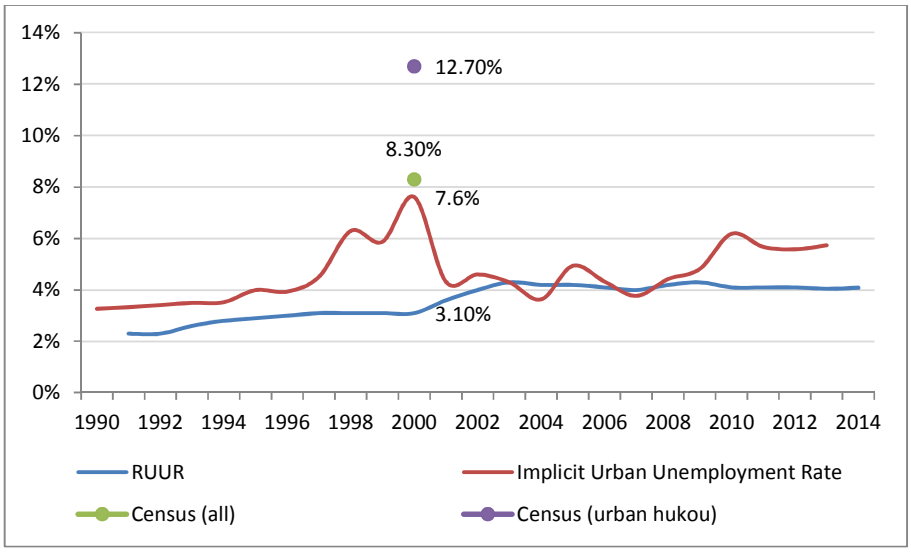
According to Naughton (2007), in the 1996-1999 period, the number of laid-off was not translated into a higher RUUR, which remained around 3%. As the period to be affiliated to RECs started expiring, the number of registered unemployed began to increase, while the number of annual laid-off was falling (NAUGHTON, 2007; CAI & WANG, 2010). For taking the laid-off into account, Naughton (2007) adds the workers attached to the RECs with the registered unemployed to obtain unemployment in urban areas. In the author's calculations, the unemployment rate peaked in 1997, between 8% and 10%, much higher than the official 3% figure. The latter, beginning in 2001, increased slightly and oscillated between 4,0% and 4,3% from 2002 to 2014. As Naughton (2007) highlights, migrant workers are still excluded from this measure both in the numerator and the denominator.

Cai and Wang (2010) propose estimating unemployment indirectly through official statistics. The presupposition is that there is no open rural unemployment, meaning that rural total employment is equal to the rural EAP. The authors subtract rural employment from the EAP to find the estimated urban EAP. Using official data on total urban employment, they are able to estimate the urban unemployment rate. Graph 1.16 presents the unemployment rate estimated through the procedure proposed by Cai and Wang (2010) – the rate implied in official data –, the RUUR and the urban unemployment rate produced by the 2000 census.

Differently from Naughton (2007), the implied urban unemployment rate proposed by Cai and Wang (2010) does not peak in 1997; in this year, it was 4,5%, about half of the value estimated by Naughton (2007). By the implied measure, the unemployment rate in urban China had its high in 2000, with 7,6%, a value close to the one estimated by the 2000 census, which was 8,3% considering *de facto* residents in urban areas – 12,7% among urban *hukou* holders and 4,7% for rural migrants in urban areas (GILES, PARK & ZHANG, 2005). According to Wang and Sun (2014), "the unemployment rate based on Census data is more

reliable than the RUUR, although not completely perfect. […] In the 2000 census, some rural migrants are excluded from the urban labor force" (WANG & SUN, 2014, p.44-45). The proximity of the implied measure to the census value is expectable, since the EAP, urban employment and rural employment on annual publications are all revised in light of the decennial population census.

Graph 1.16 – Urban unemployment rate



Source: China Statistical Yearbook (several editions), Giles, Park and Zhang (2005)
Notes:
(1) "RUUR" stands for Registered Unemployment Rate in Urban Areas.
(2) The "Implicit Urban Unemployment Rate" was obtained through Cai and Wang (2010) methodology, subtracting rural employment from total employment to obtain the estimated urban economically active population – the denominator –, and the difference between the latter and urban employment as numerator.
(3) "Census (all)" and "Census (urban *hukou*)" are, respectively, the urban unemployment rate estimated by the 2000 census considering the *de facto* population and just urban *hukou* holders.

Once again the dichotomy that traverses Chinese statistics reemerges: the incongruence between data produced through sampling and censuses and data administratively generated. One of the sources of discrepancy arises from the fact that figures on the EAP and urban employment include rural migrants that resided for more than six months in urban areas, as well as the broader definition of urban areas. In this sense, Naughton's (2007) proposed unemployment rate would be the one among residents with non-agricultural local *hukou* of administratively defined urban areas, while the implied one would take into account *de facto* urban residents as understood by NBS.

Given the fact that the RUUR is underestimated, especially if we take into account the exclusion of the laid-off workers linked to the RECs, an interesting fact emerges from graph 1.16, in which the implied unemployment rate is inferior to the RUUR for the years 2003, 2004 and 2007. Before the 2010 revision of statistics made by NBS, the implied unemployment rate was always superior to the RUUR. Despite the revision, the implied rate showed to be more sensitive to the massive lay-offs at the end of the 1990s and slightly superior to the RUUR in 2008 and 2009, years marked by the international financial crisis. In 2010, the implied rate was around the same level of 1998, slightly over 6% of the urban EAP. Nevertheless, due to the multiple problems in statistical definitions and coverage, we are not able to assess how close to reality the implied urban unemployment rate actually is as a measure of unemployment among the *de facto* urban population. Surely the fact that it was inferior to the RUUR for three years casts some serious doubts about its reliability.

Many studies have tried to estimate China's unemployment rate using other datasets originated from sampling, but generally these studies provide estimation for selected cities and for just one year or a reduced time span. Giles, Park and Zhang (2005), using data from China Urban Labour Survey conducted in 2001 and a follow-up survey in 2002 in five large Chinese cities (Fuzhou, Shanghai, Shenyang, Wuhan and Xian), estimated an unemployment rate among urban permanent residents of 14% in 2002[44]. Wang and Sun (2014) provide estimates for 2007 using a residential sample survey in 30 provincial capital cities by the Unirule Institute of Economics and the Horizon Research Inc.. They estimate the unemployment rate in these cities in 2007 as being 13,44%, whereas the weighted average of the city RUUR was only 3,6%. For local *hukou* holders, the unemployment rate was 14,36%, while for non-locals residing at least for one year, 4,5%[45].

As these researches were conducted in large cities, they are prone to produce estimates that are much higher than those of urban areas as a whole. The 2000 census reveled an unemployment rate of 8,27% for all urban areas taken together, whereas for cities the rate was higher (9,43%) than township level urban areas (6,24%)[46] (ZHANG, 2003 *apud* WANG &

[44] Relying on a set of assumptions and using the 2000 census data, they expand their estimates to the whole country, proposing a "true" urban unemployment rate for permanent residents of 6,1% in January of 1996 increasing up to 11,1% in September of 2002, while for all urban workers rising from 4,0% to 7,3% in the same period. (GILES, PARK & ZHANG, 2005)

[45] Wang and Sun (2014) also found huge differences between regions, with the Northeast – the region of more ancient industrialization that was hit harder by SOE's 'restructuration' – having an unemployment rate of 23,65%, while the North, the East and the Southwest had rates around 10%

[46] For rural areas the unemployment rate was only 1,15% (Zhang, 2003 *apud* Wang and Sun, 2014)

SUN, 2014). Other aspect in common in these findings is that the unemployment rate is substantially lower among rural migrant workers, as they are inclined to come back to their plots of land in the countryside if employment is not to be found. Thus, while rural migrant workers have a precarious employment situation in urban areas, being more prone to be fired in face of cyclical economic fluctuations, their dismissal from the production process does not fully translate into urban unemployment, as happened in the context of the international financial crisis, when masses of migrants came back home before the usual period of festivities.

The partial character of the process of proletarianization of peasants in China – as rural migrant workers were not left completely dispossessed of the means of production, having small plots of land to recur for their subsistence if needed, and to which they return seasonally to complement familial labor during peak seasons of planting and harvesting – functions as a cushioning to unemployment in urban areas. Notwithstanding this mechanism that counteracts the effects of capital accumulation on the production of redundant labor-power to capital needs, the above-mentioned studies show that unemployment has become a concrete problem in Chinese big cities.

From an urban China where everyone had employment granted for life, proper housing, education, health and all their basic needs attended, transition to capitalism led by the state produced an urban labor market where cheap and unprotected labor became the rule. Nevertheless, the intense use of such labor was not to be restricted to the private sector, as state-owned and controlled shareholding enterprises would devise complex schemes to have its share of profits over rural migrant workers and through the re-employment of the laid-off.

Chapter 2. THE INFLUENCE OF CHINA'S INDUSTRIAL RESERVE ARMY IN THE FORMATION OF THE CHINESE WAGE RATE

China's enormous industrial reserve army influence on the formation of the country's wage rate was so blatant that even mainstream economists had to concede it, although this concession was done as way of exception to their theory of wage determination and, to that end, Arthur Lewis' framework of dual economy (LEWIS, 1954) embedded in Marx's industrial reserve army was much more appropriate. Lewis' framework supposedly fit well the stylized facts concerning China's real wage behavior over the last decades, as the model postulated the existence of a non-capitalistic sector characterized by a huge labor surplus and low productivity, coexisting side-by-side with a high productivity capitalist sector.

From that model, mainstream economists claimed that in China labor transfers from agriculture to the capitalist sector could occur at constant real wages while still existed surplus labor in the former; when agricultural reserves of labor were exhausted, real wages would start to rise, signaling the end of the 'era of surplus labor' or the reaching of the 'Lewisian turning point'. In China, the trend of real wages' behavior was one of stagnation throughout the 1990s until around 2005 – at least in the case of migrant workers –, when real wages entered in a trajectory of fast growth, leading the mass of academic literature and newspapers to debate whether China had reached the Lewisian turning point, with many providing affirmative statements (CAI, 2015; CORSMAN, 2015; LIU, 2015; ZHANG, YANG & WANG, 2011; CAI & DU, 2011; BLOOMBERGNEWS, 2010).

Lewis framework is predicated in the idea that capitalist development leads to full employment, and once labor surplus in the non-capitalist sector is over, neoclassical theory regains its validity in explaining economic phenomena. The previous chapter showed through empirical analysis that Chinese capitalist development over the last decades was predicated in the existence of a vast industrial reserve army. This development, while drawing labor from the latent component found in China's agriculture to form the active industrial army, also 'recycled' part of it as relative surplus population in the form of the floating and the stagnant layers, through the rapid use and substitution of rural migrant workers' generations and the proliferation of private enterprises and 'self-employment', which are strongly associated with the domestic industry and domestic/personal services. Moreover, China's agriculture

remained significantly large in terms of employment, whereas unemployment was a substantial phenomenon in large cities, particular among urban *hukou* holders.

Nevertheless, this is only part of the story since there is nothing natural or immediate in the fact that peasants, not being physically thrown out of the land, would quick and massively have taken the road to proletarianization. Explaining this passage, which is at the core of the formation of wage-labor in China, is of the utmost importance and is key to establish how the Chinese industrial reserve army influences the formation of the wage rate in the country.

Contrasting with the English classic case described by Marx, which relied in the expropriation of land or enclosures, proletarianization in China has, for most of the period, taken this path through exception, not the norm, and was underpinned by state policies aimed at extracting peasants' surplus product in a context of increased agricultural productivity. These policies were responsible for low and stagnant peasants' real income that provoked not only massive exodus from the countryside, but also set the base for the formation of the wages rate (HUNG, 2009). The multilayered Chinese labor market, which results from the production of the different strata of the industrial reserve army through the rural-urban cleavage, tends to be sensible to changes in rural households' real income throughout the whole wage scale.

Notwithstanding, the formation of the wage rate in China, as anywhere else, is not a direct derivation of the relative size of the industrial reserve army vis-à-vis the active army. Class struggle over wages, which has a relative autonomy from capital accumulation, and the state response to it, either through repression and/or the building of institutions supporting labor, are fundamental in the determination of the wage rate. Though the relative surplus population sets the background in which class struggle over wages takes place, tilting the balance of power between classes, it does not subsume it, less even institutional changes.

In this sense, the present chapter aims to shed light in the evolution of real wage behavior in China, in the two broad tendencies mentioned above – stagnation (or slow growth) followed by fast growth –, on the one hand, through the influence of China's industrial reserve army and its particular dynamics derived from the methods of proletarianization employed in the country, on the other hand, by considering class struggle in its relative autonomy from capital accumulation and the institutional changes that took place in China.

2.1 THE INFLUENCE OF THE CHINESE INDUSTRIAL RESERVE ARMY IN THE FORMATION OF THE CHINESE WAGE RATE

From the elements contained in chapter 1, we can already establish the general ways in which the industrial reserve army, in structuring the Chinese labor market, finds expression in a specific hierarchy of wage rates, particularly through the association of *i*) the special status of rural land, *ii*) the rural/urban divide and *iii*) the still ongoing transformation of the latent component of the industrial reserve army into not only active industrial army, but also into floating[47] and stagnant[48] layers of the relative surplus population.

Given the special status of rural land, peasants' real income derived from agricultural production and commercialization has a double role in structuring the wage scale from its base. On the one hand, its per capita level is fundamental in as much as it sets the conditions from which peasants will sell their labor-power in the market, which means, becoming a wage laborer makes no sense if the per capita real income derived from agriculture is higher than

[47] According to Marx: "In the centres of modern industry – factories, manufactures, ironworks, mines, &c. – the labourers are sometimes repelled, sometimes attracted again in greater masses, the number of those employed increasing on the whole, although in a constantly decreasing proportion to the scale of production. Here the surplus population exists in the floating form" (MARX, 1887, p.449). As in this definition Marx is abstracting from the swings of the industrial cycle – which also impacts the floating surplus population –, he is mainly referring to the effects generated by the increased use of machinery on labor demand. As Grossman (1992) highlights, these effects are not generated by the use of machinery per se, but by the form this use assumes under capitalist production as increased proportion of constant to variable capital, or as heightened organic composition. Moreover, Marx also stresses the dynamics generated in this segment of the industrial reserve army by the fast pattern of consumption of labor-power characteristic to modern industry which fast exhausting the working life-span of young laborers, quickly replaces them: "In order to conform to these circumstances, the absolute increase of this section of the proletariat must take place under conditions that shall swell their numbers, although the individual elements are used up rapidly. Hence, rapid renewal of the generations of labourers (this law does not hold for the other classes of the population). This social need is met by early marriages, a necessary consequence of the conditions in which the labourers of modern industry live, and by the premium that the exploitation of children sets on their production." (MARX, 1887, p.449). Although this 'population law' does not hold to China, due to the one child policy, the description of the fast consumption of young workers' labor-power and the need to replace for new generations characterizes the process that is in course in China at actuality, as the first generation of rural migrant workers is being substituted by the second. Migrants from the first generation are made redundant from manufacturing by 35 to 40 years old, and the construction industry has been the outlet for their employment (FRIEDMAN, 2012).

[48] "The third category of the relative surplus population, the stagnant, forms a part of the active labour army, but with extremely irregular employment. Hence it furnishes to capital an inexhaustible reservoir of disposable labour power. Its conditions of life sink below the average normal level of the working class; this makes it at once the broad basis of special branches of capitalist exploitation. It is characterised by maximum of working-time, and minimum of wages. We have learnt to know its chief form under the rubric of "domestic industry." It recruits itself constantly from the supernumerary forces of modern industry and agriculture, and specially from those decaying branches of industry where handicraft is yielding to manufacture, manufacture to machinery. Its extent grows, as with the extent and energy of accumulation, the creation of a surplus population advances." (MARX, 1887, p.450)

the wage rate, consistently with the Lewisian framework. On the other hand, as the rural/urban divide incorporates rural migrant workers in urban areas as second-class citizens, denying the conditions for their permanent fixation, rural land becomes the last refuge for those among them which are made redundant by capital accumulation, downgraded even from the floating layer of the industrial reserve army, as modern industry deems them unfit, and that are unable to work or find employment in the ranks of the stagnant layer. Instead of falling into official pauperism – depending on charity –, they are reintegrated in the peasant household, performing agricultural labor if still fit and sharing the household real income.

Furthermore, as the latent component is reduced, its transformation into active army and floating and stagnant components occurs through the rural-urban cleavage, forming a multi-layered wage scale structured by the intercrossing of both hierarchies. Therefore, for instance, we expect to find the stagnant layer as the lowest in the wage scale, but differentiated across urban and rural lines. At the bottom, structuring the wage scale, we expect the income of the rural household, while at the top, the urban formal sector, the best paid strata of the active army.

Graphs 2.1 and 2.2 show the evolutions of nominal and real wages according to the interpretation of the Chinese official statistical categories of employment into formal and informal sectors as made in chapter 1, along with the inclusion of the rural households' net income from household operations per laborer – the income derived from its agricultural production and commercialization –, the total net income of rural households per laborer – whose discrepancy to the former reflects mostly the process of proletarianization through the incorporation of wages and salaries of household members – and data on migrant wages produced from by the RRMW.

Although most of the series are short and incomplete – which reflects both recent improvements in the Chinese statistical systems that still present many shortfalls[49] and the restrained access we had to existing data[50] –, they can provide a quite revealing picture. The graphs show a very stratified labor market, corroborating the expected results informed by the discussion on the compositional evolution of China's industrial active and reserve armies

[49]For instance, series for wages in urban private enterprises started being provided in CSY from the reference year of 2009 onwards and data for rural migrant workers from 2008 onwards through the reports of the National Monitoring Survey of Migrant Workers, though data on wages for self-employed in urban areas is still unavailable in China Statistical Yearbooks (CSY).

[50] Which was most evidently attested by the hole in TVEs' series for the 'missing' 2009 TVE yearbook, which we couldn't acquire for financial reasons.

through the rural-urban cleavage. They show how the segmented labor market across urban and rural lines reproduces the different components of the relative surplus population in each segment – apart of the latent in urban areas –, with the pay-scale being structured and reflecting the intercrossing of both hierarchies.

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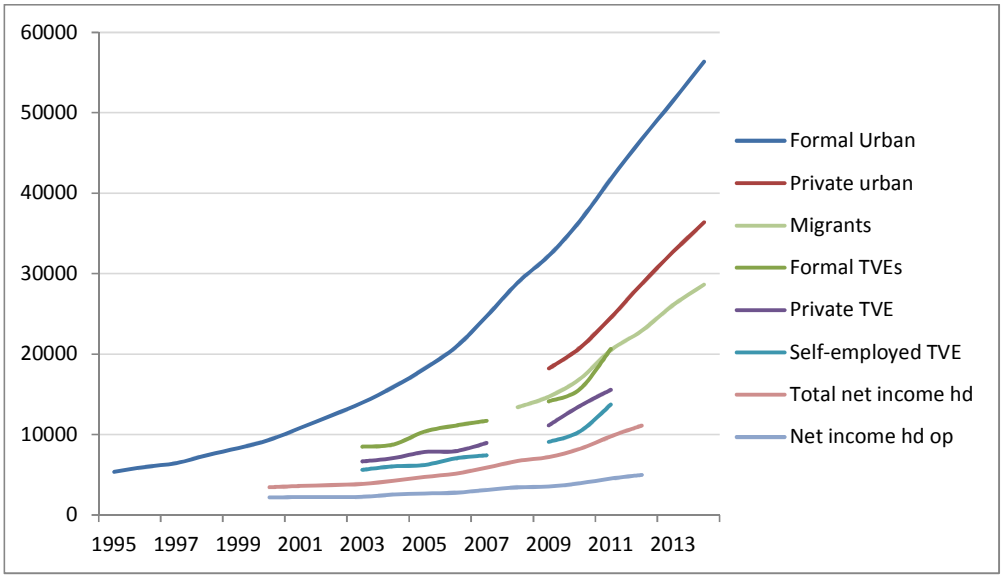
Graph 2.1 – Average annual nominal wages, rural households' net income from household operations and total net income of rural households per laborer

(average annual nominal wages in the formal urban sector, in urban private enterprises, of rural migrant workers, in formal TVEs, in private TVEs, in individually-owned TVEs, total net income of rural households per laborer and rural households' net income from households' operations per laborer, in yuan)



Source: China Statistical Yearbook (several editions), China TVE Statistical Yearbook (2004, 2005, 2006, 2007, 2008, 2010, 2011, 2012) [in Chinese], National Monitoring Survey Report on Rural Migrant Workers (2012, 2013, 2014) [in Chinese], China Labor Statistical Yearbook (table 1-85, 2013)

Notes:

(1) Formal urban refers to urban units' data; Formal TVEs refers to all TVEs excluded individually-owned and private TVEs.

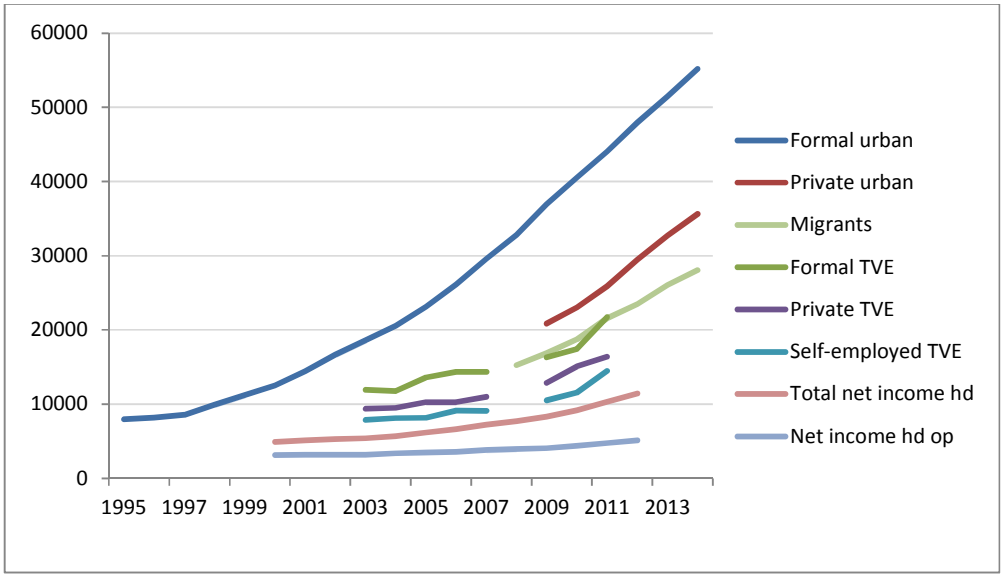
(2) 'Net income hd op' stands for rural households' average net income from rural household operations per full/semi labor force and was obtained by taking the net income from rural household operations per capita, multiplying for the average number of permanent residents per household and dividing by the average number of full/semi labor force per household.

(3) 'Total net income hd' stands for average total net income of rural household operations per full/semi labor force, and was obtained by a similar process as described above, though using total net income of rural household operations per capita as denominator.

(4) Rural migrant workers' annual wages were obtained by multiplying monthly wages for 10 months, as consistent with the National Monitoring Survey Report on Rural Migrant Workers (2014). We therefore held this parameter constant for all remaining years.

Graph 2.2 – Average annual real wages, rural households' net real income from household operations and total net real income of rural households per laborer (yuan 100=2013)

(average annual real wages in the formal urban sector, in urban private enterprises, of rural migrant workers, in formal TVEs, in private TVEs, in individually-owned TVEs, total net real income of rural households per laborer and rural households' net real income from households' operations per laborer, in 2013 constant yuan)



Source: China Statistical Yearbook (several editions), China TVE Statistical Yearbook (2004, 2005, 2006, 2007, 2008, 2010, 2011, 2012) [in Chinese], National Monitoring Survey Report on Rural Migrant Workers (2012, 2013, 2014) [in Chinese], China Labor Statistical Yearbook (table 1-85, 2013)
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(4) Rural migrant workers' annual wages were obtained by multiplying monthly wages for 10 months, as consistent with the National Monitoring Survey Report on Rural Migrant Workers (2014). We therefore held this parameter constant for all remaining years.
(5) The transformation of nominal to real magnitudes was made by using i) the price index for urban households in the case of formal urban and informal urban sectors; ii) the price index for rural households in the case of all TVEs and incomes from household operations; and iii) the consumer price index for rural migrant workers due to their presence in both urban and rural areas. All these indexes are built for 2013 constant yuan.

Moreover, the graphs exhibit a growing dispersion of labor remuneration through the period consistent with wage growth for all the strata. Of particular interest to us, graph 2.2

points to a strong upward trend in real wages that started for the urban formal sector in 1998 and around 2005 for the remaining strata, which is the stylized fact that has been underpinning the whole discussion around the arrival of the Lewisian turning point in China, as we are going to discuss later.

Structuring the wage scale from its base lies the net income from rural household operations per laborer and just above it the total net income of rural households, which reflects the latter's semi-proletarian nature. The hierarchy that ensues shows, in order: *i*) the rural self-employed who compose the rural stagnant layer of the relative surplus population; *ii*) rural private enterprises – a part of which also possibly composing the former layer; *iii*) the rural formal sector of the active army; *iv*) rural migrant workers – which are distributed across the different layers of the industrial reserve army and whose young cohorts form the backbone of the active industrial army; *v*) urban private enterprises – which is a component of the informal urban sector and which also might partially form the stagnant layer in urban areas – and the formal sector of the urban active army.

The intermediary position of rural migrant workers in this hierarchy – with wages similar to the best paid part of the rural active army though below those in the informal sector's urban private enterprises – is simultaneously premised and reflective of the position of rural migrant workers between the rural and the urban world, as well as mirroring the central role rural migrant workers have in the active army, while rapidly being made redundant by modern industry. In as much as the entitlement to use the land remains for the majority of migrant workers, it gives the process of proletarianization in China an incomplete character, as rural migrant workers are better defined as semi-proletarians or peasant-workers.

Rural land may absorb part of the floating surplus population, particularly when cyclical downturns make difficult for peasant-workers to reengage in modern industry in a reasonable delay of time; though more significant, rural land becomes the depository of the pauper and the rural households' real income derived from agricultural operations, their social security. In this sense, rural households' real income is the departure point for proletarianization and for most rural migrant workers their last resource, avoiding the production of official pauperism that results from capital accumulation, as the rural household carries the '*faux frais* of capitalist production' (MARX, 1887, p.450). This is one of the major modifications in China of Marx's '*absolute general law of capitalist accumulation*' that 'like all other laws it is modified in its workings by many circumstances' (MARX, 1887, p.451).

The development of wage labor in China that is predicated in the formation of the latent component of the industrial reserve army is closely tied to the strategies of social reproduction of the rural household, as 'for rural households relying on wage employment, individual members' entry into and exit from wage employment are regulated by household economic strategies' (ZHANG, 2013, p.22). On the one hand, these strategies are strongly dictated by capital's needs, accommodating both the phases of the industrial cycle and the pattern of labor force consumption by modern industry – that uses young girls' and boys' labor-power intensively and discard them when they mature to replace by youngsters –; on the other hand, they also contemplate the seasonal needs of labor in agriculture (ZHANG, 2013). Graph 2.3 shows the growing importance of wage labor for the social reproduction of rural households and the deepening of its semi-proletarian nature expressed in terms of net income per peasant-worker.

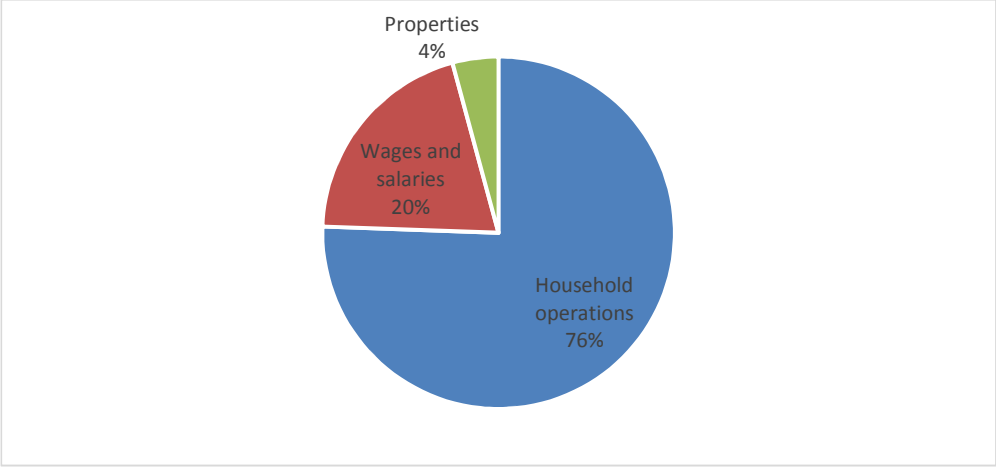
Graph 2.3 – Composition of the net income of the average rural household

(contribution of household operations, wages and salaries, properties and transfers to total net income of rural households, in percentage)

1990: net income per peasant-worker: 1.128,18 yuan

permanent residents: 4,8

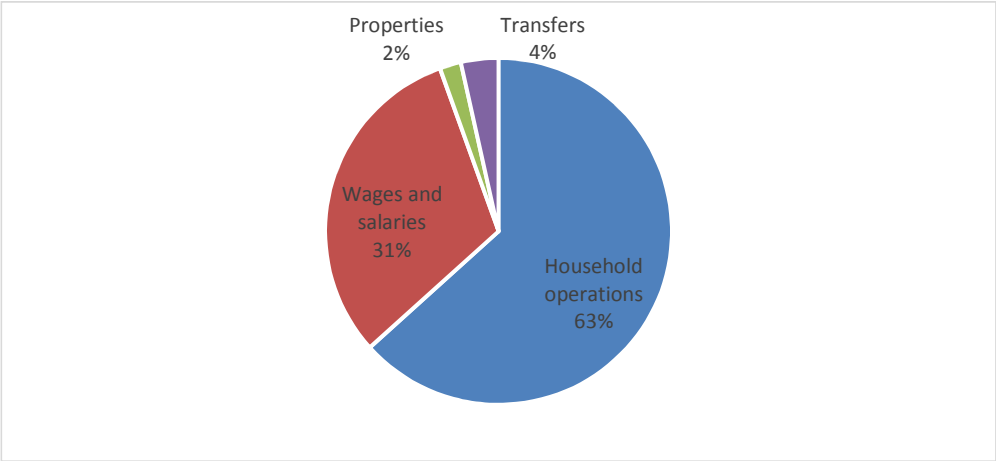
full/semi labor force: 2,92



2000: net income per peasant-worker: 3.249,12 yuan

permanent residents: 4,20

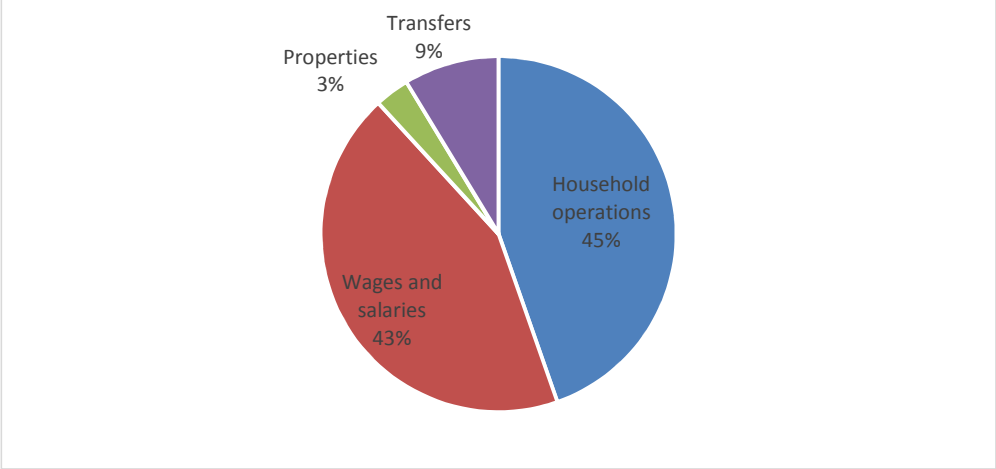
full/semi labor force: 2,76



2012: net income per peasant-worker: 11.117,76 yuan

permanent residents: 3,88

full/semi labor force: 2,76



Sources: China Labor Statistical Yearbook (2013), table 1-85
Note: Net income per peasant-worker is calculated by taking the per capita net income of rural households, multiplying it by the number of permanent residents and dividing it by the number of full/semi labor force.

In 1990, wages and salaries represented 20% of the net income of the average rural household per laboring member, while household operations accounted for slightly over three quarters. One decade after, wages and salaries grew to represent 31% of the net income of the average household per laborer and further to 43% in 2012. The income from household operations declined even more than the former's increase as a percentage of the net income of the rural household per laborer, for transfers, which were counted along with income from

properties in 1990, raised substantially to encompass 9% of the total in 2012. In this year, the income from household operations (45%) and from wages and salaries (43%) were virtually the same in their contribution for the net income of rural households per laboring member.

The deepening of the commodification of labor-power from rural households expressed in terms of income generation from its laboring members was accompanied by the dwindling of the average number of permanent residents, though this decrease was not directly translated in the number of full/semi-labor force of those left in the countryside. While the average number of permanent residents of rural households decreased from 4,8 to 3,9 persons from 1990 to 2012, the average number of full/semi labor force decreased from 2,92 to 2,76 from 1990 to 2000, and remained so in 2012, showing that the development of wage labor was accompanied by the intensification of familial labor in the countryside.

Even though it is evident that wage labor has substantially grown in importance for the reproduction of the peasant-work labor force, as Zhang (2013) highlights:

> […] wage work is neither invariably desirable to all rural households nor accessible […] On one hand, some families have control over productive assets that provide them either more secure ways of social reproduction or even opportunities for accumulation; on the other, there are also households whose shortage of labor precludes them from wage work' (ZHANG, 2013, p.29).

In this context, the key to understand the formation of China's vast latent reserve army is to respond why the intermediary is case the norm, i.e., rural households whose income from household operations cannot guarantee secure ways of social reproduction needing to resort to the selling of labor-power of their surplus – though most productive – laborers to maintain 'their precarious social reproduction' (ZHANG, 2013, p.29).

Mainstream economists generally just assume that the level of real income from peasants is at the subsistence level and move forward to show how wage labor has benefited peasant-workers as the wages of rural migrant workers are higher than what could be obtained in farming. Afterwards, if real wages rise sustainedly, it can only mean the end of surplus labor.

2.2 WAGES AND THE UNLIMITED SUPPLIES OF LABOR: THE ROLE OF INSTITUTIONS

2.2.1 The mainstream appropriation of Arthur Lewis' framework on the development with unlimited supplies of labor

Given the vast latent reserve army from which China's capitalist economic development has relied over the last decades and the low and stagnant wages from which its export success was predicated, it was hard even for mainstream economists to deny their connection. Arthur Lewis' framework of dual economy – formulated in his seminal paper *Economic Development with Unlimited Supplies of Labor* (LEWIS, 1954) and embedded in Marx's industrial reserve army – felt as a glove for mainstream economists, as Lewis sustained that developing and overpopulated economies constituted an exception to neoclassical theory, which, nonetheless, would regain validity in explaining reality as soon as surplus labor was absorbed by capitalist development and labor became scarce.

Lewis' formulation on the development with unlimited supplies of labor is premised on the structural duality of underdeveloped economies, particularly of populous Asian countries, in which a non-capitalistic sector characterized by a huge labor surplus and low productivity coexists side-by-side with a high productivity capitalist sector. His definition of labor surplus encompasses elements from Marx's latent and stagnant components[51] of the relative surplus population, although both of them are seen as specific traits of non-capitalist social formations. In investigating what would be the conditions for the capitalist sector to expand and, therefore, economic development to take place – since the capitalist sector is

[51] Foster, McChesney and Jonna (2011) stress this point by highlighting Lewis' definition of surplus labor: "[…] including "the farmers, the casuals, the petty traders, the retainers (domestic and commercial), women in the household, and population growth." Although Lewis (in his original article on the subject) erroneously confined Marx's own reserve army concept to the narrow question of technological unemployment—claiming on this basis that Marx was wrong on empirical grounds—he in fact adopted the broader framework of Marx's reserve army analysis as his own. Thus he pointed to the enormous latent surplus population in agriculture. He also turned to Marx's notion of primitive accumulation, to indicate how the depeasantization of the non-capitalist sector might take place." (FOSTER, MCCHESNEY & JONNA, 2011). We would not go as far as the authors to affirm that Lewis (1954) adopted "the broader framework of Marx's reserve army analysis as his own", because his exclusion of the floating component of the relative surplus population and the pauper are fundamental to his shift to neoclassical theory as correctly describing developed capitalist economies, and for the apologetics of capitalist development, which would not bring unemployment, nor pauperism. Moreover, Lewis (1954) sees 'the casuals, the petty traders, the retainers (domestic and commercial)' as disguised unemployment, which would be a trait of non-capitalist formations. Capitalist development, by its turn, would only result in efficient allocation of labor in full employment, as implied in Lewis. See Majerowicz (2012b).

marked by higher productivity –, Lewis discusses the relations the latter should establish with the non-capitalist sector.

For the capitalist sector to expand there must be a transfer of workers from the non-capitalist sector, which can only happen if the capitalist sector provides an income differential in relation to the non-capitalist sector in order to attract laborers. However, transfer of labor might not be the only relation the sectors establish. This would only be the case when the non-capitalist sector is a subsistence agricultural sector, in which productivity is stagnant and, therefore, also real income. This is one of the scenarios treated by Lewis (1954), but, as he remarked, anything that elevated productivity in this sector would elevate real wages in the capitalist one. As long as this sector is bloated with labor, there can be transfers of workers to the capitalist sector's expansion at constant real wages. When the labor surplus of the non-capitalist sector is exhausted, what came to be known in the academic literature as the Lewisian turning point, the segmented labor market gives room to a single labor market, and, as claimed by Lewis, the validity of the neoclassical model is reestablished: what were once underutilized labor resources in the non-capitalist sector become efficiently and fully employed by the development of capitalism.

Lewis' framework – which were fairly known in the heterodoxy, at least of peripheral countries –, became very popular among mainstream economists with China's integration in the global capitalist economy. First, it seemed to fit well the stylized facts, and many mainstream economists, starting in 2005, began to point out that China had reached the Lewisian turning point. Second, it could be seen as a praise of capitalism over socialism, as not only the capitalist sector is more productive, but also its full development brings real wage growth and full employment, while the non-capitalist sector in China was associated with its socialist past. Finally, neoclassical theory was claimed by Lewis to correctly explain the operation of developed capitalist economies.

Thus, the problems neoclassical theory faced to explain China's actuality were not in the theory itself, but in the reality of developing economies or of China in particular. Illustrative of such perspective is the title of Fang Cai's 2013 paper *Approaching a neoclassical scenario: the labor market in China after the Lewis turning point* or Huang and Jiang (2010) paper 'What does the Lewis turning point mean for China? A computable general equilibrium analysis', whose main claim is that the arrival of the Lewisian turning point signifies 'that China will probably transition from an abnormal economy to a normal

economy with somewhat lower growth but higher inflation' (HUANG & JIANG, 2010, p.191).

Mainstream economists, in general, have improperly appropriated Arthur W. Lewis' framework by in many cases decharacterizing it as a theory of development, becoming just a theory of wage setting, by equating labor surplus in Lewis with agricultural labor surplus and by treating China's agriculture as if it were an autarchic/subsistence sector, whose only external relation would be the provision of labor[52] (MAJEROWICZ, 2012b). Nonetheless, China's agriculture is not a subsistence one and, insofar as the output of peasants is not at the subsistence level, something must account for the gap relative to their real income, which sets not only the baseline for the wage rate level, but the own need for peasants to sell their labor-power in the market in the first place.

We argue that what accounts for this gap are state policies which create the need for proletarianization, forming a vast latent reserve army for capital accumulation in China and responding for the cheapness of labor-power, which has fueled China's transformation in the factory of the world (HUNG, 2009; ZHANG, 2013). Actually, the role of the state in extracting surplus product from the non-capitalist sector was emphasized by Lewis, who even praised it as a way of speeding up capitalist development. Nevertheless, mainstream economists generally neglect this dimension of Lewis' *Economic Development with Unlimited Supplies of Labor* and just tend to accept the subsistence level of income in agriculture as a natural fact. Such neglect of mainstream economists might also reflect Lewis misuse of the term subsistence.

Lewis (1954) also considered the case in which a dynamic agriculture constitutes the non-capitalist sector, proving both food and labor to the capitalist one – even though he insists in naming such agricultural sector as 'subsistence'. In this context, productivity increases will tend to raise the real income of peasants and, therefore, the wage rate in the capitalist sector; although Lewis (1954) highlights that the elevation of productivity in agriculture can be more than compensated by prices' reductions, benefiting the capitalist sector. He also stresses a series of other means that can be utilized in favor of the capitalist sector, so that agriculture finances industrialization:

[52] Additionally, the mainstream literature that applies Lewis's framework to China tends to equate its non-capitalist sector to agriculture. For a criticism on the undue translation of the Lewisian duality as an agricultural-industrial divide, see Figueroa (2004). For a criticism on the application of Lewis' model to China, see Majerowicz (2012b).

> If there is no hope of prices falling as fast as productivity increases (because demand is increasing), the capitalists' next best move is to prevent the farmer from getting all his extra production. In Japan this was achieved by raising rents against the farmers, and by taxing them more heavily, so that a large part of the rapid increase in productivity which occurred (between 1880 and 1910 it doubled) was taken away from the farmers and used for capital formation; at the same time the holding down of the farmers' income itself held down wages, to the advantage of profits in the capitalist sector. Much the same happened in the U.S.S.R., where farm incomes per head were held down, in spite of farm mechanization and the considerable release of labour to the towns; this was done jointly by raising the prices of manufactures relatively to farm products, and also by levying heavy taxes upon the collective farms. (LEWIS, 1954)

Even though our reading of the formation of China's latent reserve army can be reached through Lewis' 1954 theoretical framework – though surely not in the way it has been appropriated by mainstream economists –, insofar as this framework is predicated in the idea that capitalist development leads to full employment, and once the labor surplus in the non-capitalist sector is over wages are determined through the marginal productivity of labor, it hinders us from understanding the problems derived not from the lack of capitalist development, but exactly by its very existence, as Marx's industrial reserve army does. Furthermore, the formation of the wage rate cannot be gauged without considering the central role played by class struggle and state regulations, as we aim to discuss throughout this chapter.

2.2.2 The creation of China's vast latent reserve army and the road to proletarianization as creatures of the party-state

In order to assess how real income of household operations is determined, one needs to inquire what has happened with agricultural productivity in China since the implantation of the household responsibility system. It is a generally well-established point of view that the HRS has brought a productivity shock in agriculture. The household responsibility system imposed to households the obligation to sell production quotas to the Chinese state in exchange for the right to exploit the land. The Chinese state also provided initial stimuli for peasants to commercialize the agricultural production that exceeded the quota, selling it in the market or directly to the state, by assuring that all the exceeding production would be bought at favorable prices, resulting in a strong incentive towards the specialization of production in peasant units (MORAIS, 2011).

Until 1984, real income of households grew substantially along with productivity due to state intervention benefiting relative prices to agriculture. According to Harvey (2005), rural incomes grew 14% annually from 1978 to 1984, while Yu and Zhao (2009) point to the fast decrease in the price scissors difference, or the prices of food relative to the prices of agricultural inputs, such as fertilizers and machinery, in the same period. Nevertheless, starting in 1985, this would change, marking a phase of stagnation and even decline of real income of rural households, the latter case especially after 1995, although with exception for some agricultural products (HARVEY, 2005). It was not until 2004 that the real income derived from rural household operations would start to significantly rise again.

Has the behavior of rural households' real income derived from the commercialization and production of agricultural goods, after 1984, been in tandem with agricultural productivity? According to Aufheben (2008) this was definitely the case, and real income from farming reflected/was determined by the low productivity of Chinese agriculture:

> […] by the mid 1980s the spurt in agricultural output that had been brought about by the reforms had begun to peter out, leading to serious food shortages. […] The problem of food shortages, caused by the continued backwardness of Chinese agriculture, persisted well into the 1990s, and was only resolved when the rising export of manufactured products was able to provide the foreign exchange necessary to buy food from abroad […] the vast majority of China's agricultural producers whose production techniques have made little or no progress in the last three decades. […] Finally, China's entry into the WTO has led to substantial cuts to tariffs on agricultural imports, thereby increasing foreign competition and reducing the prices Chinese peasants can expect to obtain on what they sell on the market. Thus, although a few million may have become rich capitalist farmers, hundreds of millions have remained impoverished peasants. (AUFHEBEN, 2008)

It might be the case that stagnation of productivity in agriculture took place in the second half of the 1980s, though the idea of its long-term persistence met only by imports is very doubtful. Actually, if this were correct, then mainstream accounts might not have been so distant from reality, as real income in agriculture kept at stagnant subsistence levels would largely reflect the actual productivity conditions. However, the above interpretation couldn't be farther from statistics on Chinese agricultural production and international trade on foodstuffs. According to Yu and Zhao (2009), over the last three decades, China's output of grains largely outpaced its population growth concomitantly with a significant reduction of used acreage, expressing elevated growth rates of agricultural production:

> The outputs of grains increased from 305 megatons in 1978 to 501 megatons in 2007, and increased by 64%; while in the same period, the population increased from 963 million to1.32 billion, and increased by 37%.1 The growth rate of grain outputs overtakes population growth. On the other hand, the grain acreage shrunk from 120.6 million hectares to 105.6 million hectares, and decreased by 12.4%, due to land degradation, desertification, urbanization and other reasons2 (Rozelle, Veeck and Huang 1997, Brown 1995). (YU & ZHAO, 2009, p.1)

Considering the drastic shrinkage of laborers in agricultural activities, the growth in China's agricultural production is expressed in much higher rates of productivity growth. Such performance of the Chinese agriculture was manifested in the fact that China has been largely self-sufficient in grains. In the period from 1978 to 1995, FAO (1999) points that China has either imported relatively little or exported food:

> Net import shares reached approximately three percent in the early reform period (1978-84), then declined to approximately one percent in the following period (1985-90). China has since become a net grain exporter, except in 1995 when it had a record level grain imports of nearly 20 million tons. Net exports between 1992 and 1994 were over 5 million tons annually. (FAO, 1999)

After the major grain imports of 1995, China established in 1996 a policy of self-sufficiency targeting domestic production to account for at least 95% of its consumption of major crops (rice, wheat, soybeans, coarse grains and potatoes), which apart of soybeans, has largely been achieved at least up till the end of 2014 (THE POULTRY SITE, 2014), as the latter year 'China imported large quantities of soybeans, but the import of grains was just a little more than 19 million tons, or 3.1 percent of the total need' (LONGBAO & ZHANGLIANG, 2016). As China has a significant degree of self-sufficiency in food production – a matter of the utmost importance for the state –, agricultural productivity has had to consistently and significantly rise to enable the fast and massive process of urbanization and industrialization, as expressed in the increased domestic food production.

Therefore, the stagnant real wages experienced in the 1990s up to around the middle of the 2000s necessitated that the real income of peasants remained stagnant in face of significant productivity growth in agriculture; the corollary derived from these requirements is that peasants must be constantly alienated from the additional product of their labor. In China, the state is the only one that has the conditions to fulfill this task, for, besides having the tributary mechanisms at its disposal, it has a fundamental role in determining prices. The

state therefore has the mechanisms either to impede or to allow the peasantry to appropriate the gains of productivity in agriculture.

Despite the fact that, in theory, peasants cannot be expelled from land – although expropriation has played an ancillary and growing role –, there are in China several available means to forge a precarious livelihood among the peasantry, opening the road to proletarianization. Hung (2009) stresses that beginning in the second half of the 1980s, Chinese state policies have bankrupted the countryside and were responsible for the massive and continuous rural exodus[53]; while Zhang (2013) points to the fact that the extension of wage labor in the rural economy, in the aggregate level, is subject to changes in the political economy.

According to Hung (2009), Chinese state policy implemented from the second half of the 1980s provoked an agrarian social crisis responsible for the low and relatively stagnant wages of the capitalist sector. Central government's policies of investment and financing through state-owned banks had a strong bias towards urban areas and the industrial sector, especially in coastal areas (HUNG, 2009). Webber (2008) stresses that policies regarding pricing for quota production – that by the end of the 1980s represented around 60% of market prices – resulted in transfers out of the agrarian sector, to which were added 'real net transfers (agricultural expenditure was far less than taxes and levies); and transfers instituted through rural credit cooperatives (their deposits exceeded their rural lending)', which entailed substantial losses of agricultural GDP: 'Carter et al. (1996) estimated that the total transfer was equivalent to about 20% of agricultural GDP and more than 10 times farmers' annual investment in productive assets' (WEBBER, 2008, p.304)[54].

As consequence of central governments' policies, local governments from rural areas experienced fiscal stringency (HUNG, 2009), which resulted in increased efforts to raise tax collection from the peasantry, who regarded these practices as arbitrary and excessive. According to Zhang, 'in the late 1990s, deteriorating fiscal conditions and rising

[53] In this sense, we corroborate Hung's (2009) perspective that "an unlimited supply of labour is not a natural phenomenon given by China's population structure, as is so often assumed. Rather, it is a consequence of the government's rural agricultural policies which, intentionally or unintentionally, bankrupt the countryside and generate a continuous rural exodus." (HUNG, 2009, pp. 10-12).

[54]Hung (2009) also corroborates this perspective, highlighting that 'a recent study has found that there was a sustained and increasing net transfer of resources from the rural-agricultural to the urban-industrial sector between 1978 and 2000, both through fiscal policy (via taxation and government spending) and the financial system (via savings deposits and loans)' (HUNG, 2009, p.14).

administrative burdens drove many local governments in inland provinces into predatory behaviors, resulting in excessive taxation levied on farming households (Bernstein and Lu 2000)' (ZHANG, 2013, p.23). Excessive taxation was reflected in dwindling profitability of rural household farming (ZHANG, 2013), which was manifested in the erosion of incomes derived from agriculture from the 1990s onwards (HUNG, 2009), leading to increasing commodification of labor power as a strategy to guarantee the precarious social reproduction of the rural household (ZHANG, 2013). In this sense, the formation of a vast latent reserve army of cheap labor-power in China is a creature of the party-state.

2.2.3 The state capacity in manipulating China's latent reserve army and controlling the pace of proletarianization

Notwithstanding, the signal of state policies was reversed in 2004, leading to the increase of real income derived from agricultural activities, which diminished the need for commodification of labor-power in order to socially reproduce rural households, being expressed in labor shortages at prevailing wage rates in costal manufacturing export zones in 2005. This was when complaints from transnational manufacturing corporations of labor shortages in export zones – for the outrageously low wage rates they had been used to pay – sparkled, which was manifested in the mainstream academic literature as debates around the arrival of the Lewisian turning point, and many quickly came to declare the end of the 'era of surplus labor'.

The shift of direction on the state policies was a response of the CCP to increasing social conflicts involving peasants and workers, which will be dealt in the next section, although it might also have been informed by considerations regarding food security. For now, we will focus on the main mechanism through which this reversal was operated. The most highlighted measure on the literature has been the abolishment of the agricultural tax in 2004. Nonetheless, the impacts of the abolition of the agricultural tax have been controversial and many argue that its effect might have been overestimated, since innumerous local taxes still persisted, constituting a large burden on peasants.

The agricultural tax, in 2004, was estimated as being just a small share of peasants' income. According to Cao Jinqing (*apud* CHAN, 2006), the abolition of the agricultural tax 'will give farmers psychological comfort. But the real financial benefit to farmers will be small compared to its political windfall.' (Cao Jinqing *apud* CHAN, 2006). The perception

that a small improvement in peasants' real income would be capable of providing the political dividends necessary to CCP for easing social tensions and breathing new life into the accelerated process of capital accumulation was also endorsed by Chan (2006): "For all its high-sounding slogans about reducing the burden on farmers, Beijing is careful to ensure that its agricultural policies do not disrupt the continuing flow of cheap rural labour to urban areas." (CHAN, 2006)

Notwithstanding, the measures towards increasing peasants' real income derived from farming went farther than the abolition of the agricultural tax in 2004. According to Lin and Zhang (2013), the government accomplished the removal of different farm taxes by 2007. Moreover, the CCP changed its pricing policies and started to provide increasing subsidies for agriculture. Regarding state pricing policies, while at the beginning of the economic reforms agricultural prices were almost completely determined by state procurement prices, the proportion of procurement subject to such prices vastly shrunk to a negligible proportion by 2000: 'In 1978, 92.4 percent of agricultural procurement occurred at state-determined prices, 1.8 percent at state guidance prices, and 5.8 percent at market prices. By 1990, the three percentages were 25.0, 23.4, and 51.6, and by 2000 4.7, 2.8, and 92.5.' (HOLZ, 2014, p.71).

Nonetheless, in 2004, the CCP established state annual minimum prices of procurement for grains, offering to buy unlimited amounts of all major grains at such minimum price, influencing the setting of market prices (HOLZ, 2014). According to Holz, the market prices of these major grains are 'typically slightly above the minimum state procurement price, but in some years, the market price has fallen below the minimum state procurement price. In recent years, market and minimum state procurement prices tended to be above world market prices' (HOLZ, 2014, p.14). In as much as the intervention of the state contributed to elevate the prices of grains, it has had an upward impact on agricultural income (HUNG, 2009). The state power in setting agricultural income, particularly of grains, by price determination was stressed by Holz (2014):

> This implies that the state retains its dominant role in determining agricultural income. In the early years, it did so through compulsory procurement at state-determined prices, and it currently does so through its decisions on annual minimum state procurement prices. By limiting imports of grains and setting the annual minimum state procurement price, the state in effect determines agricultural revenues from grain sales, as market prices rarely diverge much from the minimum state procurement price. By regulating the price of intermediate inputs (such as gasoline) and by setting minimum state procurement prices in response to price changes in intermediate inputs, the state effectively determines rural incomes from

> grain production. It is only in non-grain agricultural production that rural incomes may be subject to stronger market forces. (HOLZ, 2014, p.71-72).

The measures implemented around the mid-2000s aiming to elevate agricultural income although according to Hung, 'were no more than a small step in the right direction', were immediately felt in the dynamics of proletarianization as 'slightly improved conditions in the rural agricultural sector slowed the flow of migration to the cities, and a sudden labour shortage and wage hike in the coastal export-processing zones ensued' (HUNG, 2009, p. 20). The policies directed to increase agricultural income and, hence, also stimulating agricultural production growth kept being pursued by the state during the 2000s. Subsidies to agricultural production of grains rose substantially from 2004 to 2010, being fundamental for the sustainment of income derived from farming as well as grain yields in face of increasing prices of agricultural inputs (ZHOU et al. *apud* LIN & ZHANG, 2013). From 14,6 billion yuan in 2004, subsidies from the central government destined to grain production grew to 134,1 billion in 2010, including direct subsidies for grain producers, general subsidies for agricultural production supplies, subsidies for growing superior seeds varieties and purchasing agricultural machinery and tools (LIN & ZHANG, 2013).

All these measures, in addition to the initiatives to rebuild the rural welfare system, which will be discussed in the next section, increased the viability of family farming, and their impact was that 'more rural labor circulated back from migratory wage work to farming, contributing to the rising problem of labor shortage in coastal China's manufacturing zones (He and Dong 2009, Chan 2010: 521)' (ZHANG, 2013, p.23). In this context, more than just being the architect of the vast latent reserve army of cheap labor-power, the Chinese state, as demonstrated by the analysis of the above-discussed policies, kept holding a significant power in manipulating the size of its latent reserve and controlling the pace of proletarianization.

Mainstream economists, when seeking to estimate the number of remaining people employed in agriculture or the rise of real income as natural expression of the entrance in a labor scarcity era, treat the process of proletarianization of peasants as a natural and spontaneous phenomenon, like air masses that move from high pressure areas to low pressure ones. On the one hand, they do not consider that in order for the Chinese agriculture to elevate its productivity and simultaneously supply labor at constant real wages, this high pressure zone must be artificially built by the state; one the other hand, they ignore that this pressure

might be reduced by state's action, impacting peasant's real income as well as the level of real wages in the capitalist sector without labor surplus being exhausted:

> The prc's urban-biased development model, then, is the source of China's prolonged 'limitless' supply of labour, and thus of the wage stagnation that has characterized its economic miracle… Just as China's 'unlimited' supply of labour was more a consequence of policy than a natural precondition of its development, the arrival of the Lewisian Turning Point was in fact the outcome of state attempts to reverse a previous urban bias rather than of a process driven by the market's invisible hand. The concomitant to rising peasant income and industrial wages was unprecedented, soaring retail sales, even controlled for inflation (HUNG, 2009, p. 21)

Hence, the secret of the development with unlimited supplies of labor in China has been the role of the state in promoting primitive accumulation, which has provoked, on the one hand, the appropriation of peasantry's surplus product and even part of its necessary product; on the other hand, the commodification of peasants' labor-power. In ignoring this role of the state, the coercive nature of the process of peasantry's proletarianization is masked, so that many authors give a beneficial aura to migration, seen as a positive factor in peasants' lives, even recommending it stimulus as a policy of poverty reduction. Nevertheless, if we look at the process on the contrary, the rural exodus that underpinned China's constitution as 'the factory of the world' is presented as a consequence of a policy of creation and/or reproduction of a precarious livelihood among peasants led by the Chinese state, which is the engineer of the constant real wages of the Lewisian model.

Furthermore, a differential of remuneration is not enough to secure the peasantry's road towards proletarianization. This differential should be built upon a baseline that impedes peasants to appropriate all the necessary product needed for their reproduction, as to make the proletarianization of part of the members of the productive agricultural cells a strategy for complementing this necessary product (since there are remittances made by migrants to their families), implying that those who remain in agriculture will work more hours. If peasants could retain their surplus product, they could either accumulate or unload the work burden, diminishing working hours. The decision to migrate to cities and sell their labor power in degrading, intense and dangerous conditions of work for excessive long hours and low wages, as in the manufacturing and construction industries, is mainly a response to factors of expulsion from the countryside, coercive ones, and not the fulfillment of one's aspiration or the job one envisages for life.

Harvey (2003) points to a larger concept of primitive accumulation of capital to explain proletarianization:

> The process of proletarianization, for example, entails a mix of coercions and of appropriations of precapitalist skills, social relations, knowledges, habits of mind, and beliefs on the part of those being proletarianized. Kinship structures, familial and household arrangements, gender and authority relations (including those exercised through religion and its institutions) all have their part to play. In some instances the pre-existing structures have to be violently repressed as inconsistent with labour under capitalism, but multiple accounts now exist to suggest that they are just as likely to be co-opted in an attempt to forge some consensual as opposed to coercive basis for working-class formation. Primitive accumulation, in short, entails appropriation and co-optation of pre-existing cultural and social achievements as well as confrontation and supersession." (HARVEY, 2003: pp.146)

Despite the existence of elements of co-optation, when questioned, migrants mention poverty to explain their move to cities (WEBBER, 2008). We are not affirming that these elements of co-optation do not concur to rural-urban migration. Notwithstanding, the scale presented by migration in China is such that the process of labor transfer would not be possible if it were not built upon the economic coercion imposed through the policy pursued by the Chinese state. Other element that tends to shadow this nature is the fact that, in general, there is a *de jure* possibility to remain in agriculture. In this sense, the main coercive element was not the expropriation of land (although it has an ancillary and growing role, as discussed in the next section), but a political-economic mechanism that hinders peasants from substantially appropriating the gains of agricultural productivity, and that ultimately relies in the mobilization of the state's repressive apparatus when needed.

2.2.4 Modifying trends affecting the dynamics of China's industrial reserve army and proletarianization process

So far, we characterized the main dynamics in the formation and evolution of China's industrial reserve army and proletarianization process. Notwithstanding, subjacent historical and recent trends might substantially affect the dynamics discussed and even be more meaningful when it comes to the logic of the long-term historical process of transition to capitalism. Far from aiming to do an exhaustive analysis, our objective is to give an overview of qualitative significant processes that have been taking place in China that could radically change the dynamics and evolution of China's industrial reserve army and proletarianization

process. Among these modifying trends, we will briefly discuss *i*) the ancillary and growing role of enclosures; *ii*) the commodification of land; *iii*) the development of wage labor in agriculture; *iv*) the party-state pursuit of the agribusiness model; and *v*) the reform of the *hukou* system in the context of the state's urbanization plan.

2.2.4.1 The ancillary and growing role of land seizures in the context of land commodification

Although expropriation of rural land from peasants has not been so far the main road to proletarianization, it has played an ancillary and growing role in post-socialist China. For obvious reasons, widespread enclosures as the main road to proletarianization was not a political possibility for the CCP if its objective was to remain in power, as suddenly expelling one, two or ever three hundred million peasants from their land would be the surest and fastest recipe for the collapse of the party-state. The option for an indirect road to proletarizanization, nonetheless, has not excluded processes of expropriation of rural land from peasants to occur. According to Webber (2008):

> […] land dispossession has occurred, leaving some rural residents landless or with very small holdings. Yet these are still only a small minority of rural residents. Landholdings remain more equally distributed than income (Bramall 2004) and their periodic reallocation functions as a social security system in villages (Carter and Yao 2005)' (WEBBER, 2008, p.305).

Notwithstanding, many authors have identified expropriation of peasants as the main source of social unrest in contemporary China. The most significant way in which expropriation of rural land has taken place in China has been the conversion of rural into urban land. While rural land in the country is property of the collectives, urban land appertains to the state and neither of them can be sold or mortgaged. In the Maoist period until the first half of the 1980s, land could neither be sold nor transferred, having no price (WALKER & BUCK, 2007). Nevertheless, in 1986, both rural and urban land became passible of leasing (GÜREL, 2014; WALKER & BUCK, 2007). In the case of urban land, leasing contracts can be established for periods of time as long as seventy years, so that in the second half of the 1980s a "primary market" of urban land was created, whose main promoters were the local governments and SOEs (WALKER & BUCK, 2007). At the

beginning of the 1990s, with the permission for transacting leasing rights, a "secondary market" of urban land has developed (WALKER & BUCK, 2007).

Local governments have the prerogative to transfer rural land use rights from peasants, with due compensation, in order to promote the 'public interest' – such as the liberation of land for the development of infra-structure projects, for the construction of factories and for the promotion of urbanization. Moreover, urban land is much more valued than rural land: 'a hectare of suburban land in agriculture might cost 300,000 RMB to purchase, but could be sold to developers for 10–50 times' (WEBBER, 2008, p.310).

In this context, several local governments in rural areas have been transforming the status of part of peasants' lands into urban areas, so that it can be leased to property developers in order to obtain new sources of income to local administration: "local governments are motivated, above all, by a fiscal regime in which their revenues depend more on local taxes and rents than on redistribution of national revenues." (WALKER & BUCK, 2007, pp. 63). In 2011, a survey in seventeen provinces estimated that 'the mean compensation to farmers for transfer of contractual rights to land was $17,850 an acre', whereas 'the mean selling price to commercial developers was $740,000 an acre' (MAGDOFF, 2013)[55]. As a result, expropriation by converting rural in urban lands has become an important expedient to the process of urbanization, as highlighted by Walker and Buck (2007): "annexation of territory, seizures of farmland and extension of infrastructure have all been useful in urban expansion" (WALKER & BUCK, 2007, pp. 63).

Estimates of landless peasants have varied largely. The above-mentioned survey found that 4 million peasants lost their land every year (MAGDOFF, 2013). While Chinese officials claim that annually 2 million rural residents become landless (KELIANG & PROSTERMAN, 2012); the Chinese Academy of Social Sciences, in a 2011 report, estimated that between 40 to 50 million migrants out of 250 million migrants have been expropriated and that the annual increase in the landless would be of 3 million persons (HORNBY, 2015). Nonetheless, much higher estimates exist. According to Hu Xingdou, the number of the landless reached 120 million, whereas 10 years prior it was around 40 million (HORNBY, 2015); Zhang (2015) estimated that between 1991 and 2002, 62,3 million peasants were dispossessed – or 5,19 million annually – and in the period of 2003 to 2013, 65,14 million – or an yearly increase of

[55] "Falling real estate prices have accelerated the process, forcing local governments with inadequate tax bases to engineer more land sales. Land sales currently account for around 30 percent of total local government revenues, and in some cities make up more than half the revenue." (FOSTER & MCCHESNEY, 2012, p.178)

5,9 million –, totaling 127,5 million, which, if added those who lost land due to 'rent-replacement occupation' the total could be as high as 130 million.

One common practice developed to grab peasants' land without reducing arable land was to expropriate their residential plots through the displacement of farmers into building complexes (ZHANG, 2015). Zhang (2015) also remarks that the abolition of the agricultural tax has constituted an incentive for local governments to expropriate peasants:

> […] when agriculture is no longer a source of taxation, villages and peasants in the rural areas become the burden or the social surplus to the local government, which deepens the "deprecation of the rural" and intensifies the enclosure movement that annihilates villages, peasants and agriculture (ZHANG, 2015).

Although so far expropriation of land has been closely intertwined with urbanization and large infrastructure projects, Gürel (2014) identifies that some cases of land grabs for the development of agribusiness have already occurred:

> The Stora Enso Plantation Project in Guangxi province provides a more striking example of accumulation by dispossession in Chinese agriculture. Stora Enso, a Finnish company which is one of the largest pulp, paper, paperboard, and wood producers of the world, has been in the process of investing 1.8 billion Euros in order to establish a large pulp tree plantation on 1.8 million mu of forestland (120,000 hectares) spanning five counties of Guangxi. This is certainly one of the biggest agribusiness projects in contemporary China. Beihai municipal government's mobilization of the bureaucracy in order to transfer forestland to Stora Enso demonstrates the unique ways in which large blocks of land are transferred to agribusinesses in China. The cadres that were mobilized from above used a variety of methods to obtain land from the villagers, which often included cheating, forgery, and naked force. The Beihai Forestry Investment Company (BHC), a company established by the municipal government, accumulated these lands and transferred them to Stora Enso. The company openly acknowledges the impossibility of obtaining this much land without the support of the local government (Ping and Nielsen 2010). (GÜREL, 2014, p.77)

Despite the fact that the central government appears to reprehend abusive practices of expropriation from local governments, if and when the development of agribusiness in China really gains momentum and meets the still long to go process of urbanization, then land enclosures can pass through a qualitative change and be significantly accelerated. As far as urbanization goes, the central government still looks for maintaining the red line of arable land, while agribusiness development, if based on expropriation, would break this limit

hindering land grabs posed by the opposition between urbanization and the maintenance of necessary arable land.

2.2.4.2 Rural land concentration, the development of wage labor in agriculture and the agribusiness model

Two major trends have been developing in China's agriculture that might drastically affect the process of proletarianization in the country and the particular dynamics of China's industrial reserve army. One is the development of wage labor in agriculture, while the other is the promotion of the agribusiness model predicated in land concentration; and definitely, both trends are inextricably intertwined. Although there is a debate whether China should chose the agribusiness model or develop high-productivity based in small plots – through the promotion of organic agriculture 'with small capital-labor dual intensifying family farms for livestock-poultry-fish raising and vegetable-fruit cultivation', vertically but not horizontally integrated (HUANG, 2011, p.107) – this seems to be a non-issue to the Chinese government, which has been in the last few years providing statements affirming the need to concentrate land, lately being reinforced by 2015 n°1 document:

> More efforts will be made to establish a new-style agricultural management system, accelerate reforms of rural collective property rights system, steadily push forward pilot reforms of rural land system, carry out rural financial system reforms, and deepen water conservancy and forestry reforms. It urged guiding land management rights to flow in an orderly way and raising the scale of agricultural production. (XINHUA NEWS AGENCY, 2015)

The formation of rural rental land markets has allowed for the process of rural land concentration to take place in China, as well as to increase the incidence of wage labor in agriculture. According to Gürel (2014), in 1986, transfers of land were allowed inside villages, whereas in 1995, legislation permitted farmland to be rented to outsiders, opening the way for urban capital to enter in agriculture and making a strong move towards establishing a national land market[56]: "this was further confirmed by the Law of the People's Republic of China on Land Contract in Rural Areas of 2002, which allows subcontracting,

[56] Other measures that were fundamental for the formation of rural land markets in China, according to Gürel (2014), were the increase in the length of land tenures – from three years, in the beginning of reforms, to thirty years – and restrictions to land relocations inside the villages, all of these features would, in the author's opinion, confer rural land a semi-private character.

leasing, exchanging, and transferring of land by a written contract (Law on Land Contract in Rural Areas 2002)" (GÜREL, 2014, p.75). These reforms had the scope of allowing for land concentration and the scaling up of production in agriculture, whose main content was "to promote capitalist agriculture by making land transfers from smallholders to larger farmers and agribusiness companies increasingly easier" (GÜREL, 2014, p.67).

If in the early reform period wage labor in agriculture would be mostly associated with seasonal demands of households which had labor shortages due to migration or non-farm employment, contracting other peasants to help carry through harvesting, or by the differentiation of peasants into richer and poorer, with the former contracting labor of the latter; the panorama of wage labor would take a significant shift in the course of the post-socialist period. According to Webber (2008), wage labor in Chinese agriculture would be mostly as characterized above:

> There is, for example, market-based land consolidation (Lin 1997). In some localities, especially where there is ready access to well-paying jobs in the local enterprises, peasants hire other peasants, from poorer places, to do their farming for them; or a group of peasants amalgamate their farms and contract one of their number to produce crops, often with the help of hired labour. Lin (1997) describes a farm of nearly 100 ha in the Pearl river delta, on which the manager hires a team of 20 or so labourers and I've seen similar, though smaller operations in Shandong. No one is dispossessed in this form of production: the hired labourers still have their land, back in their villages; the original peasants still have rights to their land, were they to choose to exercise them. Nevertheless, such experiments are evidently on a path to capitalist farming with hired labour -power. (WEBBER, 2008, p.306)

Notwithstanding, Gürel (2014) provides a quite different picture of wage labor in agriculture over the last decade, showing that, although landless full-proletarians are still not a large share of agricultural employment, capital-labor relations of production have been widely diffused through contract farming and wage labor employment in private farming. In the latter case, either peasants keep their lands and work outside to agribusinesses or rich farmers, or they lease the lands to companies and become employed as wage laborers (GÜREL, 2014). Gürel (2014) also highlights that the maintenance of the collective rights of the rural land has facilitated the transfer of large tracts of land to private businesses, as the local government arranges the transfer of use rights from peasants; whereas if land was completely private-owned, businesses would need to sign a multitude of contracts, one for each individual owner, substantially slowing down the process of land concentration.

Contract farming, in contrast, in many cases is a way of virtually transforming peasants in proletarians, as they become subordinate to capital, particularly through the dependence of peasants on their contractors for technology, means of production (such as machinery and modified seeds) and marketing, in a way that the direct producer loses the control of the labor process whose purpose becomes the production of surplus value for the contractor. Dependence on contractors for sales has been already manifesting in China:

> Supermarkets now rarely deal directly with small farmers. Instead, over the past five years, a new generation of companies has emerged to supply them with food. Some of these producers, such as Chaoda, a vegetable producer that operates farms in 29 different parts of the country, have managed to lease large enough tracts of land to justify big investments. (DYER *apud* MAGDOFF, 2013).

This modality of capital-labor relations has been significantly diffused in China as a way to increase the scale of operations of companies and 'company-like farmer cooperatives', and has been realized either directly between the latter and farmers or through intermediaries, which might involve or not the provision of means of production by contractors (GÜREL, 2014): "The number of enterprises involved in contract farming increased from 8,377 in 1996 to 58,186 in 2002 (Niu 2006 as cited in Zhang 2012: 460). In 2002, the number of smallholders who have contractual relations with these companies was approximately 72,650,000 (Guo and Jolly 2008: 570)." (GÜREL, 2014, p.82-83). Accounts on the scale achieved through contract faming and the development of agribusiness in China are staggering:

> For example, almost half of the supplies of Xinchang Foods in Changyi county of Shandong province, which is a major supplier of poultry meat to foreign fast food companies in China, is provided by 10,000 farmer households who sign contracts with the company (Zhang and Donaldson 2008: 25). Tai'an Taishan Asian Food Company, located in Tai'an city of Shandong province, is a major food processing company exporting frozen organic vegetables to Japan, United States and European countries. It engages in contract farming relationship with about 1300 farmers from 17 villages in the region. Although average farm size is very tiny (0.4 ha), the company can organize large scale production (on land of 534 ha in total area) thanks to contract farming which enables it to produce 9,133 tones of 18 different varieties of vegetables annually (Kledal and Suliang 2007: 6, 1011). Singaporean Fufa Zhongji company, which operates in Yantai city of Shandong province, produces fruits for exports on 500 mu of land via contract farming (Hu 2006: 12). (GÜREL, 2014, p.83)

Magdoff (2013) also provides accounts of the significant diffusion of contract farming in China:

> Corporations such as Starbucks (coffee) and Pepsico (potatoes for its Frito Lay brand) are growing crops on land that they control—Pepsico is the largest potato grower in China—as well as contracting with farmers to grow for them.
> Large-scale ("factory") dairy farms, with capacities of 10,000 cows per farm and robotic milking machines, are already in place near major Chinese cities. Factory hog farms are also being developed and large crop farms are being encouraged. The purchase by Shuanghui International (a firm connected to China's largest hog producers) of Smithfield (a U.S. company that owns over 400 farms and has contracts with 2,100 "farmer-contractors" to produce for them—the nation's largest hog "farmer" and pork processor) is a further indication of China's intention to concentrate on factory animal farms to supply its citizens with meat. (MAGDOFF, 2013)

The CCP's commitment to raise agricultural productivity and assure food security has been a top priority from the very beginning of the economic reforms[57]. Nevertheless, this commitment has also become one of developing capitalist relations of production in agriculture. Mechanization, application of high technology and vertical integration have been developing hand-in-hand with land concentration and proletarianization.

All these modifying trends, taken together – namely, expropriation of peasants for urban development, concentration of rural land and the increased penetration of capital in agriculture – point to significant changes in the process of proletarianization so far experienced in China, from an incomplete character towards a full-blown one. First, this would implicate a substantial growth in the latent component of China's industrial reserve army – supposed to be already exhausted according to many mainstream economists –, which seems to be expected by the CCP's 2014-2020 urbanization plan. The latter pretends to elevate the percentage of permanent urban population from 53,7% to 60% of total population, while conceding 100 million urbanite status to migrant workers and other permanent residents, which would elevate the percentage of urban *hukou* holders from 35,7% to 45% of total population (XINHUA NEWS AGENCY, 2014). Whereas this will benefit a huge number of rural migrant workers, it is also implied in the plan that rural migrant workers will keep playing a substantial role in China's labor force, for the percentage of urban permanent residents without urban *hukou* will only be reduced from 18% to 15%.

[57]The latest episode attesting this priority and the efforts to develop high-tech agriculture was ChemChina's bid for acquiring Syngenta – a U$ 43 billion deal – that would put the country in the global commanding highs of food security (DONNAN, 2016).

Second, the move towards full proletarianization would not only result in the swelling of the latent component, but also in a radical shift in the dynamics of the industrial reserve army, as rural land would progressively – and possibly fast – lose its role as the depository of the pauper and regulator of the floating component. In short, even if accounted for the incorporation of a significant number of rural migrant workers as urban residents, these trends if concretized would imply an enormous increase in the pressure put by the reserve over the active industrial army, tilting the balance of power towards capital. Well, unless peasants and workers do not resist and fight back.

2.3 CLASS STRUGGLE, THE PARTY-STATE RESPONSE AND INSTITUTIONAL CHANGES AFFECTING WAGE DETERMINATION IN CHINA

From the beginning of the 1990s until mid-2000s, the Chinese state was successful in repressing rural households' real income from agricultural activities to substantially grow, keeping the real wage rate of migrant workers low and stagnant. Notwithstanding, class struggle in both the countryside and urban areas intensified and, in response to growing social unrest, the CCP had to adjust the course of its policies, as we have seen, to assure that its position in power would not eventually be compromised. According, to Yu Jianrong (*apud* CLB, 2012), by the end of the 2000s, an estimated 30 thousand protests and strikes took place in China annually. These 'mass incidents' were classified by the same author as involving rural residents (35%), workers (30%), urban residents (15%), social conflicts (10%), organized crime (5%) and social anger (5%), showing a picture in which social unrest is led by both peasants and workers and spread across rural and urban areas (Jianrong *apud* CLB, 2012).

2.3.1 Peasants' conflicts, the re-orientation of CCP's policies toward rural areas and the incipient rebuilding of a rural social security system

Social unrest among peasants was mainly a response to the heavy tax burden and land grabs. As discussed prior, in rural areas, local governments were submitted to fiscal stringency by the central one, resulting in an increased number of taxes and fees over the peasantry. Moreover, peasants who had lost the access to free healthcare when the breaking of the communes, though still entitled to nine years of free mandatory education, were

increasingly charged with school fees forbade by law, “because without ‘illegal’ school fees the teacher’s wages cannot be paid” (FRIEDMAN, 2012). As local governments were also the agents responsible to implement rural land seizures, peasants’ grievances were mainly directed against the former, while seeing the central government as their protector: “although the incidents might ostensibly appear to be anti-state, it must be stressed that the target was not the central government. In fact, peasants identified themselves with the center, and called upon it for help” (SO & CHU, 2015). According to So and Chu (2015), the results were two waves of protests after 1978. The first starting at the 1980s opposed predatory taxes, while the second that began in the 1990s was directed against land grabs. By 2004, peasants’ protests had gained momentum:

> In 2004, 74,000 protests and riots took place, involving more three million people – many of them were by the rural poor. Clashes between police and peasants have become more bitter. In the village of Dongzhou in Guangdong province last month, paramilitary police opened fire on protesting villagers, killing at least three. Beijing fears that these localized protests will lead to the formation of a broader and more politically dangerous anti-government movement. (CHAN, 2006)

Despite the fact that an anti-government movement had not materialized, the party-state changed course of its politics directed to rural areas and the peasantry beginning in 2004, trying to prevent conflicts to gain huger proportions and eventually unify against the central government:

> It was at the height of worker’s protests and peasant protests that the communist party-state formulated the policy of a “harmonious society” and the construction of a “new socialist countryside” under the Hu/Wen regime. In order to pacify the growing peasant unrest in the countryside, the communist party-state wanted to deepen state neoliberalism by abolishing the agricultural tax, increasing expenditure into the rural area by 15 percent, and raising its allocation to the health care budget by 87 percent. Peasants were also relieved from the burden of paying for many public services such as miscellaneous fees levied by the rural schools (So 2007). (SO & CHU, 2015)

Besides the policies regarding prices, taxation and subsidies discussed in the prior section, the party-state also started to build a social security system in rural areas that had collapsed with the communes, though in an explicitly reduced scope vis-à-vis the urban system:

> The majority of the Chinese people live in rural areas, where the economic development level is comparatively low. In the rural areas the land, as a means of both production and livelihood, is owned collectively where the contractual household output-related responsibility system is practiced. Under the influence of China's traditional culture, there is a time-honored tradition of provision by the family, security coming from self-reliance and help from the clan. In accordance with the characteristics of rural socio-economic development, the state's social security measures in rural areas are different from those practiced in cities. (STATE COUNCIL, 2004)

Lest not dishonoring the family, the clan and one's pride in self-reliance – and specially by recognizing land as the main social security system in rural areas –, the government asserted the minimized scope in building China's rural social security system by proposing *i*) "Experimenting to Establish an Old-Age Insurance System in Rural Areas"; *ii*) "Establishing a New Rural Cooperative Medical Service System"; and *iii*) "Practicing Rural Social Relief" (the 'Five Guarantees'[58]) (STATE COUNCIL, 2004).

The cooperative medical care legated from the Maoist period was successful and covered almost 90% of rural residents by the beginning of economic reforms (WANG, 2008). With the breaking of the communes, the funds to the program were cut, resulting in the privatization of a substantial part of community clinics, while "peasant doctors who had been trained in the program returned to farming because it provided a higher income for their families"; the result was the collapse of the program, which covered just 5% of rural residents in 1986 (WANG, 2008, p.8-9). In 2003, the rural population with health insurance was still low as 10%, entailing that "becoming sick is a high risk for poverty and this also leads to the rise of miracle healers and 'sects' promising cures to ill people" (FRIEDMAN, 2012).

Nonetheless, since then the central government has committed in a radical change in China's health system. The New Rural Cooperative Medical System was launched in 2003, and in 2013 the government claimed to have achieved almost universal health insurance coverage, accounting for 99% of the rural population (WILKINSON, 2013). Even though this was a significance shift in China's social policies since the beginning of reforms, it has been recurrently pointed that the rate of reimbursement was too low – entailing large out-of-pocket

[58] "The Five Guarantee Household System. In 1953, the Ministry of Internal Affairs issued the Regulations of Food and Disaster Relief to help the elderly, widows, and the disabled in rural areas. The emerging rural collectivization offered a new approach to poverty. Essentially, rural cooperatives were encouraged to help the elderly and the poor by providing food, clothes, housing, firewood, and burial services, which constituted the Five Guarantee Household System (Chen, 1994). This community-based welfare system was funded and operated by rural cooperatives." (WANG, 2008, p.5) According to Wang (2008, p.12), "The rural Five Guarantee Household System, funded by villagers in the past, is now a publicly financed program."

payments in rural areas –, that the coverage of conditions and drugs were narrow, serious illnesses being often excluded – imposing the need for high savings – and that the care varied significantly in quality and extent (SAGLI *apud* WILKINSON, 2013; NOFRI, 2015). In 2016, the State Council announced the merge of rural residents' and urban *unemployed* health insurance programs into a basic health insurance for urban and rural residents, in which "all participants pay the same premium and enjoy the same reimbursement rate, regardless of their hukou status", with the program being largely subsidized by the central government (JUAN, 2016).

While progresses have also been made regarding old-age pensions, with the introduction of the New Rural Social Pension Scheme, in 2009, it still lags far behind the developments in the health system; although coverage has expanded in 240 million persons in just two years, pensions have a very low level: "in some rural counties the basic pension can be as low as 55 yuan (about $8.75) per month." (THE ECONOMIST, 2012). Land continues to play by far the main source of social security for the rural population, and as land concentration and seizures tend to increase, social unrest among peasants will also tend to escalate.

Meanwhile, the CCP keeps pursuing a so far successful strategy of divide and rule the peasantry, as the responsible for conducting the growing process of primitive accumulation through land concentration and expropriation will remain being local governments – towards who peasants revolt against –, whereas the central government appears as benevolent and the savior of the peasantry (SO & CHU, 2015). For instance, while document n°1 of 2015 claimed for the increased transfer of use rights in order to concentrate land, document n°1 of 2016 exempted from fees rural high-school students who could not afford them, promising also to expand the compulsory nine year schooling system. Concessions to the peasantry and the creation of a minimal social security system are a response to peasants' unrest, but its logic is also inscribed in the party-state claim to rebalance the economy towards consumption. Nonetheless, these measures deeper content are to provide means to politically enable the process of land dispossession and an increased field for capital accumulation in the country, while constructing a minimal basic net of safety for when peasants become full proletarians and no longer can find in land the securing of their existence and reproduction.

2.3.2 Migrant-workers conflicts in manufacturing export zones, government responses and institutional changes

As China's industrial structure shifted from the traditional Northern heavy state-owned industry towards the booming Southeast export manufacturing, fueled by large inflows of rural migrant workers, so too did the epicenter of workers' unrest in the country. From mid-1990s until 2002, the main protests and strikes concerning workers were led by urban SOEs' workers and laid-off against privatization and the deleterious effects of the breaking of the iron rice bowl. The movement, nevertheless, was largely defeated[59], and labor unrest in China would find from mid-2000s afterwards their main protagonists in rural migrant workers, despite the prohibition of strikes and the ban on independent trade unions from the party-state bureaucracy branch, the All-China Federation of Trade Unions (ACFTU).

Labor unrest involving rural migrant workers gained momentum in the mid-2000s in the context of the much claimed labor shortages in manufacturing export zones, a manifestation not of the end of the 'era of surplus labor', but of increased real income in rural areas. According to China Labour Bulletin (CLB, 2012), 'it was only after labour shortages first appeared in 2004, that factory worker wages in Guangdong began to rise' (CLB, 2012, p.6-7), whereas Friedman (2012) highlights that 'the least spectacular item in this catalog of resistance forms the essential backdrop to all the others: migrants, increasingly, have simply been refusing to take the bad jobs they used to flock to in the export processing zones of the southeast' (FRIEDMAN, 2012). The latter author also stresses that these shortages were not ephemeral and had endured up to 2012: 'Suffice it to say that a large swath of manufacturers in coastal provinces such as Guangdong, Zhejiang, and Jiangsu has not been able to attract and retain workers' (FRIEDMAN, 2012). Nevertheless, we have also seen also that the CCP's policy toward increasing peasants' real income has been persistently pursued since 2004.

Instead of looking into the demographic structure of the country to explain these shortages as a natural phenomenon, one should consider the living hell which the manufacturing export sector has transformed rural migrant workers' life into if one is to understand how improvements in conditions of living in the countryside would imply to many

[59]"Although this resistance did not stop the process of de facto privatization of SOEs, it did force the government to increase spending in the old industrial northeast to boost local economic growth and compensate for the job losses. It also urged the government to redouble its efforts to introduce social security and a medical insurance system to make up for the destruction of the SOE-based welfare regime. By the 2000s, this type of labor resistance had declined after the peak of SOE reform." (HUNG, 2013, p.209)

the possibility of evading the torment of export zones. Accounts have been widespread in the academic literature and media on the excessive working hours, the military-like operation of dormitory-factories, the degrading and dangerous conditions of work, the discrimination and insecurity of rural migrant workers in cities and their extremely low pay, from which employers discount excessively for food and find pretext in everything to reduce payment – from chatting in the line of production to stepping into the grass, as reported by Foster and McChesney (2012).

Foxconn, the main subcontracting firm producing Apple's iPads, iPhones and iPods, has been at the spotlight, particularly due to the collective suicides in its factories in 2010, when wages supposedly have already hiked in export zones. The conditions in Foxconn factories are generalized features of the manufacturing export sector in China:

> The KYE factory in China produces manufactured goods for Microsoft and other u.s. factories, employing up to 1,000 "work-study" students 16- 17 years of age, with a typical shift running from 7:45 A.M. to 10:55 P.M. Along with the "students," the factory hires women 18- 25 years of age. Workers reported spending ninety-seven hours a week at the factory before the recession, working eighty-plus hours. In 2009, given the economic slowdown, the workers were at the factory eighty-three hours a week, and on the production line sixty-eight. Workers race to meet the requirement of producing 2,000 Microsoft mice per shift. The factories are extremely crowded; one workshop, 105 feet by 105 feet, has almost 1,000 toiling workers. They are paid 65 cents an hour, with 52 cents an hour take-home pay, after the cost of abysmal factory food is deducted. Fourteen workers share each dorm room, sleeping on narrow bunk beds. They "shower" by fetching hot water in a small plastic bucket for a sponge bath.
>
> Similar conditions exist at the Meitai Plastics and Electronics Factory in Dongguan City, Guangdong. There two thousand workers, mostly women, assemble keyboards and computer equipment for Microsoft, IBM, Hewlett-Packard, and Dell. The young workers, mostly under thirty, toil while sitting on hard stools as computer keyboards move down the assembly line, one every 7.2 seconds, 500 an hour. A worker is given just 1.1 seconds to snap each separate key into place, continuing the operation 3,250 times every hour, 35,750 times a day, 250,250 times a week, and more than a million times a month. Employees work twelve hour shifts seven days a week, with two days off a month on average. They are at the factory eighty-one hours a week, while working for seventy-four. They are paid 64 cents an hour base pay, which is reduced to 41 cents after deductions for food and room. Chatting with other workers during work hours can result in the loss of a day and a halfs pay." (FOSTER & MCCHESNEY, 2012, p.171-172)

After one decade and a half under these conditions, reflected in stagnant manufacturing wages[60], the increase in living conditions in the countryside lead many to stay

[60] "From the 1990s to about 2005, manufacturing wages in China compared with those in the United States remained unchanged despite the booming economy." (HUNG, 2013, p.209-210)

in their home places, manifesting in labor shortages in costal zones. To attract back workers, manufacturing enterprises had to substantially increase the wage rate, while labor bargaining power increased: 'the salient point is that the shortage has driven up wages and strengthened workers' power in the market — an advantage that they have been exploiting' (FRIEDMAN, 2012). Migrant workers, since then, started to fight back and, in many cases, it was enough for a little incident to sparkle collective response from rural migrant workers (FRIEDMAN, 2012; CLB, 2012): "While there are no official statistics, it is certain that thousands, if not tens of thousands, of strikes take place each year […] More importantly, *workers are winning*, with many strikers capturing large wage increases above and beyond any legal requirements" (FRIEDMAN, 2012). Mass incidents figures – which cover protests not just of workers – stopped being published by the government, though China's Academy of Social Sciences estimated them to be higher than 60 and 80 thousand in 2006 and 2007 respectively, whereas in 2009 they were probably higher than 90 thousand (CLB, 2012).

Whereas the illegality of strikes has not prevented them to occur; the ban on independent trade unions made these clashes fragmented and short-lived, hindering their transformation from economic into political demands. The extraordinary proliferation of workers protests throughout the last decade has hit particularly the manufacturing export sector. According to CLB's publication *A Decade of Change: The Workers' Movement in China 2000-2010*, from the 553 cases of workers' collective disputes covered by the entity, all outside the ACFTU's scope, more than 70% took place in manufacturing enterprises, except for 2006 (CLB, 2012).

The character of these protests has evolved from a defensive nature in the first half of the 2000s towards an offensive one, particularly in 2010 (CLB, 2012; FRIEDMAN, 2012). At the beginning, workers' resistance was manifested in protests to guarantee their payments and rights, being triggered especially by wage arrears. Migrant workers' owed total wage bill – predominantly in the manufacturing, construction and services sectors –, in 2003, was estimated to possibly be as high as 100 billion yuan (ZHONGXI & YU *apud* CLB, 2012). Nonetheless, by the end of the 2010s, workers' protests started being directed towards wage increases and improvements in working conditions, even though defensive protests prevailed.

"Throughout the late 1990s and early 2000s, factory workers' wages in the Pearl River Delta, which was rapidly establishing itself as the "factory to the world", remained basically stagnant.13 Their take home pay of just 800 yuan each month at the time was exhausted by the costs of daily necessities, food, housing, transport etc." (CLB, 2012, p.6)

From the cases accompanied by CLB (2012), 2010 represented an inflection in demands for wage increases and better working conditions particularly due to a wave of strikes in the automotive components sector[61].

According to CLB (2012), conflicts involving demands for wage increases were generally linked to rising prices of prime necessaries in the second half of the 2000s, particularly of food. Increasing food prices was one of the main policies of the central government to elevate rural households' real income, whose counterpart was the negative impact of inflation in urban areas, particularly for those with the lowest incomes. These conflictive effects had always put the CCP on a thin balance. According to Hung (2013), the shift in the second half of the 1980s away from a set of policies that benefited and increased income in the countryside towards policies neglecting and aiming at extracting surplus product from the rural economy were a response to the urban upheaval in 1989 to which inflation had a major role:

> One lesson that the CCP had learned from the urban revolt in the 1980s was that the favorable policies to agriculture and TVEs that improved the rural-urban terms of trade also contributed to urban hyperinflation in the late 1980s, helping to trigger the 1989 revolt. In response, the Chinese government developed an urban bias in the 1990s that cut back on the subsidies and other favorable policies to TVEs, disinvested in agriculture, and reformed the grain procurement policy to ensure low grain prices for urban dwellers (Hung 2009; Yang and Cai 2000). The consequence of such policies was slowing growth in agriculture and TVEs as employment providers for surplus rural labor. This in turn created an exodus of village migrant workers to coastal export-processing zones, which accelerated the expansion of export-oriented manufacturing. (HUNG, 2013, p.209)

Whether the urban bias of CCP's policies in the 1990s was a mere result of fighting inflation is questionable, and furthermore, whether inflation was a result of favorable prices to agriculture is even more debatable, as the terms of trade started deteriorating in 1985 increasing the income gap between rural and urban household from 1985 to 1989; while hyperinflation had a strong link with price liberalization and changes in the dual track system. Nonetheless, this is an important point to be made, i.e., that the effects in the terms of trade of pricing policies aimed at increasing rural income (or urban income), while softening conflicts with peasants, intensify them among urban workers (and vice-versa). The materialization of

[61] "Prior to 2010, the proportion of protests involving demands for higher wages and improved working conditions hovered between nine and 17 percent. In 2010, the proportion of such protests rose dramatically to 30 percent, largely because of the wave of strikes at automotive components plants and other industrial enterprises across the country" (CLB, 2012, p.14).

changes in relative prices as gains or losses is, however, different for peasants as small commodity produces – which might not hold true for contract farming relations – and for workers. Not only in the obvious sense that the impacts are *ceteris paribus* opposite, but most importantly in the existence or not of a second instance of determination in the effectuation of relative prices' changes on real income.

For peasants as small commodity producers, changes in the relative prices are directly expressed in their real income in as much as they appropriate all the product of their labor (abstracting taxation and subsidies); whereas for workers, the repartition of the product of their labor among wages and profits, for a given productivity, means that the impacts of a modification in the terms of trade in a particular direction might be offset, more than compensated or enhanced by changes in the distribution among wages and profits, and the ultimate result is contingent on class struggle and the prevailing institutions. In this sense, even in the presence of deteriorating terms of trade for industrial workers, real wages rose in the manufacturing sector for not only workers increasingly fought capital, but also the state promoted institutional changes aiming to create some support to rural migrant laborers in an effort to curb labor unrest.

Even though the minimum wage was passed in 1994 along with the *Labor Law*, labor legislation was not enforced and minimum wages were far lower than the required for living, entailing the need for substantial overtime work (CLB, 2012; CLB, 2016b). For instance, the Labor Law stipulated that on top of the 40 hours of regular work a week, overtime could not exceed three hours a day and 36 hours a month (CLB, 2012), which blatantly was never enforced in the case of rural migrant workers. In 2004, the central government finally launched regulations for calculating the minimum wage and its adjustment, which was recommended for each two years (CLB, 2016b). Minimum wages should be established in 40% to 60% of average regional wages, also making them vary largely across the country (CLB, 2016b). The regulations regarding minimum wages served as a landmark for its significant increase throughout the decade, even though CLB highlights that during the 2008-2009 crisis many regional governments did not promote the adjustments and that in 2015 the proportion of minimum wages in the country was around 30% of the average wage, as was the case in the previous five years (CLB, 2016b). Notwithstanding, CLB (2016b) assessed that the target of the 12th Five Year Plan of increasing minimum wages yearly on average of 13% seemed to be met.

Besides the minimum wage, the central government passed a series of labor legislations in the second half of the 2000s. On the one hand, the party-state has sought to institutionalize conflicts though a system of labor dispute arbitration, which pre-empts protests and individualize grievances (SO & CHU, 2015). On the other hand, it promoted intensive legal activity regarding social security – in which the *2008 Labor Contract Law* was a landmark – that should also cover rural migrant workers. Social security was further codified in a national framework by the 2011 Social Insurance Law, providing five different insurance funds – pension, medical, unemployment, maternity and work-injuries – plus a housing provident fund to all workers (CLB, 2016a). Funds are managed locally and employers should contribute to all, while employees do not contribute to the maternity and work-related injuries funds (CLB, 2016a). The rates are different not only among employees and employers but also vary across localities. Although workers are guaranteed portability of their accounts in funds through different localities, in practice this has turned out to be really difficult, posing serious problems for those few rural migrant workers which are actually secured: "in general, as with nearly all labour legislation in China, enforcement of the *Social Insurance Law*, even its most basic provisions, has been very lax, and the majority of workers are still denied the social security benefits they are legally entitled to" (CLB, 2016a).

Table 2.1 – Ratio of social security coverage among outside location manufacturing rural migrant workers (2012) and all manufacturing rural migrant workers (2014)

	Injury	Medical	Pension	Unemployment	Maternity	Housing
2012	28,9%	18,5%	15,2%	8,1%	5,3%	-
2014	34,2%	22,1%	21,4%	13,1%	9,3%	5,3%

Source: National Monitoring Survey Report on Rural Migrant Workers (2012, 2014) [in Chinese]

The RRMW has provided data for social security coverage in 2012 and 2014. Table 2.2 shows the percentage of social security coverage among rural migrant workers in manufacturing, with data for 2012 being accrued to rural migrant workers out of their localities, while 2014 is related to the total of rural migrant workers. Although the manufacturing sector presents the highest rates of coverage among rural migrant workers, they are still very low. The social security item which stands out in terms of coverage is the injury insurance, whose low rate as percentage over wages was of 0,4% to 3% compared to

the 20% required from employers to the pension insurance (LIVERMORE, 2012) serves to insure also the employer from an eventual legal process that could lead to high expenses.

Despite all the institutional changes promoted by the central government to curb labor unrest and increase consumption in the country, capital has found many ways to evade them: from reducing benefits when minimum wages increased, using labor dispatch agencies and hiring workers as interns to simply relocating – in many cases to China's interior provinces – without due compensation and even leaving behind unpaid past wages. Labor unrest in manufacturing export zones not only kept high, but also experienced a peek in 2015 (CLB, 2016c). If in 2010 workers were in the offensive, labor was put in the defensive again as quickly as from mid-2011 onwards, as relocation and closures rose significantly materializing in high incidence of wage arrears and mass lay-offs without compensation (CLB, 2014), especially in 2015.

It should be reminded, though, that the party-state strategies to control labor unrest were not just summed up into promoting institutional changes aimed at increasing wages and improving social security, by which the party-state tries to appear as the protector of workers (and peasants), such as it seems in Hung (2013):

> The resistance of the new generation of capitalist workers who worked in the export sector in the 2000s is now gaining leverage in shaping the development of Chinese capitalism. If their virtuous interaction with reformers at the center of the party-state manages to deepen its success in breaking the resistance of local vested interests against labor-friendly reforms, the trend of empowering capital and disempowering labor that has been the norm for more than three decades of Chinese capitalist development will see a reversal for the first time. The impact of the struggles of workers in Foxconn and other factories goes far beyond the rights and wellbeing of the workers alone. These struggles will help shape the Chinese model of development in the years to come. (HUNG, 2013, p.211)

Increased repression has been used against workers and their political expression through independent trade unions. The "Stability Fund" destined to internal security has quickly increased overpassing expenditure with national defense, as in 2011 the former amounted to U$ 111 billion whereas the latter reached U$ 106 billion (SO & CHU, 2015). The party-state has implemented a vast set of strategies to contain social conflicts in China, as it "devised policies to create social divisions within the working class, had imposed political repression to disorganize the working class, had set up labor legislations to pre-empt labor protests, had adopted the tactic of accommodation to diffuse labor protests, and had

maintained a moral high ground by shifting the blame to lower-level officials" (SO & CHU, 2015). Moreover, it presented laborers' increased struggle and demands for better wages and working conditions as if they were an oeuvre of the state on their benefit:

> The result is that when the state does intervene on behalf of workers — either by supporting immediate demands during strike negotiations or passing legislation that improves their material standing — its image as "benevolent Leviathan" is buttressed: it has done these things not because workers have demanded them, but because it cares about "weak and disadvantaged groups" (as workers are referred to in the official lexicon).Yet it is only through an ideological severing of cause from effect at the symbolic level that the state is able to maintain the pretense that workers are in fact "weak." Given the relative success of this project, the working class is political, but it is alienated from its own political activity. (FRIEDMAN, 2012)

The intensification of peasants' and workers' confrontation with the state and capital has repercussed in the increase of labor's share on GDP, which had been falling due to transition to capitalism, particularly after the huge process of privatization of the urban economy in the mid-1990s. From 1995 to 2007, the labor share on GDP felt from 51,4% to 42,4%, tough rose to 45,6% in 2012 (QI, 2014). After all, much of the rebalancing story of increased consumption put forward by the CCP might not be such a concern with realization problems, but more of a recognition that the fast paced process of capital accumulation based on peasant-workers' real income stagnation as both peasants and workers[62] was increasingly becoming politically unviable. On the one hand, the first priority of the CCP is to stay in power; on the other hand, profits, before being realized, need to be produced, and class struggle in China was becoming increasingly dangerous for both of them[63].

[62]It should be highlighted that most of rural household real income increase in the 1990s until 2004 was due to the compositional effect of increased proletarianization of rural families, whereas peasants-workers being just farmers experienced real income stagnation, and peasants-workers being just sellers of their labor power also experienced real wage stagnation.

[63] Nevertheless, the CCP's policies and institutional changes supporting laborers, a response to growing social unrest, were far from being a consensus inside the party-state; whereas the Finance Minister Lou Jiwei (*apud* GRIFFITHS, 2016) criticized the 2008 Labor Contract Law for being "'unbalanced' and overprotective of workers" (GRIFFITHS, 2016), the Minister of Human Resources and Social Security, Yin Weimin (*apud* GRIFFITHS, 2016), attacked the law for generating "lack of flexibility in the labor market and high labor costs for employers" (GRIFFITHS, 2016).

Chapter 3. FROM STAGNANT TO GROWING WAGES: EVOLUTION OF EMPLOYMENT AND LABOR COMPENSATION COSTS IN THE MANUFACTURING EXPORT SECTOR

China's transformation in the 'factory of the world' and Guangdong's in the Manchester of neoliberal era was predicated in the invitation made by the CCP to advanced countries' productive capitals to access the vast industrial reserve army the party-state had been creating in the country. A literate labor force already habituated with hierarchical command and production targets – not only by the factory discipline of the socialist period, but also by the verticalized structures of decisions in the communes – temporarily/increasingly abandoned the peasant life to become the backbone of China's active industrial army, fueling the manufacturing export boom in the costal Southeastern regions where international productive capitals were accommodated in Special Economic Zones.

Notwithstanding, as peasant-workers in both their realities started fighting back the state and capital, the stagnant farm real incomes underlying the process of proletarianization and the stagnant real wages at the basis of China's transformation in the factory of the world were undermined. The high-sound complaints from transnational corporations due to wage increases, the panic and fuzz international capitals made because the lowest of wages were not eternal – because peasant-workers would not accept it forever – reverberated across the globe through their many spokespersons in mainstream academics and media, who soon would declare the 'end of the surplus labor era'. On the one hand, Chinese peasant-workers demonstrated to the world that the labor movement is not dead in the neoliberal era and can fight back conquering gains; on the other hand, capital also showed that the increased freedom achieved through neoliberal globalization meant it could quickly implement many strategies to evade the constraints put by the working class and the state.

In this context, the objective of the present chapter is to discuss the evolution of China's manufacturing employment and labor compensation costs over the last years, particularly of its export sector, aiming to assess *i*) how the transformation of the country in the factory of the world was manifested in terms of manufacturing employment; *ii*) how growing wages in manufacturing and social security rights since mid-2000s were translated in terms of rising manufacturing labor compensation cost in dollars, a central parameter along with productivity determining transnational corporations decisions of offshoring and

outsourcing; and *iii*) how increasing manufacturing labor compensation costs might have impacted manufacturing employment in terms of both growth and sub-sectorial composition.

That means, we aim to assess these transformations based on China's official available data, which implies that our analyses are limited both by the shortfalls of official data with all their problems of constantly changing definitions and incongruences – manifested in a multiplicity of breaks in employment series, overlapping or incomparable sets of data – and by the paywall, as in some cases it proved easier to pass the Chinese language barrier than the money one. Furthermore, we will have as methodological reference the research developed by Judith Banister (2005) for the US Bureau of Labor Statistics (BLS) program of international comparison of labor compensation costs, for the detailed and careful scrutiny the author made on official Chinese data, which was followed by a series of papers coauthored with Erin Lett and George Cook (LETT & BANISTER, 2006; LETT & BANISTER, 2009; BANISTER & COOK, 2011).

Nonetheless, as the program was terminated in 2009 due to US federal government budgetary cuts, the author provided the last estimates on manufacturing employment and labor compensation costs for the reference year of 2009, while revising the whole set of previous estimates (BANISTER, 2013). In this context, on the one hand, we extend the estimates to posteriors years whenever possible by applying the same methodology; on the other hand, we discuss the recent changes in the coverage of official employment and wage categories that impose obstacles to construct estimates with the mentioned methodology from 2013 onwards, while exploring new official data sets made available by the NBS on the urban informal sector and rural migrant workers.

3.1 EVOLUTION OF MANUFACTURING EMPLOYMENT

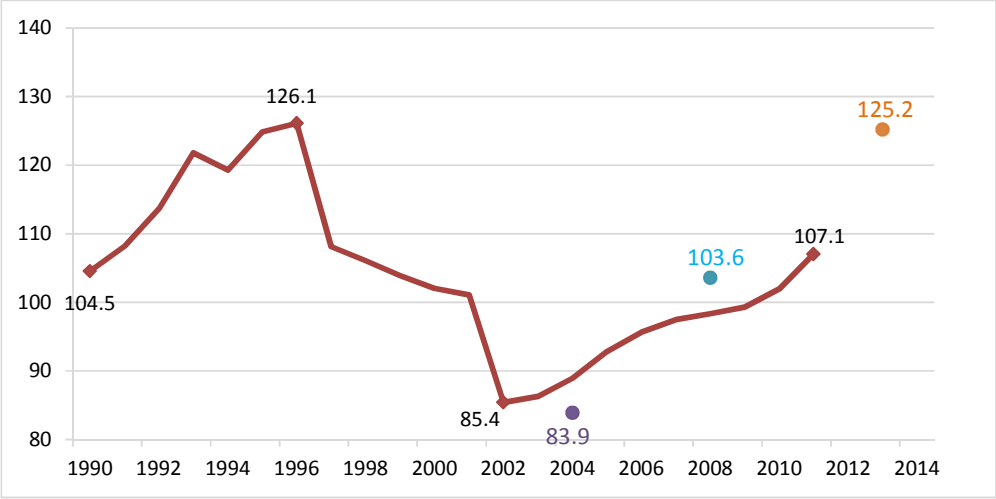
As we discussed previously, China's industrialization was a phenomenon that took place in both rural and urban areas and FDIs' entrance in the country was not restrained to the latter. Particularly in coastal export regions, for wages and labor legislation diverged from rural to urban areas, foreign capital also searched to be installed in the rural outskirts of exporting zones. Graph 3.1 shows the evolution of annual aggregate manufacturing employment considering both TVEs – formal and informal – and the urban formal sector for the period 1990 to 2011 in comparison to data on manufacturing employment from the three National Economic Censuses performed for the reference years of 2004, 2008 and 2013.

Appendix D.1 explains the methodology and data problems for the measurement of aggregate manufacturing employment.

By 1990, when inflows of FDI and migration to urban areas were still incipient processes, China already had an enormous manufacturing sector in terms of labor absorption, accounting for 104,5 million persons. In the first half of the 1990s, TVEs were blooming and manufacturing employment grew to its peak of 126,1 million workers in 1996. The process of privatization and lay-offs in urban collective and state-owned enterprises that took place in the second half of the 1990s until around 2002 were expressed in a drastic contraction of manufacturing employment, which was reduced to the historical low of 85,4 million workers. Nonetheless, it should be noted that from 2001 to 2002 there is an important break in the series, with the exclusion of self-employed TVEs from data.

Graph 3.1 – Manufacturing employment

(employed persons in manufacturing, in millions)



Sources: Banister (2005, 2013), Communiqué on Major Data of the First National Economic Census of China No.1 (2005), Communiqué on Major Data of the Second National Economic Census of China No.1 (2009), Communiqué on Major Data of the Third National Economic Census of China No.1 (2014), China TVE Statistical Yearbook (2011, 2012) [in Chinese], China Statistical Yearbook (several editions).
Notes:
(1) The manufacturing employment from 1990 to 2011 was composed by *i*) 'staff and workers' and TVE manufacturing employment, year-end figures, from 1990 to 1993; *ii*) urban units and TVE manufacturing employment, year-end figures, from 1994 to 2001; *iii*) urban units (year-end) and TVEs manufacturing employment without self-employed individuals (average figures provided by Banister, 2013), from 2002 to 2009; and *iv*) urban units and TVEs manufacturing employment without self-employed individuals, year-end figures, for 2010-2011.
(2) Dots are data from National Economic Censuses.
(3) Series brakes in 1997, 1998 and 2002.

From 2002 onwards, manufacturing employment started to consistently recuperate. In 2011, the number of workers employed in manufacturing finally overpassed the level experienced in 1990, with 107,1 million persons, and in 2013, according to the Third National Economic Census, the historical peak of employment registered in 1996 was practically recomposed, with 125,2 million employed persons. As data after 2001 do not include the self-employed in TVEs and the mid-1990s numbers are inflated by the counting of laid-off workers as employed persons – as discussed in chapter 1 –, manufacturing employment registered in the first half of the 2010s expressed far higher levels than in the first half of the 1990s. For instance, the Third National Economic Census counted 9,4 million persons employed by licensed self-employed units in manufacturing, totaling 134,5 million persons employed in manufacturing in 2013 (NBS, 2014). For annual data after 2011, we need to decompose employment in manufacturing in its different official categories, allowing us also to analyze it by rural/urban and formal/informal dichotomies (graph 3.2). This decomposition also enables to better gauge the major trends described above.

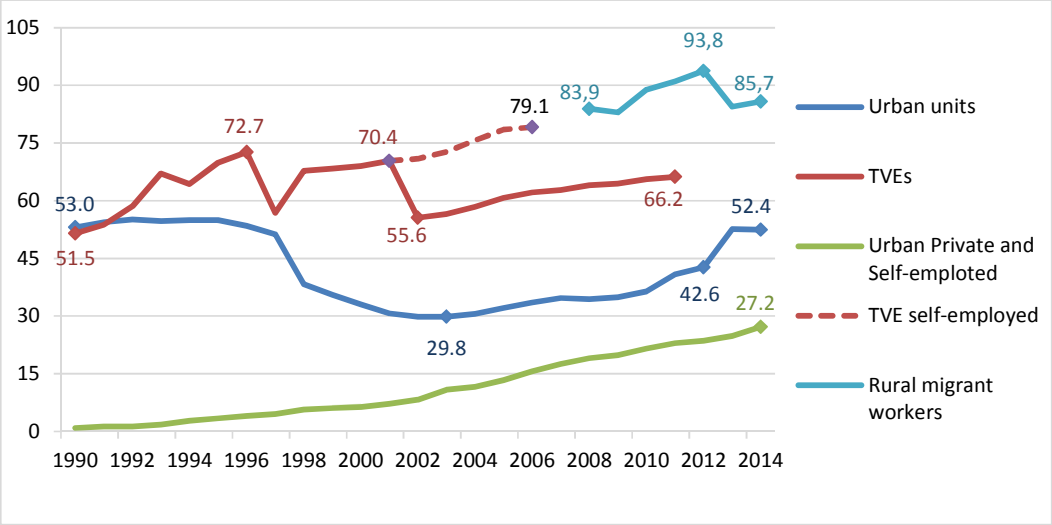
In 1990, manufacturing employment in rural and urban areas was virtually equal, with the latter being synonymous with urban formal sector (urban units). Since then, manufacturing employment in TVEs presented much higher levels than formal urban manufacturing employment. As we did not have direct access to sectorial TVE data decomposed by type of ownership, it was not possible to separate self-employed TVEs (and private TVEs) from TVEs manufacturing data for the period 1990-2001. But it is quite probable that a substantial part of manufacturing employment growth in TVEs between 1990 and 1996 was accrued to self-employed TVEs. This is suggested by the sharp decline of TVEs employment in 1997, which marked not only the end of their golden age period, but also a break in the series. Though the following trend is one of reduction, in 1997 occurred the exceptional exclusion of firms bellow designated size from reporting, which probably excluded all self-employed TVEs along with other small sized firms.

Manufacturing employment in self-employed TVEs definitely contributed to swallow TVEs' manufacturing employment numbers as can be assessed by the difference in the dotted TVE series from the full traced TVE series in the 2002-2006 period. Regardless of this differentiation, in the second half of the 1990s up to 2001, TVEs manufacturing employment exhibited a much less pronounced decrease when compared to the urban formal sector. In contrast, the period 2002-2011 was marked by rising TVE employment in manufacturing,

without self-employment, increasing from 55,6 to 66,2 million employed persons from 2002 to 2011.

Graph 3.2 – Manufacturing employment by official statistical categories and rural migrant workers' employment in manufacturing

(employed persons in manufacturing in urban units, in TVEs, in urban private enterprises and self-employed individuals and rural migrant workers employed in manufacturing, in millions)



Source: Banister (2005, 2013), China Statistical Yearbook (several editions), China TVE Statistical Yearbook (2011, 2012) [in Chinese], National Monitoring Survey Report on Rural Migrant Workers (2013, 2014) [in Chinese].
Notes:
(1) Data for urban units from 1990 to 1994 refers to staff and workers employed in urban units. There are breaks in urban units' series in 1998 and in 2013.
(2) Data on TVEs (with and without self-employed) until 2009 are from Banister (2005, 2013) and are average annual figures, while data for 2010 and 2011 are from TVE yearbooks referring to year-end figures, therefore there is a minor source of inconsistence between TVE data for 2010 and 2011 and previous years. There are breaks in the full-traced TVEs series in 1997, with the exclusion of TVEs below a certain size, and 2002 due to the exclusion of TVEs self-employment. Whereas TVEs below a certain size were reintegrated in the full-traced series in 1998, self-employed TVEs exclusion in 2002 was made permanent. After 2001, TVE self-employment can be gauged by the semi-traced series.
(3) Data on rural migrant workers employed in manufacturing were obtained by applying the proportion of rural migrant workers employed in manufacturing over the total number of rural migrant workers.

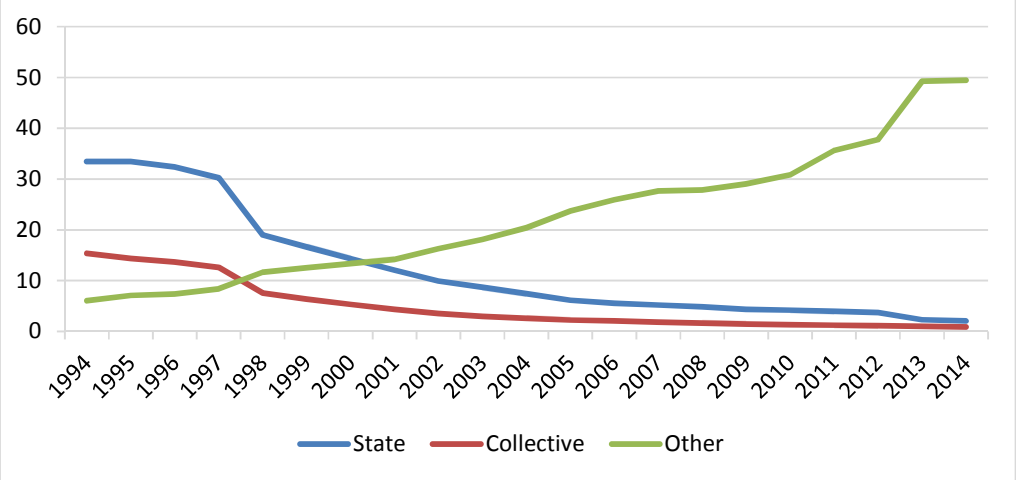
The most remarkable trend in graph 3.2 is the sustained increase in the informalization of urban manufacturing employment (urban private enterprises and self-employment), which grew in absolute numbers year-to-year, from almost zero in 1990 to 27,2 million employed persons in 2014, regardless of the global financial crisis and the recent deceleration of Chinese growth. Unfortunately, we are not able to decompose it in self-employment and private enterprises, but the graph shows that the domestic industry, with its lower pay and

worst working conditions, has become an increasingly important outlet for manufacturing employment. International estimates for manufacturing employment underlying calculations of unit labor compensation costs tend to exclude both self-employment and private enterprises, a procedure that seems consistent with the idea that these are not the relevant labor costs for greenfield FDI. Notwithstanding, further investigation on these types of employment in China is needed to assess if and in which extent they might be linked to outsourcing schemes of major international brands, such as in clothing or footwear.

In contrast, manufacturing urban formal employment in 2014 when compared to the first half of the 1990s became not only lower in proportion to total manufacturing employment but also in absolute numbers. Considering that there is a break in the urban formal sector series in 2013, when part of large scale TVEs were incorporated in urban units' data provoking a significant increase in the latter, manufacturing urban formal employment was never recomposed from its peak before the mass lay-offs and privatizations that started in the second half of the 1990s.

Graph 3.3 – Manufacturing employment in the urban formal sector by type of ownership

(employed persons in state-owned units, collective-owned units and other units, in million)



Source: China Statistical Yearbook (several editions)
Note: Series break in 1998 for collective-owned and state-owned enterprises. Series break in 2013.

Manufacturing employment growth in the private urban formal sector, although manifesting a strong trend of growth from 1994 to 2012 – prior to the inclusion of large TVEs

– was not enough to generate as much manufacturing urban formal employment as state-owned and collective-owned urban units did in the first half of the 1990s (graph 3.3). In 1995, urban collective-owned and state-owned units employed 47,9 million workers in manufacturing, while in 2012, other type of ownership units of the urban formal sector employed 37,8 million persons. As we should recall form chapter 1, these numbers do not fully reflect the state's share on manufacturing employment, as state joint ownership enterprises and state sole funded limited liability corporations are not deemed as SOEs, neither mixed ownership enterprises controlled by the state, which are considered as state holding enterprises.

The recovery in urban formal employment in manufacturing after 2002 (graph 3.2) was followed by stagnation during the global financial crisis, when employment in the category remained flat between 2007 and 2009, resuming growth in the period 2010-2012. It is possible that employment in the urban formal sector would be flat in 2013 if not for the upward impact of data reclassification, as stagnation was verified in 2014. Were it not for the inclusion of large TVEs data on urban formal manufacturing employment, it is quite possible that formal urban sector employment in manufacturing would reflect the trend perceived in rural migrant workers' employment in manufacturing for the period 2008-2014, as there is a possible overlap among the categories. As large lay-offs and closures were reported by the end of 2015 in private sector enterprises in manufacturing export zones, and the Chinese government announced its plans in the beginning of 2016 of laying-off 1,8 million laborers in the manufacturing of coal and steel (YAO & MENG, 2016), the trend in formal urban manufacturing employment for the 2015-2016 period probably will be of stagnation or decline, the same being valid for migrant workers' employment in manufacturing sector.

We do not know the extent in which rural migrant workers overlap with the other categories of official employment data, possibly partially overlapping with each of them and partially not being accounted by any of them, as the proportion of migrants with signed contracts assessed by the RRMW suggests (table 3.1). In 2011-2012, the proportion of rural migrant workers out of their localities in manufacturing with signed contracts was slightly more than half, even though manufacturing tends to have higher incidence of signed contracts than construction and services, the proportion should be much lesser when accounted for rural migrant workers within their localities, which drags down the ratio of signed contracts for the overall rural migrant workforce.

Table 3.1 – Percentage of rural migrant workers with signed contract

(all rural migrant workers, rural migrant workers outside locality and rural migrant workers in manufacturing outside locality, in percentage)

	total	out locality	manufacturing out locality
2011	-	43,9%	50,4%
2012	-	43,9%	51,2%
2013	38,1%	41,3%	-
2014	38,0%	41,4%	-

Source: National Monitoring Survey Report on Rural Migrant Workers (2012, 2013, 2014) [in Chinese]

Despite the fact that we do not know the extent in which rural migrant workers are accounted in official employment annual data, rural migrant workers appear as the single most important category of manufacturing employment. In 2008, 83,9 million rural migrant workers were employed in manufacturing (graph 3.2). With the sector's recovery from the global financial crisis in the 2010-2012 period, employment of rural migrant workers grew from 83,0 to 93,8 million persons to subsequently fall to 84,8 million in 2013 with the economic slowdown of China and foreign capital's relocations out of the country. While such variations in manufacturing employment in other categories generally represent statistical breaks, in the case of rural migrant workers it actually shows the enormous flexibility they confer to capital accumulation in China's manufacturing that, for instance, can expand in almost 6 million workers or decrease in 9 million for one year to another by recruiting rural migrant workers to the active industrial army or throwing them back in the industrial reserve army as capital needs and dictates. Being the backbone of the active industrial army, particularly in the export sector, rural migrant workers' level of employment in manufacturing tends to express the fullest the swings of the industrial cycle and is the better thermometer to assess industrial dynamics in China.

3.1.1 Employment in manufacturing zones

Since manufacturing wages started hiking in mid-2000s, a lot has been said about foreign investors flying away from the traditional Special Economic Zones and relocating their manufacturing plants to China's central provinces where wages are lower. Although our data is limited to the formal urban sector, if anything, manufacturing employment concentration in the traditional export zones has increased in the period 2004-2014, despite of

higher wage levels assumed in these regions. The traditional manufacturing export zones are composed by the Pearl River Delta, in Guangdong, by the Yangtze River Delta, encompassing Shanghai, Jiangsu and Zhejiang, and by Fujian, for its proximity to Taiwan. In 2004, the participation of the mentioned export zones was 33% of urban formal manufacturing employment (table 3.2), whereas in 2012 concentration of employment in this zones had risen to 41,9%. Inclusion of large TVEs in urban formal employment data has revealed an even further absorption of manufacturing employment in the main export zones, with 45,6% of total urban formal manufacturing employment in 2013. Even in face of the stagnation of the latter in 2014, traditional manufacturing export zones grew to represent 46,3%.

Table 3.2 – Main regions in participation in manufacturing urban formal employment
(urban units' manufacturing employment in Guangdong, Shandong, Jiangsu, Fujian, Zhejiang, Henan and Shanghai, in percentage of total urban units manufacturing employment and rank position in terms of employment)

	2004		2012		2013		2014	
	%	P	%	P	%	P	%	P
Guangdong	10,4	1	12,7	1	19,4	1	19,4	1
Shandong	9,2	2	9,3	2	8,3	3	8,1	3
Jiangsu	7,6	3	8,4	4	10,6	2	11,7	2
Fujian	6,0	4	6,9	5	4,8	6	4,7	6
Zhejiang	5,1	5	8,7	3	6,8	4	6,7	4
Henan	5,0	6	5,1	7	5,9	5	6,4	5
Shanghai	3,9	10	5,1	6	4,0	7	3,9	7
Sum of SEZ	33,0		41,9		45,6		46,3	

Source: China Statistical Yearbook (several editions)
Note: "P" stands for the position of the region in the rank of employment, whereas "SEZ", for special economic zones.

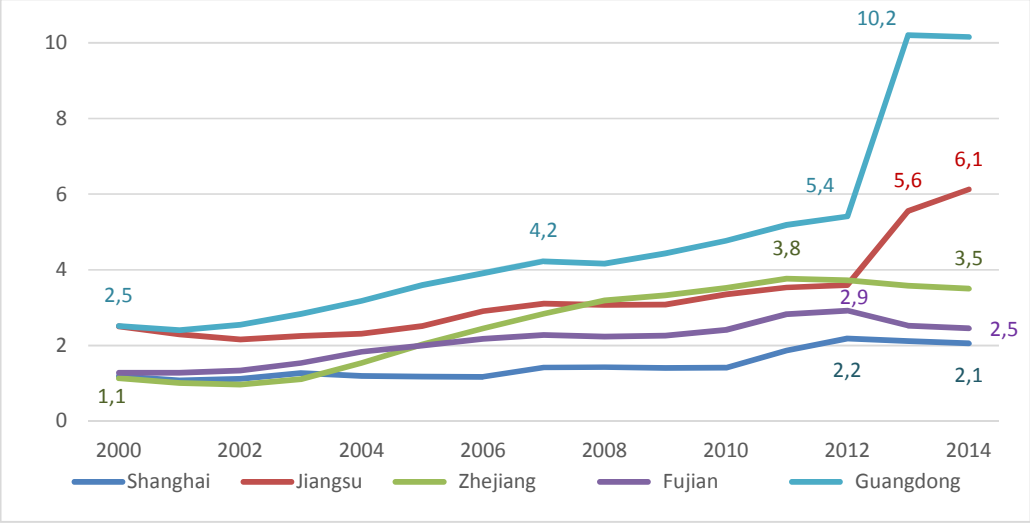
Apart of established traditional export regions, table 3.2 also shows the importance of Shandong and Henan for manufacturing employment. While the former is located on the Eastern region along with all traditional export zones, the latter is part of the Central one. Both are marked by heavy and processing food manufacturing – the latter particularly in Henan, which produces a significant share of China's agricultural output – that are more closely connected with China's domestic market, although they also have a significant export manufacturing sector. Currently Henan has been experiencing fast growth of FDI inflows and of high-tech industries, becoming home for Foxconn relocation away from Shenzhen in Guangdong. Even if relocation of export industries towards central regions has been

occurring, the traditional manufacturing export zones not only still largely account for most of China's urban formal manufacturing sector, but also have been growingly done so despite of rising wages.

Graph 3.4 exhibits the evolution of urban formal employment in the traditional export manufacturing regions between 2000 and 2014. In 2000, two clusters of regions can be assessed in terms of employment absorption, Guangdong and Jiangsu – with 2,5 million persons each – and Zhejiang, Fujian and Shanghai, employing slightly over one million persons each. Just at the beginning of the 2000s, Guangdong took off as China's main manufacturing export zone. Urban formal manufacturing employment in the latter rose fast between 2001 and 2007, to achieve 4,2 million persons. After stagnation on employment in 2008, labor absorption in Guangdong's resumed growth but in a slower pace from 2009 onwards. Inclusion of large TVEs showed that the region had significant rural industrialized outskirts, with employment leaping from 5,4 to 10,2 million between 2012 and 2013. Apart from the impact of the global financial crisis in 2008, Guangdong's employment in manufacturing has risen since 2001, despite of the rising wages experienced since around 2004, when it finally showed signal of stagnation in 2014.

Graph 3.4 – Manufacturing employment in the urban formal sector of traditional export zones

(urban units' manufacturing employment in Shanghai, Jiangsu, Zhejiang, Fujian and Guangdong, in million)



Source: China Statistical Yearbook (several editions).
Note: Series break in 2013.

According to CLB (2014), Guangdong provincial government, in the context of rising wages, has been actively stimulating low-end manufacturing to leave the Pearl River Delta as it plans to move towards high-tech manufacturing. The publication also cites the announcement of Shenzhen's city government, which targeted as strategic six industries – namely, IT, telecommunications, the cultural and creative industry, new energy, new materials and biotechnology:

> In the next five years, Shenzhen will clean up low-end enterprises that are unlicensed and have serious safety risks, high pollution, and high energy consumption. By the end of 2013 we will free up five million square meters of industrial development space; by 2015, 7.5 million square meters will be made available. (Shenzhen Municipal Government *apud* CLB, 2014, p.10)

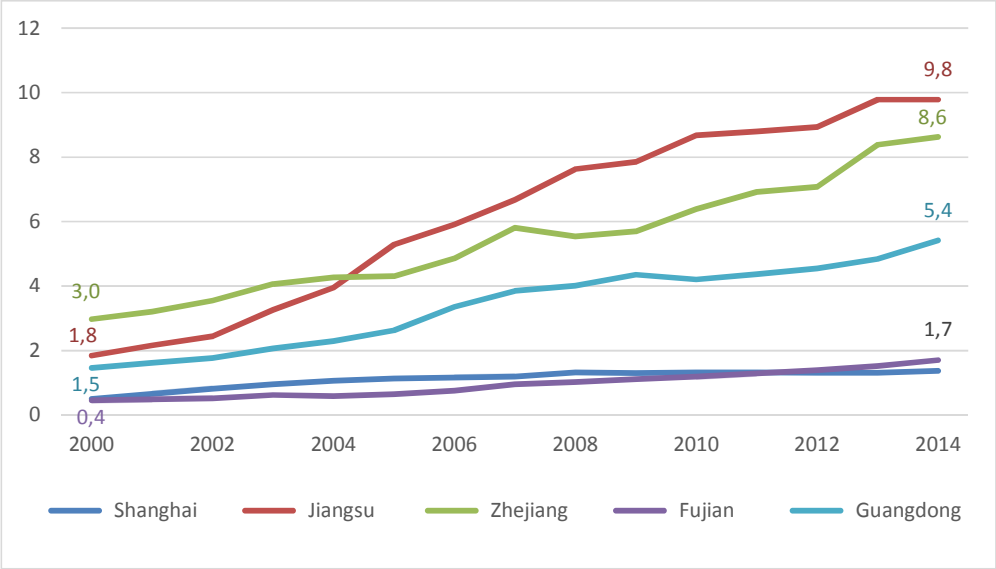
In contrast, Jiangsu, Fujian and Shanghai experienced manufacturing employment stagnation in the second half of the 2000s, particularly from 2007 onwards, while resuming growth in the first years of the 2010s. Nonetheless, while Jiangsu had a significant rural manufacturing sector, expanding employment in 2013 and being the only of the traditional export zones to increase employment in 2014, with a total of 6,1 million employed persons, both Fujian and Shanghai along with Zhejiang – the only region which employment grew throughout the global crisis – saw their levels of manufacturing employment in the urban formal sector decline from 2012 to 2014.

While manufacturing urban formal employment stagnated in almost all traditional export regions during the global financial crisis to then resume growing, it began to actually decline in the period 2012-2014 for the first time after one decade in most of the traditional export manufacturing zones and stagnate in Guangdong, whereas the only exception was Jiangsu, where employment kept growing. Taken together, these patterns are largely compatible with the one seen in rural migrant workers' manufacturing employment between 2008 and 2014.

In contrast, manufacturing employment in private enterprises and self-employed individuals – for both urban and rural areas –, in these same regions, grew for the period as a whole in all of them (graph 3.5).

Graph 3.5 – Manufacturing employment in the informal sector of traditional export zones

(number of engaged persons in manufacturing private enterprises and self-employed individuals in Shanghai, Jiangsu, Zhejiang, Fujian and Guangdong, in millions)



Source: China Statistical Yearbook (several editions)

In the case of Jiangsu, the manufacturing informal sector surpassed by far the urban formal sector, employing 9,8 million persons compared to 6,1 in the urban formal sector in 2014. Zhejiang was the only case in which the informal sector was already larger in terms of manufacturing employment than the urban formal sector in 2000, nonetheless, in 2014, the latter represented only 40,7% of the former, which accounted for 8,6 million persons in contrast to 3,5 million employed in the urban formal sector. Guangdong, Fujian and Shanghai presented in 2014 higher levels of manufacturing employment in the urban formal than in the informal sector, with Guangdong being the only main export region in which urban formal manufacturing employment far exceeded both in proportion and in absolute numbers manufacturing employment in the informal sector, an excess of 89% or 4,8 million persons.

3.1.2 Recent transformations in the sub-sectorial composition of manufacturing employment

Although aggregate manufacturing employment rose in China since 2002, when the strong shocks of collective and state-owned enterprises' privatizations and lay-offs had

mostly been absorbed, this trajectory hide a significant transformation in the sub-sectorial structure of manufacturing employment after the end of the era of stagnant wages, around 2004. On the one hand, this change reflects China's effort in attracting FDI in and developing indigenous high-tech manufacturing; on the other hand, the shift expresses the uneven impact of rising labor costs across different manufacturing subsectors, with the labor-intensive ones being more affected.

Table 3.3 – Manufacturing employment by main sub-sectors

(number of employed persons, participation in total manufacturing employment and rank in manufacturing employment, in million, percentage and position)

	2013			2008			2004		
	persons	%	n°	persons	%	n°	persons	%	n°
Total Manufacturing	125,2	100	-	103,6	100	-	83,9	100	-
Computer, Communication Equip. and Other Electronic Equipment	10,3	8,2	1	7,0	6,7	4	4,6	5,5	7
Non-metallic Mineral Products	9,9	7,9	2	9,3	9,0	1	8,7	10,4	1
Electrical Machinery and Equipment	8,4	6,7	3	6,2	6,0	6	4,6	5,5	5
General Purpose Machinery	7,9	6,3	4	7,2	6,9	3	5,4	6,5	3
Textile Wearing Apparel and Accessories	7,5	6,0	5	6,4	6,2	5	5,0	6,0	4
Metal Products	6,6	5,3	6	5,0	4,8	9	3,6	4,3	9
Textile	6,6	5,3	7	8,0	7,8	2	7,9	9,4	2
Raw Chemical Materials and Chemical Products	6,6	5,2	8	5,6	5,4	8	4,6	5,5	6
Automobile	5,3	4,2	12	5,8	5,6	7	4,4	5,3	8
Railway, Ships, Aerospace and Other Transportation Equipments	2,4	1,9	-						
Sum	71,5	57	-	60,5	58	-	48,9	58	-

Sources: Communiqué on Major Data of the First National Economic Census of China No.2 (2005), Communiqué on Major Data of the Second National Economic Census of China No.2 (2009), Communiqué on Major Data of the Third National Economic Census of China No.2 (2014)

In 2004, the main subsector in terms of labor absorption was the manufacture of non-metallic mineral products (10,4%), marked by the substantial presence of the state and mostly responding to the internal dynamics of China's economy, particularly by the fast urbanization process experienced in the country[64]. The export sector was second in terms of sub-sectorial manufacturing employment, represented by the textile industry, with 9,4% of total manufacturing employment. General purpose machinery was third, with 6,5% of total

[64] See Medeiros (2010) on the central role played by urbanization in China´s economic growth.

manufacturing employment, followed by textile wearing apparel and accessories (6,0%), another labor intensive export subsector. The subsequent main sub-sectors in terms of employment represented almost the same participation on total manufacturing employment (5,5% to 5,3%), namely, electrical machinery and equipment; raw chemical materials and chemical products; computer, communication equipment and other electronic equipment; and transportation equipment (later split in the automobile subsector and railway, ships, aerospace and other transportation equipment).

After almost one decade this picture had significantly changed. Although the three main sub-sectors remained the same in 2008, employment in computer, communication equipment and other electronic equipment rose to the 4th position (6,7%) to further become the main subsector in 2013, with 8,2% of total employment, increasing from 4,6 to 10,3 million workers in the whole period. Manufacture of non-metallic mineral products felt to the second position in 2013, decreasing its participation from 10,4%, in 2004, to 7,9%, with a slight increase in absolute labor absorption from 2008 to 2013. Surpassing general-purpose machinery, electrical machinery and equipment became the third subsector in terms of employment (6,7%) in 2013, rising from 4,6 to 8,4 million workers between 2004 and 2013.

Finally, the textile industry was the most hit, falling to the 7th position in 2013, with 5,3% of total manufacturing employment. Although it had maintained the second position in 2008, employment in the textile industry had virtually stagnated in absolute numbers from 2004 to 2008, whereas it has decreased in 1,4 million workers from 2008 to 2013, reflecting the industry's relocation towards lower labor costs countries in Asia, particularly to Vietnam and Bangladesh. Worth of mention, employment in the textile apparel and wearing accessories grew throughout the whole period, while the automobile industry, though relevant in terms of employment, still lag behind in the 12th position.

In this context, increased labor costs in China since 2004 have underpinned significant changes in manufacturing employment in terms of industrial specialization, particularly affecting the export sector. The latter became not only the major absorber of labor in manufacturing, surpassing the heavy industry, but also shifted away from labor-intensive industries towards high-tech subsectors.

3.2 EVOLUTION OF MANUFACTURING HOURLY LABOR COMPENSATION COSTS IN DOLLARS

China's hourly manufacturing labor compensation costs in dollars have substantially risen in the last decade due to rising wages in manufacturing. Nevertheless, the formers' increases were much higher than that what workers take home as payment and particularly that what they can buy with it, which constitute the kernel of laborers' concerns. For foreign investors or domestic producers competing in the world market, not only direct wages matter, but also the cash disbursements capitalists need to make, especially regarding employers' contribution to social security, both of them in dollar terms. Given this mismatch, we are going to briefly assess the evolution of nominal and real hourly direct earnings, which matters for workers, before discussing how hikes in nominal wages were translated in even greater dollar disbursements for capitalists, since contributions for social security rose and the yuan continuously appreciated in relation to the dollar.

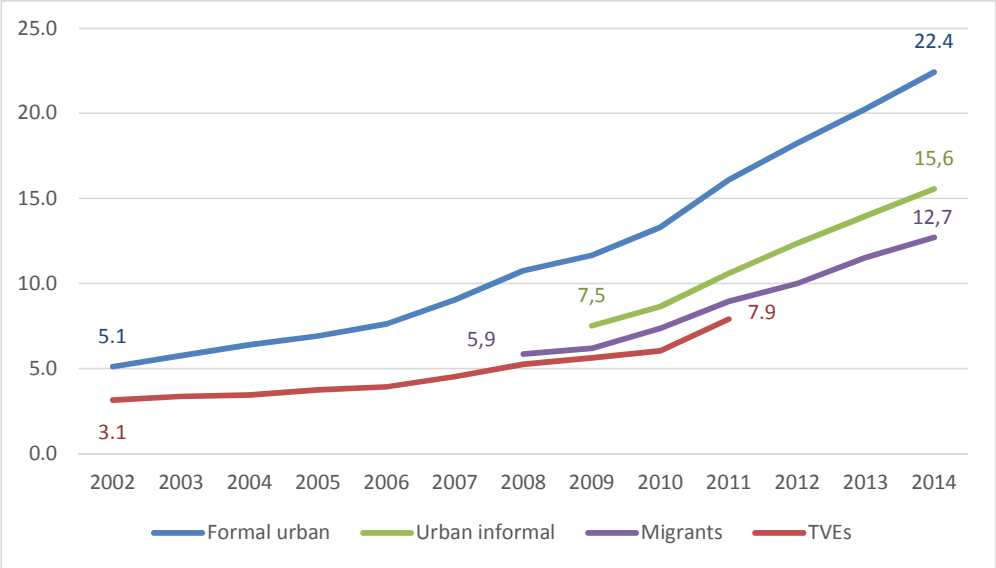
3.2.1 Manufacturing hourly direct earnings

Manufacturing workers' direct earnings per hour have risen substantially throughout the last decade. Although these earnings do not express take home payments, since they encompass also social security contributions that accrue to workers and other charges manufacturers try to impose on laborers in the dormitory-factory facilities, they are the best index for what workers receive in cash by the end of the month or the day. Graph 3.6 exhibits the evolution of hourly direct earnings of manufacturing workers in the different sectors and according to their rural migrant worker status.

Hourly direct earnings in manufacturing rose to all categories of workers for the different time spans in which data are available. Urban formal manufacturing workers' direct earnings increased from 5,1 yuan per hour, in 2002, to 22,4 yuan per hour in 2014. Apart from 2005 and 2009, urban formal manufacturing workers saw their hourly direct earnings increase by double-digit rates every year, expressing an annual compound growth rate of 13,1% from 2002 to 2014. In real terms, these increases were translated in an annual compound growth rate of 10,1% for the same period.

Graph 3.6 – Hourly direct earnings of manufacturing workers

(hourly manufacturing direct earnings in the formal urban sector, in the urban informal sector, of rural migrant workers and in TVEs, in yuan)

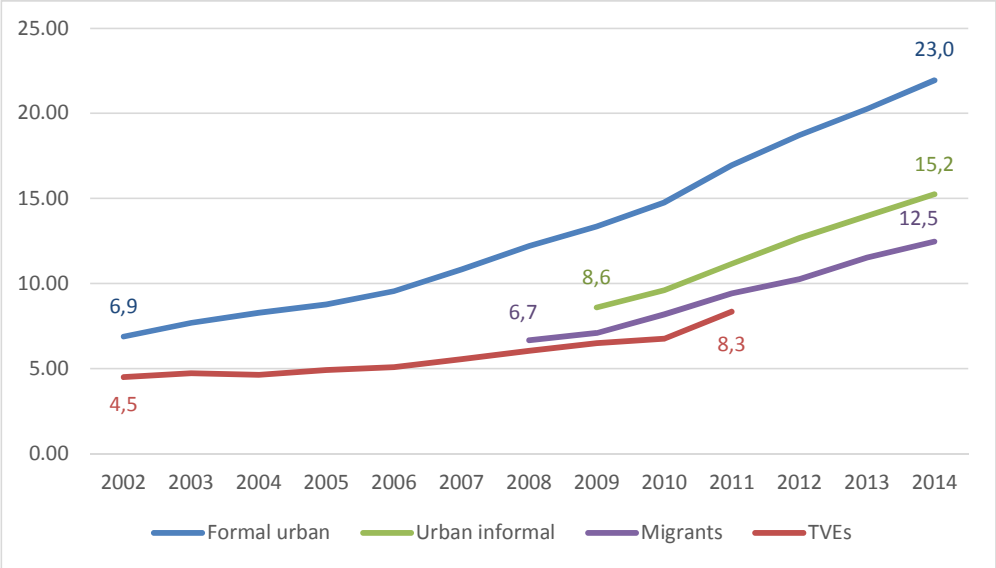


Sources: China Statistical Yearbook (several editions), Banister (2005), Lett and Banister (2006, 2009), Banister and Cook (2011), National Monitoring Survey Report on Rural Migrant Workers (2012, 2013, 2014) [in Chinese].
Notes:
(1) Hourly direct earnings are calculated through a set of assumptions regarding annual hours worked, appendix D.2 specifies the methodology for calculating the latter.
(2) 'Urban formal' refers to urban units; 'urban informal' refers to urban private enterprises
(3) TVE data from 2002 to 2006 and 2008 might include self-employed TVEs in the average annual earnings for manufacturing TVEs.
(4) Estimates on rural migrant workers manufacturing hourly direct wages for 2008 to 2011 and 2013 are based on assumptions regarding the proportion of manufacturing wages to average wages in all sectors derived from 2012 migrant workers' data (see appendix D.2)

In contrast, TVEs manufacturing workers' hourly direct earnings, at the bottom of the manufacturing pay scale, were only 3,1 yuan in 2002, rising to still low 7,9 yuan in 2011, just 49% of what urban formal manufacturing workers received in the same year. Differently from the urban formal sector, TVEs manufacturing direct earnings per hour grew at moderate rates, particularly from 2002 to 2006, revealing double-digit growth only for the 2007-2008 biennium and 2011, when a substantial hike in hourly direct earnings occurred. Whereas between 2002 and 2006, hourly direct earnings of TVE manufacturing workers grew at an annual compound rate of 5,7%, the latter leaped to 15,1% for the 2006-2011 period. In real terms, this pattern was translated in stagnation of direct real earnings per hour from 2002 to 2006 (graph 3.7), followed by substantial growth manifested in a 10,4% annual compound growth rate for 2006 to 2011.

Graph 3.7 – Hourly direct real earnings of manufacturing workers (yuan 100=2013)

(hourly manufacturing direct real earnings in the formal urban sector, in the urban informal sector, of rural migrant workers and in TVEs, in 2013 constant yuan)



Sources: China Statistical Yearbook (several editions), Banister (2005), Lett and Banister (2006, 2009), Banister and Cook (2011), National Monitoring Survey Report on Rural Migrant Workers (2012, 2013, 2014) [in Chinese].
Notes:
(1) Hourly direct earnings are calculated through a set of assumptions regarding annual hours worked, appendix D.2 specifies the methodology for calculating the latter.
(2) 'Urban formal' refers to urban units; 'urban informal' refers to urban private enterprises
(3) TVE data from 2002 to 2006 and 2008 might include self-employed TVEs in the average annual earnings for manufacturing TVEs underlying our estimates (see appendix D.2).
(4) Estimates on rural migrant workers manufacturing hourly direct real wages for 2008 to 2011 and 2013 are based on assumptions regarding the proportion of manufacturing wages to average wages in all sectors derived from 2012 migrant workers' data (see appendix D.2)
(5) Hourly direct real earnings were calculated using i) the price index for urban households in the case of formal urban and informal urban manufacturing sectors; ii) the price index for rural households in the case of TVEs; and iii) the consumer price index for rural migrant workers due to their presence in both urban and rural areas. All these indexes are built for 2013 constant yuan.

Despite not having a complete data set for migrant workers, it is quite probable that real wage stagnation in the first half of the 2000s in TVEs was also experienced among rural migrant workers, not only because their remuneration is very close, but also because the complaints about wage increases by manufacturers around mid-2000s were mostly linked to rural migrant workers, the main source of labor-power from which the industry drawn from. Nonetheless, from 2008 to 2014, rural migrant workers hourly direct earnings in manufacturing more than doubled, rising from 5,9 to 12,7 yuan per hour, exhibiting an annual compound growth rate of 13,8%, or 11% in real terms. Even with all this increase, the pay

gap between rural migrant and urban formal manufacturing workers kept being high, with just a slightly reduction: hourly direct earnings for rural migrant workers were 54,8% of urban formal workers in 2008, whereas this rate was 56,7% in 2014.

Finally, hourly direct earnings in the manufacturing urban informal sector (urban private enterprises) – which have been proliferating in China's general employment structure, in manufacturing employment and, particularly, in manufacturing export zones – were just a little higher than rural migrant workers. In 2009, direct earnings in the manufacturing urban informal sector were 7,5 yuan per hour, more than doubling to 15,6 yuan in 2014, an annual compound growth rate of 15,7% or 11% in real terms.

3.2.2 Hourly manufacturing labor compensation costs in dollars

China's hourly manufacturing labor compensation costs in dollars have substantially risen in the last decade due to rising direct wages and levels of social security and to the sustained appreciation of the yuan relative to the dollar. Nonetheless, calculating hourly labor compensation costs in China's manufacturing is a very tricky endeavor, requiring not only the assessment of the relevant underlying employment series with all their short falls, breaks and possible overlapping, but also the establishment of strong assumptions by the researcher that can lead to significantly different estimates. Judith Banister led the reference research on the topic and her most detailed methodology was described in "Manufacturing Employment and Compensation in China" (2005), which provided original estimates for the reference year of 2002. Afterwards, the author along with Erin Lett and George Cook made follow-ups, for the period 2003-2008. With the cuts in US federal government spending, the program was discontinued and, in a later publication of 2013, Banister published estimates for 2009, while revising the whole series of prior estimates. In contrast with the previous papers, which provided extremely detailed information on the methodology used, the 2013 publication was very synthetic and lacked explicit information on the procedure used by the author in revising her estimates. Appendix D.2 describes how we replicated her estimates for 2002-2009 and further extended.

Recently, two different private profit-oriented entities proposed estimates for China's hourly manufacturing labor compensation costs based in the methodology developed inside the BLS, namely, The Conference Board's program of international labor comparisons (THE CONFERENCE BOARD, 2014) and The Economist Intelligence Unit (EIU, 2014). While our

extension of Banister's (2013) estimates are really close to those produced by The Conference Board (2014), with variations that might account for missing data we had to fill, they are significantly different from The EIU for methodological reasons. The EIU has developed a set of estimates from 2000 to 2012, claiming that their estimates of manufacturing labor costs per hour were "comparable with the manufacturing 'compensation costs' concept used by the BLS to assess labour costs across OECD countries" (EIU, 2014), because:

> We base our measure of labour costs on earnings data published by the NBS for employees of urban manufacturing firms and TVEs. The NBS defines earnings as direct wages plus social insurance, housing funds, bonuses, overtime pay and subsidies. It is comparable to the measure used by the BLS, which incorporates pay for time worked (including overtime pay, bonuses and premiums), directly paid benefits (leave pay, irregular bonuses, pay in kind) and social insurance (contractual social benefit costs). (EIU, 2014, p.6)

Unfortunately, labor compensation costs instead of direct wages are the chosen measure for international comparison not because of the need to consider the well-being of the laborer and therefore its benefits and social security. Instead, it is the relevant measure for it synthetizes the equivalent cash disbursements capitalists should incur when hiring an hour of labor-power, and thus significant for capitalists' investment decisions. In this sense, the problem with the updated measures provided by The Economist Intelligence Unit is that social insurance is not just funded by the laborer, but also by the employer[65]. Though the NBS defines employee earnings as 'direct wages plus social insurance, housing funds, bonuses, overtime pay and subsidies', these earnings reflect only the social insurance and housing funds contributions that accrue to the employee, even if retained by the employer, but they do not include the employer's contribution to social insurance and housing funds, as Banister (2005) remarked.

[65] This particularly affects their estimates for provincial level hourly manufacturing labor compensation costs, as social security contributions required from employers vary significantly between regions in China.

Assumptions required for estimating China's manufacturing hourly labor compensation costs

In determining China's manufacturing hourly labor compensation costs, three broad set of assumptions must be made. First, which aggregation of manufacturing employment's official categories should be done – obviously, with corresponding existing wage data –, once employment numbers are going to enter as weight for composing average national or regional labor compensation costs. Note that for investment decisions, in as much as the investor can choose whether to locate in rural or urban areas or if opening an informal private enterprise or a formal urban unit enterprise, the averaged compensation costs is indifferent.

Second, as average earnings are published in statistical yearbooks in annual terms, a second set of assumptions must be made regarding annual hours worked. For urban areas, China Labor Statistical Yearbook provides weekly working hours measured in one specific week of the year. As there is seasonal variation in hours worked throughout the year, Banister (2005) proposes an adjustment in weekly working hours which she follows through in all her estimates (see appendix D.2). Nevertheless, the fundamental assumption concerns the average number of weeks worked in the year, for which there is no available official measure. The EIU (2014) found data on annual days worked, though in this case they need to assume the average number of days worked in a week.

Third, indirect wages as a percentage over direct wages should also be assumed, which are mostly composed by employers' social security contribution, which could be estimated by the compulsory legal parameters – even though they are not so compulsory in practice. The EIU (2014) just ignores the existence of this component of labor compensation costs, whereas Banister (2005) presents higher percentages than those of compulsory social security. Banister (2005) parameters came from a 2002 research in enterprises accounting for indirect labor costs, which showed to be more than just social security, although the latter was the biggest component. When she revised her estimates, in Banister (2013), she augmented the indirect parameters without providing the parameters' values adjustment, nor justifying their levels.

Therefore, the EIU's measures would only be the relevant ones for capitalist calculations if they were considering evading the law and not paying social insurance, which actually occurs a lot in China, since even direct wages capitalists dodge from paying, as made explicit by the concern of the investment consultant firm 'China Briefing' in a piece of advisement or article entitled 'How Does an FIE in China Become Criminally Liable for not Paying Wages?' (ELSINGA, 2015). In the sense that many capitalists, if not most or all of them, calculate not paying social insurance to Chinese rural migrant workers, then EIU measures might be the good ones instead of BLS'.

In this context, in the present section we aim at extending the BLS' estimates of China's hourly manufacturing labor compensation costs in dollars up to the years in which we had data available, comparing them with EIU (2014) and the Conference Board (2014) estimates. While the BLS methodology became significantly difficult to be pursued with the incorporation of large TVEs in urban units' data in 2013, new official datasets made available by the NBS on the urban informal sector and rural migrant workers should also be taken into account, as not only rural migrant workers are the backbone of China's manufacturing labor force, but also the manufacturing sector has been experiencing increasing and widespread informalization. Therefore, along with the extension of BLS' estimates based on urban units and TVE data, we also present estimates for hourly manufacturing labor compensation costs for rural migrant workers and urban private enterprises.

Though all measures have been significantly rising over time, we also stress that, being based on official statistics, they might depict labor conditions in far better light than the actual accounts coming from workers and NGOs in China. For instance, official data states the average weekly working hour as being somewhere between 46 to 51,6 hours during the period 2002-2014, when it is quite common to have reports denouncing that weekly working hours in manufacturing can be as high as 80 hours (this consideration also applies to the prior subsection).

3.2.2.1 Replicating and extending Banister's (2013) estimates

To extend Banister's (2013) estimates, we first reproduced the original estimates by applying the methodology and values given in Banister (2005), Lett and Banister (2006, 2009) and Banister and Cook (2011). We arrived at the same numbers, with sometimes differences in one cent due to rounding. Afterwards, for the revised estimates and the original

2009 estimate in Banister (2013), we took the revised employment series she used – excluding self-employed TVEs from 2002 to 2006 in order to harmonize with its exclusion by official statistics from 2007 onwards[66] – to construct the revised estimates for hourly manufacturing labor compensation costs series, applied the same methodology as before, and through trial and error found the implied indirect parameters she used over direct wages. In the original 2002-2008 estimates, the papers explicitly acknowledged the proportions to transform direct wages in compensation costs to be 53,8% in urban units and 8% in TVEs. We found out that implicitly the revised estimates escalated through time an increase from 53,8% to 67% in the case of urban units, and from 8% to 40% in the case of TVEs. To extend the estimates after 2009, we held these parameters constant.

Table 3.4 – Hourly manufacturing labor compensation costs by Banister methodology

	Hourly compensation (USD)			exchange rate	Compensation over direct earnings		Hourly direct earnings (yuan)		
	Total	*Urban*	*TVE*		Urban	TVE	Total	Urban	TVE
2002	*0,60*	*0,95*	*0,41*	8,28	53,8%	8%	3,8	5,1	3,1
2003	*0,67*	*1,09*	*0,46*	8,28	56,0%	12%	4,2	5,8	3,4
2004	*0,75*	*1,23*	*0,50*	8,28	59,0%	19%	4,5	6,4	3,5
2005	*0,83*	*1,35*	*0,57*	8,1936	60,0%	24%	4,8	6,9	3,8
2006	*0,95*	*1,56*	*0,64*	7,9723	63,0%	29%	5,2	7,6	3,9
2007	*1,21*	*1,96*	*0,80*	7,6058	65,0%	34%	6,1	9,0	4,5
2008	*1,59*	*2,58*	*1,06*	6,9477	67,0%	40%	7,2	10,7	5,3
2009	*1,75*	*2,85*	*1,15*	6,83	67,0%	40%	7,7	11,7	5,6
2010	*1,98*	*3,28*	*1,25*	6,77	67,0%	40%	8,6	13,3	6,0
2011	*2,65*	*4,16*	*1,71*	6,46	67,0%	40%	11,0	16,1	7,9
2012	-	*4,83*	-	6,31	67,0%	-	-	18,2	-
2013	-	*5,46*	-	6,20	67,0%	-	-	20,3	-
2014	-	*6,10*	-	6,14	67,0%	-	-	22,4	-

Sources: Banister (2005, 2013), Lett and Banister (2006, 2009), Banister and Cook (2011), China TVE statistical yearbook (2011, 2012) [in Chinese], China Labor Statistical Yearbook (several editions), China Statistical Yearbook (several editions) and The World Bank (2016).

Table 3.4 provides the replicated – thus with rounding differences from Banister (2013) – hourly manufacturing labor compensation costs estimates for the 2002-2009 period, along with 2010-2011 estimates for aggregate and TVE hourly manufacturing labor

[66] It should be noted that even if Banister (2013) excluded individually-owned TVEs from TVE data, changing the weight used on TVEs average earnings to compose average earnings for aggregate manufacturing employment (TVEs plus urban units), the underlying manufacturing TVEs average earnings was not adjusted, as we used the ancient values with the new weights and arrived at the same estimates as her. Therefore, there is a downward bias as self-employed earnings reduce the average earnings in TVEs.

compensation costs and 2010-2014 estimates for urban units. The table also exhibits the decomposition of the factors accruing for changes in hourly manufacturing labor compensation costs in dollar, namely, the exchange rate, the percentage of indirect labor costs over hourly direct earnings and hourly direct earnings in yuan.

Hourly manufacturing labor compensation costs in dollars presented enormous growth from 2002 to 2014. In 2002, hourly manufacturing labor compensation costs for aggregate manufacturing employment (urban units plus TVEs) were U$0,60, while in 2011 they amounted U$2,65, expressing an annual compound growth rate of 18%. Our estimate for 2011 is slightly above the Conference Board's (2014) one of U$2,62 for 2011, while both are equal for 2010, at U$1,98. Although we could not calculate hourly manufacturing labor compensation costs for aggregate manufacturing for 2012, due to lack of access to TVE data, the Conference Board (2014) estimated it to be U$3,07, while the EIU (2014) calculated it to be U$2,1. It should be noticed that the discrepancy between the latter estimates is not as big as indirect labor costs over average earnings, as the EIU considers also urban private enterprises in the measure, which pushes the average up, since wages paid in urban private enterprises are higher than in TVEs.

Appreciation of the yuan relative to the dollar and rising social security costs have contributed to the hiking in manufacturing hourly labor compensation costs in dollars; whereas the increase in yuan hourly direct earnings underpinning it was also significant, expressing an annual compound growth rate of 12%. In TVEs, hourly manufacturing labor compensation costs in dollars were just U$0,41 in 2002, growing to represent U$1,71 in 2011. In the formal urban manufacturing sector, hourly labor compensation costs rose from U$0,95 in 2002 to U$6,10 in 2014, an annual compound growth rate of 17% compared to 13% for hourly direct earnings in yuan.

3.2.2.2 Estimates for rural migrant workers and urban private enterprises

Notwithstanding, applying this methodology for the latest years has two downsides. On the one hand, the incorporation of large TVE data in urban units would need to be complemented by data on the remaining TVEs if they are still produced, otherwise the universe of manufacturing workers to which the compensation costs refer would be very restrained, expressing only the better paid strata of manufacturing laborers. On the other hand, as new sets of data were made available, namely, data on annual wages for

manufacturing urban private enterprises – acknowledged in the EIU (2014) estimates – and rural migrant workers, they should also be taken into account to better reflect the increasingly informal character of manufacturing employment in China, although difficulties arise from the overlapping of migrants' data with official categories of employment.

Table 3.5 – Hourly manufacturing labor compensation costs in urban private enterprises and among migrant workers

	USD hourly compensation				USD hourly direct wages			Hourly direct wages (yuan)			
	urban units	urban pivate	migrants 1	migrants 2	urban units	urban pivate	migrants	migrants	growth	urban private	growth
2008	*2,58*	-	*1,18*	*0,89*	1,55	-	0,84	5,85	-	-	-
2009	*2,85*	*1,54*	*1,27*	*0,96*	1,71	1,10	0,91	6,19	5,7%	7,51	-
2010	*3,28*	*1,79*	*1,53*	*1,15*	1,97	1,28	1,09	7,38	19,3%	8,65	15,2%
2011	*4,16*	*2,30*	*1,94*	*1,46*	2,49	1,64	1,39	8,95	21,2%	10,59	22,5%
2012	*4,83*	*2,74*	*2,22*	*1,67*	2,89	1,96	1,59	10,0	11,8%	12,36	16,7%
2013	*5,46*	*3,16*	*2,60*	*1,98*	3,27	2,25	1,86	11,53	15,2%	13,98	13,1%
2014	*6,10*	*3,55*	*2,90*	*2,23*	3,65	2,53	2,07	12,72	10,4%	15,55	11,3%

Source: Banister and Cook (2011), Banister (2013), China Statistical Yearbook (several editions), China Statistical Labor Yearbook (2009, 2010, 2011, 2012, 2013), National Monitoring Survey Report on Rural Migrant Workers (2012, 2013, 2014) [in Chinese] and the World Bank (2016).
Notes:
(1) "Migrants 1" stands for the set of estimates for rural migrant workers that have the underlying assumption that the proportion of indirect labor costs over direct earnings is the same as implied by Banister (2013) for workers in TVEs, namely 40%. This ratio was also assumed for urban private enterprises estimates.
(2) "Migrants 2" stands for the set of estimates for rural migrant workers which have much lower proportions of indirect labor costs over direct earnings based on compulsory legal ratios of contribution to social security multiplied by their coverage among rural migrant workers as provided by the National Monitoring Survey Report on Rural Migrant Workers. The ratios applied over direct earnings varied from 5,5% to 7,8%. See Appendix D.2.

Table 3.5 exhibits estimates for hourly manufacturing labor compensation costs for rural migrant workers' and urban private enterprises, based on a set of assumptions described in appendix D.2. We provide two sets of estimates for rural migrant workers; the highest ('migrant 1') was achieved by applying the same ratio of indirect labor costs assumed by Banister (2013) for TVEs, or 40% over direct earnings throughout the whole period. This procedure was also used for the estimates on urban private enterprises, since indirect costs should be lesser than in urban units due to their informal character. The second estimates for rural migrant workers assume a low level of indirect costs based on an estimation of

compulsory legal ratios of contribution to social security multiplied by their coverage among rural migrant workers, representing 5,5% to 7,8% over direct earnings in 2012 and 2014, respectively. We applied the 2012 percentage for the period 2008 to 2012, while we did a mean between the above-mentioned values for 2013.

Manufacturing hourly labor compensation costs in dollars rose for all categories of workers, although the levels paid for urban private enterprises and migrant workers are much lower than urban units. In the conservative scenario, rural migrant workers hourly labor compensation costs in manufacturing were just U$1,18 in 2008 (or 46% of urban units) or as low as U$0,89 for the second scenario. Workers in urban private enterprises were paid just U$1,54 for hourly labor compensation costs in 2009. In 2014, after five years of double-digit hourly direct earnings growth in yuan, rural migrant workers hourly labor compensation costs varied between U$2,90 to U$2,23, depending on the scenario, and in urban private enterprises were U$3,55, both significantly less than U$6,10 paid to urban unit workers.

It should also be remarked that whereas urban units' average earnings underpinning all estimates include also management earnings and urban private enterprises, employers' earnings; rural migrant workers' earnings reflect mostly those of production line laborers in manufacturing. As rural migrant workers alone compose the main category of workers in manufacturing and their earnings tend to reflect conditions in the production line, even if hourly labor compensation costs have hiked in the last decade, traditional measures based on official categories tend to overestimate the level of hourly manufacturing labor compensation costs.

3.2.3 China's hourly manufacturing labor compensation costs in international perspective

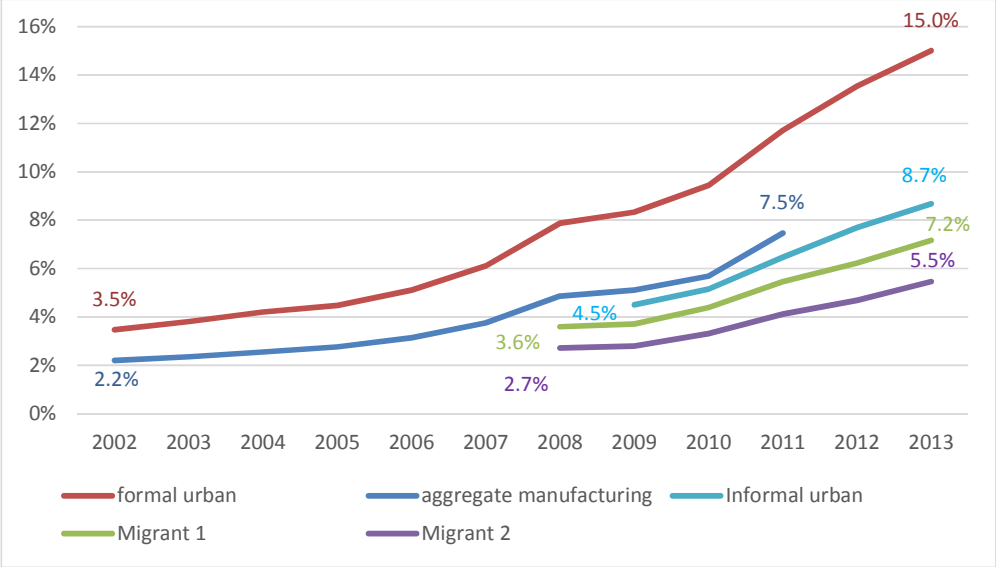
Even though manufacturing labor compensation costs in dollars have risen significantly over the last decade – and disregarding that problems with Chinese statistics make these estimates problematic for international comparison –, the low level from which they grew still made them just a fraction of the levels experienced in the developed world and smaller than many countries of the global South as Mexico and Brazil (figure 3.1).

As proportion of the US', Chinese manufacturing hourly labor compensation costs have also substantially grown, though remaining a small share. Graph 3.8 shows the evolution of Chinese manufacturing hourly labor compensation costs as percentage of the US' for

aggregate manufacturing (urban units plus TVEs), the formal urban sector, the informal urban sector (urban private enterprises) and both estimates of rural migrant workers.

In 2002, manufacturing hourly labor compensation costs in China were just 2,2% of the US', while this proportion in the urban formal sector was 3,5%. In 2011, manufacturing hourly labor compensation costs in China had risen to represent 7,5% of the US', while in 2013, in the urban formal sector this proportion was 15%. Nonetheless, as we have seen, the latter is the better paid strata of manufacturing workers, reflecting also management earnings. For the informal urban sector, manufacturing hourly labor compensation costs were 4,5% of the US', in 2009, rising to 8,7% in 2013. In the highest estimates for rural migrant workers, in 2008, manufacturing hourly labor compensation costs as a percentage of the US' were 3,6%, virtually the same of the urban formal sector in 2002, while for the second set of estimates, they were just 2,7%. In 2013, both these proportions to rural migrant workers had risen to 7,2% and 5,5%, respectively.

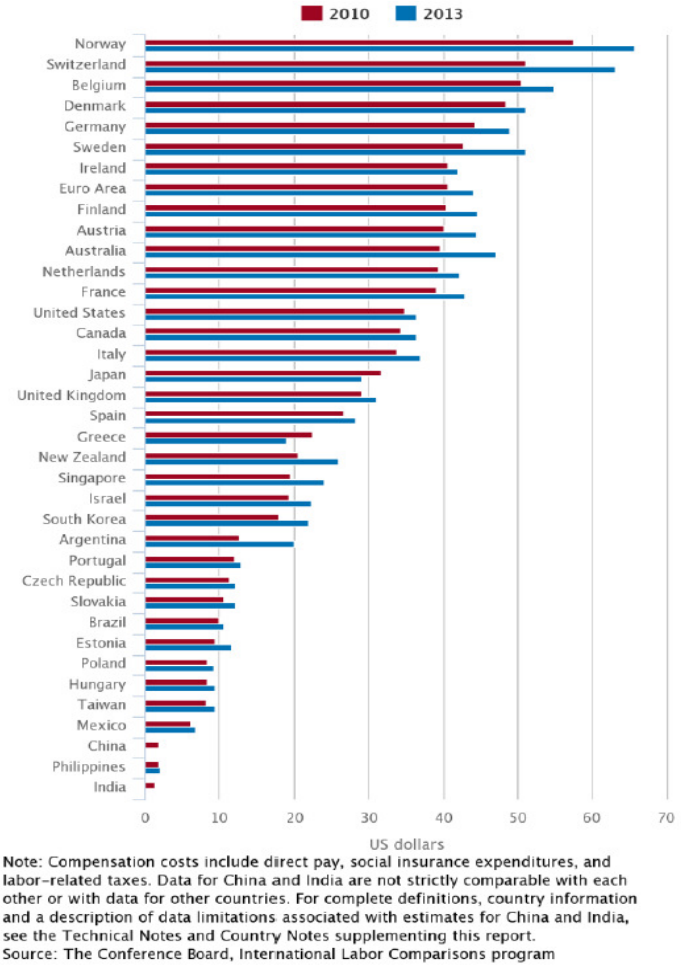
Graph 3.8 – China's manufacturing hourly labor compensations costs as percentage of US'



Source: The Conference Board (2014), Banister (2005, 2013), Lett and Banister (2006, 2009), Banister and Cook (2011), China TVE statistical yearbook (2011, 2012) [in Chinese], China Labor Statistical Yearbook (several editions), China Statistical Yearbook (several editions), National Monitoring Survey Report on Rural Migrant Workers (2012, 2013, 2014) [in Chinese] and the World Bank (2016).
Notes: From the Conference Board (2014) we extracted only the US series of manufacturing hourly labor compensation costs.

It should be noted, nonetheless, that these relative increases of China's manufacturing hourly labor compensation costs were not an exclusive phenomenon to the country, as the Conference Board (2014) remarks 'between 1997 and 2013, compensation costs in manufacturing as a percent of US costs […] increased in all economies compared [to the ones in figure 3.1] except Japan, Taiwan and Brazil, improving US labor cost competitiveness" (THE CONFERENCE BOARD, 2014).

Figure 3.1 – The Conference Board Estimates for manufacturing hourly compensation costs in dollars, 2010 and 2013



Source: The Conference Board (2014)

Meanwhile, compared to the other economies analyzed by the Conference Board (2014), even in face of the fast growth in China's manufacturing hourly labor compensation costs, in 2010, just the Philippines and India presented lower costs than China. In the latter

year, while manufacturing hourly labor compensation costs in China were U$1,98, they were U$10,0 in Brazil, U$6,13 in Mexico, U$ 1,85 in the Philippines and U$1,46 in India. If we take into account manufacturing hourly labor compensation costs of rural migrant workers in 2010 (U$1,53 for 'migrants 1' and U$1,15 for 'migrants 2), then the Philippines had higher costs (U$1,85) than China in both measures and India had still lower costs (U$1,46) for the first estimate, but not for the second estimate (CB, 2014).

In 2013, China had lower manufacturing labor compensation costs than Brazil (U$10,69) and Mexico (U$6,82) in all different categories of manufacturing employment estimated in table 2.8 – even though the urban formal sector in China was quickly approaching Mexican levels –, whereas only in the smaller estimate for migrant workers the Philippines (U$2,12) had higher costs (CB, 2014). Summing up, even with the fast growth in China's manufacturing labor compensation costs over the last decade, they are still just a share of those in the developed world. Notwithstanding, as China's labor compensation costs keep rising, other Southern countries, particularly Asian ones, appear to advanced countries' capitals as more attractive destinations in terms of lower labor compensation costs. It should be reminded, though, that many of these countries suffer of low productivity, which tends to offset their attractiveness in terms of labor costs, and the prevailing of these factors is also strongly contingent to the particularity of each manufacturing industry in terms of labor intensity.

PART II – THE OUTWARD VECTOR: BREAKING THE HISTORICAL LINK BETWEEN CENTRAL CONSUMER MARKETS AND INDUSTRIAL PRODUCTION THROUGH GLOBAL VALUE CHAINS

Chapter 4. THE HEGEMONIC NARRATIVE: NEOCLASSICAL THEORY AND THE THEOREM OF FACTOR PRICE EQUALIZATION

The question whether China's integration in the global economy is emanating a downward pressure over the wages of unskilled workers in advanced countries has been one of great attention in neoclassical economics and mainstream media. From the standpoint of Western media, politicians and neoliberal academics, the flooding of US and European consumer markets by manufacturing imports 'made in China' is the most important aspect – at least the most highlighted one – of China's ascension in the world economy. In tandem with such emphasis, the bottom line of the hegemonic narrative tells us that free trade with China is the root of the impoverishment and unemployment of the regular, blue collar, unskilled laborer of the developed world. Moreover, as international trade is exclusively conceptualized as a phenomenon that arises from the existence of nations, therefrom being its 'natural' unit of analysis, it follows that the one to blame for degrading the living conditions of unskilled workers in the central economies is either China, or free trade.

The first reasoning does not exclude, but instead complements the latter in the neoclassical formulation. Accusations of unfair trade have proliferated against China, elevating the terms 'currency manipulation' and 'social dumping' as common places in the political, economic and journalistic debate. Notwithstanding, even if 'unfair' Chinese practices would cease to exist, neoclassical economics, through its international trade theory, still accounts free trade between China and advanced countries as responsible for dwindling wages among the unskilled workers of the latter.

The issue, though, is submitted to a significant reframing. After all, for the mantra that free trade is a win-win situation for all countries to hold, if someone is losing in advanced countries, somebody else must be winning. Uncannily, it is not capital the fortunate one, but workers themselves. The point is that, not being laborers a homogenous group, some workers gain and others lose, whilst the net benefits for the country as a whole are still maintained. Precisely, the reframing assures that the wage losses of unskilled laborers in advanced countries are presented along with the wage gains of skilled workers, being both the result of free trade with China. Thus, in the developed world, skilled laborers are those who capture the benefits of free trade.

Once again, the contraposition of different groups of workers obliterates the struggle between capital and labor. The replacement of the latter dichotomy by a duality within the working class appears to be justified by the observation that income inequality among wage earners has been growing continuously in the US. Nevertheless, no less veridical is the fact that the labor share on GDP has also been significantly dropping since the 1970s in that same country, even though the neoclassical academic literature massively models the trade analysis between China and the developed world on the basis of the first fact, picking its two factors of production as unskilled and skilled labor instead of capital and labor.

Although neoclassical economics presents the effects of trade with China on advanced countries as a two-sided phenomenon, simultaneously exerting a downward pressure on the wages of unskilled workers and an upward pressure on the remuneration of skilled workers, it should be noted that such stylized facts only apply for the US. In the case of the Eurozone, these pressures would not manifest in the same manner, since the welfare state would prevent the downward pressure on the wages of unskilled laborers from materializing. Thus, the 'natural' market outcome – the declining wages –, in face of 'institutional rigidities', would be transmuted into higher unemployment among unskilled workers.

Atkinson (1999) designates this formulation that "provides a unified explanation as to how a single cause has a differential impact on the United States and on mainland Europe" as the 'Transatlantic Consensus'[67], a term that also entails "the fact that this view has been widely influential in the policy-making of international institution on both sides of the Atlantic, such as the IMF and the OCDE" (ATKINSON, 1999, p.1-2). In effect, during the 1990s, the *Transatlantic Consensus*[68] treated the impacts of China's integration in the global economy on wages in advanced countries as an indistinct part of the broader phenomenon of trade between advanced and developing countries.

The affirmation of China as a global manufacturing center led neoclassical analyses, in the 2000s, to predominantly single out China from the discussion on the effects of trade between advanced and developing countries. Furthermore, the *Transatlantic Consensus* wouldn't endure the awakening of the new millennium. As China's emergence as the factory of the world was accompanied by a substantial sophistication of its exports; a new fission was

[67]Actually, is the demand shift away from unskilled workers to skilled workers that would be brought either by trade with developing countries or biased technological change.

[68] The Consensus could be more accurately described by the term North Atlantic Consensus, as it ignores the realities and academic production of the South and it influences the international institutions that are dominated by the developed capitalist countries of the Atlantic North.

opened in neoclassical formulations regarding the pressures emanating from China over wages in advanced economies.

On the one hand, China's export sophistication has been seen as the result of the country 'climbing the technological ladder', an interpretation that entailed a change in the neoclassical framework used to analyze China's trade with advanced economies, along with the postulation of different pressures on the wages of the latter. In a sense, the fear of China catching-up with the US has brought dissent inside neoclassical economics. Paul Samuelson (2004) made use of a Ricardian model of comparative advantage to state that trade with China could harm the US if the former were to climb the ladder.

Freeman (2006, 2010) deemed as obsolete the analyzes based upon the proportions of skilled to unskilled labor, claiming that what mattered was the reduction in the capital to labor ratio brought about the Great Doubling of the capitalist workforce, caused by the integration of China, India and the ex-Soviet bloc in the global capitalist economy. This process of integration led the world "onto a long and epochal transition toward a single global economy and labor market" (FREEMAN, 2006, p.13), for "the triumph of global capitalism has the potential for creating the first truly global labor market" (FREEMAN, 2006, p.9). Though from a different start, such proposition gives a full round back to the result of a single world price for labor, as predicted by the factor price equalization theorem. Nevertheless, as China's efforts to catch-up were already being successful, the country's integration in the global economy would be putting downward pressures not only on the wages of the unskilled, but also on those of the skilled in advanced countries.

On the other hand, different claims have been made that Chinese export sophistication was not the result of the making of a catch-up process. The manufacturing export success of the country, allied with the growing US trade deficit, unleashed a flood of complaints in mainstream economics on Chinese unfair trade practices. The most popular of such claims, namely, that China is a currency manipulator – in its hard version –, attributes Chinese exports of skilled labor-intensive goods to its 'unfair' exchange rate policy and practices. Such policy and practices would be responsible for putting an artificial downward pressure on the wages of skilled workers in advanced economies. Therefore, if the policy were to be corrected, China would lose its artificial comparative advantage in skilled labor-intensive goods, and skilled workers in advanced countries would experience the traditional upward pressure in their wages as predicted by the factor price equalization theorem.

A second line of reasoning ascribed China's export sophistication to a mere statistical illusion derived from the fragmentation of production processes through global value chains. At the end of the day, China would be just a giant assembly base for skilled intensive parts and components produced by advanced economies. This characterization has underpinned the interpretation that the pressures on wages in the developed world emanating from China's integration in the global economy would be essentially the same as predicted by the Heckscher-Ohlin-Samuelson (HOS) model and discussed in the 1990s. This understanding was put forward by Krugman (2008) through modifying the HOS model to encompass the fragmentation of final goods' productive processes, pioneering what would constitute the whole branch of neoclassical academic literature on models of international trade in tasks.

Given the hegemonic position of the neoclassical narrative on how China's integration in the global economy would affect the wages (and employment) of workers in advanced economies, the current chapter is dedicated to present it through three different moments. In the first section, the aim is to discuss the *Transatlantic Consensus* forged in the 1990s. In order to do so, we present the neoclassical international trade theoretical framework that supports the *Consensus*, namely, the principle of comparative advantage, the HOS model and the factor price equalization theorem. Subsequently, this framework is grounded upon the stylized facts that have been posed by mainstream academics in the 1990s regarding trade between developing and advanced countries, presenting the *Transatlantic Consensus*. We then discuss the predicted outcomes of the HOS model – both to advanced economies and to China –, checking if they hold when confronted with reality. The focus is not only on the main inconsistencies between the prognoses of the model and actuality, but also in the problematic manner that the *Transatlantic Consensus* proposes different prospects for the US and for the Eurozone based upon trade with developing countries.

Sections two and three are dedicated to discuss the different interpretations of China's export sophistication and the respective consequences they entail when it comes to the pressures that China's integration on the global economy would exert over wages in advanced countries. In section two, the focus in on Samuelson (2004) and Freeman (2006, 2010) dissent inside neoclassical theory, anchored by the fear of China catching-up. In the case of China climbing the ladder, Samuelson (2004) poses the possibility of trade with the country generating losses for the US; while Freeman (2006, 2010) states that all workers – unskilled and skilled – would suffer downward pressures over their wages through China's integration in the global economy.

The third section presents the views in which China's export sophistication is not a result of the country's supposed technological advancements. Therefore, claimed pressures over skilled workers' wages in advanced countries would be either a result of policies – and thus could be corrected –, or inexistent. In both cases, the fair correct market outcomes would be the traditional wage pressures proposed by the *Transatlantic Consensus*. In the currency manipulation argument, as the impacts of trade on wages are stated in terms of distortions on the free international flows of commodities, we present these accusations along with the expected free trade results of the *Transatlantic Consensus*, showing how these two stories interplay with each other. The aim is to assess how these accusations corroborate and/or modify the predicted wage pressures of China's integration in the global economy derived from the free fair trade HOS model. Afterwards, Krugman's (2008) 'statistical illusion' interpretation is addressed, negating the downward pressure over skilled workers' wages in advanced countries and reaffirming the *Transatlantic Consensus*.

Throughout this chapter, far from attempting to execute an extensive literature review, we restrain our focus on the contributions of three authors, namely Paul A. Samuelson, Richard B. Freeman and Paul Krugman, for their impact and relevance on either the development of the neoclassical international trade theory or its application on the case of trade between China/developing and advanced countries. Lastly, section four is dedicated to the conclusions.

4.1 THE TRANSATLANTIC CONSENSUS: IMPOVERISHMENT AND UNEMPLOYMENT AMONG UNSKILLED WORKERS

By coining the term *Transatlantic Consensus*, Atkinson (1999, 2001) precisely referred to the fact that, between economists, "there has become established a 'Transatlantic Consensus' that increased income inequality in the United States and high unemployment in Continental Europe are due to a shift of demand away from unskilled workers towards skilled workers" (ATKINSON, 2001, p.433). As the author highlights, the unified explanation behind it has not been the same in the academic literature. While some argue that such demand shift was provoked by biased technological change, others center their explanation on increased international trade with developing countries, recurring to the HOS model. Thus, before discussing the *Transatlantic Consensus* in itself, we present the theoretical framework behind its international trade version.

4.1.1 The theoretical framework of the Transatlantic Consensus*: Comparative advantage, the Heckscher-Ohlin-Samuelson model and the theorem of factor price equalization*

The Heckscher-Ohlin-Samuelson model has at its heart Ricardo's comparative costs theory of international trade, being sometimes presented by mainstream economics as an expansion and refinement of the latter and sometimes as contrasting with it. According to the principle of comparative costs, free trade will always occur to the benefit of each of the countries involved, even if one of them has lower costs in every tradable good. That is, because countries will specialize in the goods they can produce relatively cheaper, they are able to obtain by exporting part of them a greater amount of the other goods than if they would produce all goods domestically. Free trade, thus, guarantees the most efficient specialization of production between countries, elevating world output and the amount of goods that each nation can dispose for consumption.

The fundamental question, as put forward by Shaikh (1980), is what would make this normative prescription to actually occur in international trade, that is, what automatic mechanism would convert the absolute cost advantages held by the country which would be more efficient in the production of all goods into relative cost advantages. As the author highlights (and criticizes, which is discussed in chapter 5), it is Ricardo's quantitative money theory that asserts this result. In the example found on the *Principles* (RICARDO, 1821), two countries – Portugal and England – and two commodities, cloth and wine, are produced cheaper by Portugal. Portugal starts exporting both goods to England, since traders are able to make more profits in the foreign market and English consumers can pay less than what they would have to for the domestic production. As a result, Portugal will incur in a trade surplus, while England will need to export gold to settle its trade deficit. The money inflow to Portugal would then elevate its price levels while reducing England's. The surplus would progressively be reduced by the corresponding inflows of money it engenders, up to the point in which one of the two products would become cheaper in England – the one with relatively cheaper costs.

With the adjustment provoked by free trade, not only each country specializes in the good it has comparative costs advantage, but also trade becomes balanced. In the case of flexible exchange rates, price levels remain unchanged as it is the exchange rate itself that

adjusts. Thus, in Ricardo's framework, the flexible system would lead the exchange rate to assume a value at some point between the relative prices experienced in Portugal and those in England (SHAIKH, 1980, 2016). The specific value inside this interval would be the one in which the imbalances disappear.

The neoclassical reformulation of Ricardo's theory of comparative costs as the regulating principle of international trade is provided by the Heckscher-Ohlin model, and further radicalized by Samuelson's theorem of factor price equalization, being also called Heckscher-Ohlin-Samuelson model. Mainstream economics presents it as an expansion or complexification of Ricardo's theory insofar as it would consider two factors of production instead of just one, suppressing the fundamental differences of the neoclassical school with Ricardo's labor theory of value, which underpins his choice for labor as 'the only factor of production'. By stripping Ricardo of his labor theory of value, neoclassical economists are able to argue that the HOS model goes deeper than Ricardo, as it would provide the fundaments that determine comparative costs.

The model is also described as contrasting with Ricardo's theory of international trade, since the HOS assumes that all countries have the same technologies of production (FEENSTRA & TAYLOR, 2014). Furthermore, it is exactly by assuming equal production functions in all countries that the HOS is supposedly able to dig down to the 'fundaments' of comparative costs or relative prices, namely, the countries' factor endowments: "Both countries employ the same production technology. Hence, the relative factor endowments of the two nations and the relative factor requirements of the two goods determine where comparative advantages lie" (DANIELS & VANHOOSE, 2014, p.62).

A series of strong assumptions are established in order for the HOS' conclusions to hold. Besides the supposition of the use of the same technologies around the world, the model also assumes that: *i*) factors of production are completely mobile inside a country, but absolutely immobile across international borders; *ii*) international trade is free, and there are no transaction or transportation costs; *iii*) countries are endowed with different factor proportions; *iv*) given the technologies, some goods use proportionally more of one specific factor than others for any factors' relative prices, ruling out the possibility of factor intensity reversals; *v*) consumers have the same preferences everywhere in the world, in a way that each country confronts the same indiffence curves; *vi*) all countries experience full employment; *vii*) markets are under perfect competition, equalizing international commodity prices; *viii*) production is submitted to decreasing marginal productivity/returns, which

generally entails that countries will not fully specialize; *ix*) there are constant returns to scale; *x*) factors are qualitatively equal across countries (SAMUELSON, 1948; SAMUELSON, 1949; FEENSTRA & TAYLOR, 2014).

Let's follow Samuelson's (1949) example of a two goods – cloth and food –, two countries – 'America' and 'Europe' – and two factors – land and labor – model. Since America is endowed with proportionally more land than labor, it is deemed as the land-intensive country, while Europe is the labor-intensive one. Production of cloth uses more labor than food for each unit of land, making cloth labor-intensive and food land-intensive. As labor is relatively abundant in Europe, the relative price of cloth to food would be lower than in America, giving the former a comparative advantage in the production of cloth. Factor endowments would explain the relative prices, which in turn would establish the countries comparative advantages and international trade patterns.

With free trade, relative prices need to be equalized for there is only one international price for each commodity. As discussed, the world relative prices would assume a value between the two countries' pre-trade relative prices. Thus, the relative price of cloth to food would augment in Europe, leading it to specialize and export cloth, whilst the contrary would happen in America[69]. According to the Stolper-Samuelson theorem, the increased price of cloth in Europe will entail a more than proportional rise in the reward of labor, the factor that is used intensively in its production, and a reduction in the reward of land.

At this point, the factor price equalization theorem enters at play. Since commodities are nothing more than the embodiment of factors of production, what in fact are being indirectly exchanged are the factors of production. When Europe imports food and exports cloth, what is actually happening is that Europe is giving away relatively more labor for relatively more land. From the standpoint of European endowments, the effect of free trade would be to augment Europe's availability of land while reducing of labor, whilst the reverse takes place in America. As land is becoming relatively abundant vis-à-vis labor in Europe, its reward would diminish and labor's would augment; the opposite being true to America.

Through free trade, factor proportions are virtually equalized. If technology and preferences are the same across countries, there is a single world price for each commodity

[69] For the factor price equalization to hold, such specialization must be partial: "Something is being produced in both countries of both commodities with both factors of production. Each country may have moved in the direction of specialising on the commodity for which it has a comparative advantage, but it has not moved so far as to be specialising completely on one commodity." (SAMUELSON, 1949, p.182)

and countries face virtually the same factor proportions as a result of free trade, it follows that the marginal productivity/returns of the factors must be the same in both countries: “The same international commodity-price ratio, must – so long as both commodities are being produced and priced at marginal costs – enable us to infer backwards a unique factor-price ratio, a unique set of factor proportions, and even a unique set of absolute wages and rents.” (SAMUELSON, 1949, p.188). The theorem predicts that not only relative real factor prices will be equalized by free trade, but also absolute real returns, in a way that: “the imputed real returns of labor in one country [America] and of land in the other [Europe] will necessarily be lower, not only relatively but also absolutely, than under autarky.” (SAMUELSON, 1948, p.170)

In this context, free trade appears as nothing more than a vehicle for the exchange of factors of production between countries, virtually homogenizing the ratio of labor to land in all countries. Exchange of commodities operates as a pseudo-displacement of factors of production, without the inconveniences of actually realizing it. As a result, free trade is not only a perfect replacement for factor mobility, but also preferable to it. This is the theoretical justification to why the focus of the neoclassical debate about the effects of China’s integration in the global economy on wages in advanced countries is usually centered on international trade alone.

4.1.2 The Transatlantic Consensus *about the impact of trade with developing countries.*

In 1995, Richard B. Freeman’s seminal article ‘Are your wages set in Beijing?’ synthetized the terms of the debate in mainstream economics and journalism of what Atkinson (1999, 2001) would later call the international trade version of the *Transatlantic Consensus*. In the paper, the issue is strictly defined as a matter of ‘the economic consequences of **trade** between developed and developing countries’ (FREEMAN, 1995, p.15, *emphasis mine*) and ‘the effects of trade on the labor market’. His analysis starts with the observation that, in the 1980s and the 1990s, imports of manufacturing goods from developing countries had augmented significantly in developed economies, simultaneously with the decrease in the demand for less-skilled labor in the latter.

In the case of the US, this diminishing demand would be mainly expressed in the reduction of real wages of unskilled workers, while in OCDE-Europe, it would be translated in the rise of unemployment among these laborers due to the ‘rigidities’ on real wages

imposed by the welfare state. As stated by Krugman, "high unemployment in many industrial nations is an unintended byproduct of their redistributionist welfare states, and that the problem has worsened because the attempt to promote equality has collided with market forces that are increasingly pushing the other way" (KRUGMAN, 1994, p.24).

In this context, Freeman (1995) aims to discuss in which extent trade with developing countries would be responsible for the dwindling demand for unskilled labor in developed economies, recurring to the theorem of factor price equalization. Appling the HOS model, Freeman's two 'countries' are the advanced and the developing countries, while the factors are skilled and less-skilled labor, and the commodities are generally defined as those manufacturing goods which utilize intensively each of the factors. Developed economies are abundant in skilled labor and the Third World, in less-skilled labor. As a result, trade would reduce the scarcity of less-skilled labor in advanced countries and of skilled labor in the developing ones, reducing the real wages of both. Since the demand for skilled labor would rise in developed economies as well as the demand for less-skilled labor in the Third World, their real wages should rise. After the process of adjustment, reaching equilibrium, free trade would make skilled workers' real wages equal in both groups of countries, the same being valid for the real wages of less-skilled workers around the world.

The above-mentioned predictions supposedly fit well the stylized facts in the US economy highlighted by Freeman (1995). The observation that the real earnings of less-skilled workers in the US 'have gown sluggishly at best, and fallen for men at average' (FREEMAN, 1995, p.18) was accompanied by growing wage inequality that reflected the rising wages of skilled workers. Coupled with these facts, Freeman points out that the pattern of trade between the US and developing countries follows the one described by the neoclassical model: US' imports are less-skilled labor intensive, while its exports are skilled labor intensive. Once he postulates these two phenomena, he takes them as sufficient grounds to start discussing the 'strength of forces for factor price equalization'. It is worth of note that Freeman has not a fundamentalist position regarding the theorem of factor price equalization, relativizing it, especially in face of the developments of domestic labor markets:

> The argument for complete factor price equalization is, to be sure, an extreme one. […] factor price equalization should not be seen as the Holy Grail giving the answer of economic science as to why demand fell for low-skilled western workers in the 1980s and the 1990s. Instead, the theory is a flag alerting us to the possibility that increased linkages with less-developed countries *may have* contributed to the immiseration of the less-skilled, and pointing to some routes through which such

> linkages *may have* worked. The gap between "may have" contributed and "has" contributed is large – bridgeable only by empirical analysis, with all of its compromises and difficulties. (FREEMAN, 1995, p.22)

Thus, theoretically, the tendencies described by the theorem would not only be correct, but also fit well the stylized facts put forward by the author. The question is then reduced to assessing the pros and cons of the empirical strategies aimed to measure the 'strength of forces for factor price equalization'. Broadly, two different empirical strategies have been pursued according to the author: factor content and price effect analyses. The former consists in attempts of estimating the factors' contents present in the imports and exports of a country, translating them as shocks in the relative demand and supply for the factors, at given wages and prices. Subsequently, using already existing estimates for elasticities, these studies assess the changes in relative prices of the factors due to relative changes in their supply.

Since developing countries would be able to produce cheaper unskilled labor-intensive goods than advanced economies, price analysis attempt to identify if competition from imports in advanced countries has been reducing the prices of such goods. Price declines would entail a reduction in the relative wages of unskilled workers and, hence, affect the economy-wide prices of the goods and services produced by them (FREEMAN, 1995). Thus, these studies aim to establish a relation between price changes and the proportion of workers who are unskilled in the different industries.

According to Freeman (1995), both lines of empirical inquiry attributed only a modest impact of trade in the increase of wage inequality. Price studies results pointed to "some pressure on the pay of the less skilled, but not enough to account for a significant widening of wage inequality" (FREEMAN, 1995, p.28), while "standard factor content analysis studies indicate that trade can account for 10-20 percent of the overall fall in demand for unskilled labor needed to explain rising wage differentials in the United States or rising joblessness in Europe" (FREEMAN, 1995, p.25).

4.1.3 Inconsistencies

Assuming that the HOS is theoretically correct – either in its stronger or lighter versions of, respectively, complete factor price equalization or just a trend manifestation towards it –, do the stylized facts really fit the predictions of the theorem? Although the phenomenon in question is formulated in general terms – the effects of trade between

developing and developed countries on the latter –, we will try to narrow down the discussion to trade between China, on the one hand, and the US and the European Union, on the other one. This procedure is justifiable by the relevance of these economies, which are the major traders in the world. The prominence of China's trading position among developing countries, though not discussed in Freeman's 1995 paper, is nevertheless acknowledged by him in the title.

Despite the stylized facts apparently fitting well the HOS model, there are many inconsistencies around the model's application to the case of trade between China and the US and the Eurozone. At least three sorts of inconsistencies can be identified without the need to criticize/reject the model itself: *i*) the criticism developed by Atkinson (1999, 2001) that the predictions of rising unemployment in the Eurozone and growing inequality in the US, at the same time, are a wrong derivation of outcomes from the HOS model; *ii*) some results expected by the model in the case of the US/Eurozone economies were contradicted by reality; and *iii*) the main prognoses – along with assumptions – of the HOS model to China were conflictive with the facts.

4.1.3.1 Theoretical misrepresentation of the EZ/US distinction

Since 'the industrialized countries have very different structures'[70], Atkinson (1999, 2001) criticizes the aggregation of all developed countries in a single group. Opposing the widespread undue treatment conceded to advanced countries as a monolithic bloc, the author proposes a separation in two different groups, the US, on the one side, and Continental Europe, on the other side[71]. Such separation is justified by the existence in the Eurozone of an 'effective minimum wage protection, or social security benefits level preventing wages from falling at the bottom' (ATKINSON, 1999, p.7), which would transmute the impacts of trade from wages to employment.

Given that free trade will constitute a single international price for each good, and, thus, bring the equalization of factor prices, then the downward rigidity of unskilled workers'

[70] Atkinson opposes the industrialized with the newly-industrializing countries. Although his aim was to question the inevitability of rising wage inequality in developed countries, focusing on these countries, it is also true that the same criticism can be applied to the case of the 'newly-industrializing countries', as there are significant structural heterogeneities among them.

[71] The author also weights the possibility of aggregating the UK and other Anglo-Saxon countries along with the US and treating Japan as a case apart.

real wages in the Eurozone (EZ), which floor is set by the effective minimum wage, would determine the international price of unskilled labor. Actually, the point made by Atkinson (1999, 2001) is that the Eurozone would set a 'minimum *relative* wage for unskilled labour, then this determined the goods relative prices and the wage of skilled labour' (ATKINSON, 1999, p.9, *emphasis added*).

For the US and the EZ trade alone, if the countries do not fully specialize and still produce both goods – as required by the assumptions of the HOS model put forward by Samuelson (1948, 1949) –, then the equalization of factor prices will be achieved by the adjustment of the flexible real wages in the US to the level of real wages in the EZ: 'the wages of the unskilled rise to the European level (and those of the skilled fall) as the US expands its exports to the EZ of the good which uses unskilled labour intensively' (ATKINSON, 1999, p.9). Therefore, the result is unemployment in the EZ and wage convergence in the US.

Subsequently, the author introduces trade with the newly-industrializing countries. As in the case of the US, factor prices in the developing countries would also adjust to the EZ determined levels. The byproduct would be that more unemployment would be generated in the EZ and nothing would happen in the US: "In neither region [US and EZ] is wage inequality affected. We have one part of the Transatlantic Consensus but not the other. […] this means there is a tendency for the low paid in the United States to be sheltered by European unemployment." (ATKINSON, 1999, p.9-10)

According to Atkinson, one way in this three bloc model to produce wage inequality in the US is to violate the assumption of incomplete specialization underlying the factor price equalization theorem. If the EZ minimum wage led it to stop producing unskilled labor intensive goods – which would be imported from the US –, fully specializing in skilled labor intensive goods, then the wages of the unskilled in the US would be unrelated to the EZ (ATKINSON, 1999, 2001).

The introduction of trade with newly-industrializing countries would augment the relative wages of the skilled, provoking increasing inequality in the US, as well as in the EZ, for "wage inequality will rise, and unemployment fall (as unskilled labour is substituted for skilled in the production of the high technology good)" (ATKINSON, 1999, p.10). Thus, to have the outcome of wage inequality in the US, not only an assumption of the factor price equalization theorem needs to be violated, but also the predictions would contradict those

proposed by the Consensus to the EZ. Atkinson concludes that 'the standard Heckscher-Ohlin trade theory falls short of yielding the predictions assumed in the Transatlantic Consensus' (ATKINSON, 1999, p.9) and that "the theoretical basis for the Consensus does not appear to be a simple application of standard international trade theory of the Heckscher-Ohlin variety" (ATKINSON, 1999, p.10).

4.1.3.2 Inconsistent predictions in the US and the Eurozone

In the advanced economies, during the 1990s, two sources of factual inconsistencies have created substantial polemics in the application of the HOS model to trade between developed and developing countries. For the relative real wages of the skilled to rise in advanced countries, analogous movements should be verified in the relative prices of skilled intensive goods, *in tandem* with the Stolper-Samuelson theorem. Therefore, if free trade with developing countries was responsible for growing wage inequality and unemployment among unskilled workers in the developed world, the prices of skilled intensive goods should be rising, while those intensive in unskilled labor, diminishing. In IMF's publication "*Does Globalization Lower Wages and Export Jobs?*", Slaughter and Swagel (1997) highlight that there was no such clear cut movement in the relative prices of goods as predicted by the Stolper-Samuelson theorem:

> A great deal of research has been done on this question, and although the conclusions are not robust, there appears to be little evidence of larger price increases in skilled-labor-intensive products in advanced countries; if anything, price increases were larger in the unskilled-labor-intensive industries. Rapid technology change seems to have led to relative price declines in skill-intensive industries rather than the price decreases in unskilled-labor-intensive industries one would expect in the face of import competition from developing countries. In most cases, trade with developing nations has played only a small role, if any, in raising income inequality in the advanced economies. (SLAUGHTER & SWAGEL, 1997, p.5)

Moreover, the price changes predicted by the Stolper-Samuelson theorem are fundamental to put in motion the mechanism that will adjust production. As higher relative prices in skilled intensive industries increase their profitability vis-à-vis unskilled intensive ones, resources are displaced from the latter towards the former and skilled workers demand a premium for carrying through the displacement, until opportunity costs in both groups of industries are equal again (SLAUGHTER & SWAGEL, 1997). The changes in relative prices

trigger a modification in the bundle of goods produced in advanced economies, augmenting the production of skilled intensive goods and reducing of unskilled intensive. As Krugman (1994) points out, such mechanism of adjustment in advanced economies would be manifested as: *i*) a change in the industrial mix towards sectors that are skilled-intensive, resulting in an increase in the demand for skilled labor relative to unskilled; *ii*) which would augment the real wages of the former and reduce of the latter, inducing enterprises in all industries to substitute skilled labor for unskilled labor and decreasing the ratio of skilled to unskilled labor employed in each particular industry.

Thus, regarding factor proportions, the HOS predicts that the increase in the demand for skilled relative to unskilled workers in advanced countries would be consubstantiated by a movement of resources across industries towards the skilled intensive ones, which would be matched by within industries reorganization away from skilled laborers. According to Krugman (1994), data shows that none of these two predictions of the HOS model hold, and specially, that the ratio of skilled to unskilled workers had been rising in all industries. Slaughter and Swagel (1997) highlight that "the majority of U.S. manufacturing industries during the 1980s employed relatively more high-skilled workers than in the 1970s, even though wages of these workers had risen" (SLAUGHTER & SWAGEL, 1997, p.4). Moreover, in contrast with the predictions of the HOS, the authors state that "about 70 percent of the overall shift in U.S. labor demand in manufacturing was a change in skill demands *within* industries, not *across* industries from less skill-intensive to more skill-intensive" (SLAUGHTER & SWAGEL, 1997, p.4).

Notwithstanding, in general, the verification of such reality mismatches has led neoclassical authors to state that free trade with developing countries had a small or negligible role in growing US inequality and EZ unemployment. As the HOS model was deemed theoretically correct, these empirical evidences would point to the rival explanation of the phenomena in the neoclassical debate, that is, biased technological change.

4.1.3.3 Inconsistent dynamic of factor prices in China

It is remarkable that Freeman accepts the observation of the supposed effects of factor price equalization in the advanced countries as enough. What about the corresponding effects in the developing countries? Is the behavior of wages in these countries in tandem with the predictions of the theorem? Given China's centrality to trade with developed nations, one

should make sure that the presumed effects of the theorem also hold for the country. Otherwise, the observation of rising wage inequality in the US just proves that there is rising wage inequality in the US, and not that any sort of equalization between wages across trading partners would be occurring.

As treated above, in advanced countries, factor price equalization would make the wages of the less-skilled to dwindle and the wages of the skilled to augment, resulting in a divergence trend in labor's rewards. Notwithstanding, such tendency would exist because the reverse process would be surfacing in developing nations: the wages of the less-skilled would be rising and the wages of the skilled would be diminishing, which would establish a convergence trend for wages in China.

Although Freeman's focus was on the processes occurring inside the US and the EZ, at that time – from the beginning of the reform and opening up to 1995, when the paper was published –, the massive lay-offs in China's state-owned enterprises were still to fully unfold and the behavior of real wages was still very much linked to the centralized/socialist system of rewards. Therefore, for the period examined by the author, it does not make much sense to apply the HOS to China, in an attempt to analyze how the market forces set in motion by free trade – 'factor price equalization forces' – would have impacted the behavior of real wages in the country. Nonetheless, this ceases to be the case with the full-blown effects of the breaking of the iron rice bowl and the process of privatization of the urban economy.

It is well known that China's tremendous growth over the last decades was accompanied by fast rising income inequality. According to Sicular (2013), China's Gini coefficient was around 0,3 in the beginning of the 1980s – which was mainly explained by the rural-urban divide, as the within urban Gini coefficient of only 0,16 –, jumping to over 0,45 in the early 2000s and peaking in 2008 at 0,49, when it slightly declined though still above 0,45 up to 2012. These figures are subject to great contend, especially the Chinese government official numbers. Cevik and Correa-Caro (2015) affirm that the coefficient was 0,52 in 2013. Xie and Zhou (2014) calculate it to be between 0,53 and 0,55 in 2010 and the Chinese Household Finance Survey Center of Chengdu Southwestern University of Finance and Economics (*apud* HU, 2012) estimated that the Gini was 0,61 in 2010.

Even though inequality in China has surpassed by far the US (XIE & ZHOU, 2014), its dynamics is different, as "China's persistently high inequality does not reflect a deterioration of living standards for poorer groups" (SICULAR, 2013, p.2). The rise on

inequality in the country has been associated with substantial rising income of all strata, though at a much faster pace for the richer.

The Gini coefficient provides a broad panorama of China's inequality, while the predictions of the HOS as modeled by the bulk of the academic literature only concern inequality arising from skill rewards. There are not many studies focusing on such source of inequality in China, for the hugest factors explaining it are associated with the rural-urban divide and regional disparities. Han, Liu and Zhang (2011) analyze real wage inequality within urban areas in China between 1988 and 2008 using data from the China Urban Household Survey. Considering Deng's Southern Tour, in 1992, and China's accession to the WTO, in 2001, as two major shocks of liberalization, the authors investigate their impacts on real wage inequality in regions with larger exposure to globalization vis-à-vis regions that were less exposed.

The authors find that real wage inequality has been rising faster in higher exposed regions and was widened by accession to the WTO, especially in the upper half of the distribution. Moreover, trade liberalization also played a role in within-region inequality as "the rate of real wage increases is much faster in the higher percentile [90^{th}] than in the lower percentile [10^{th}]" which would be explained "by raising the returns to education (the returns to high school after 1992 and the returns to college after 2001)" (HAN, LIU & ZHANG, 2011, p.291).

Therefore, even though the stylized facts would supposedly hold for the US and the Eurozone, in China the facts do not fit the model. Instead of real wage convergence, the country has been experiencing rising real wage inequality between unskilled and skilled laborers, which was a result of the latter's real wages growing faster than the former's. A parcel of the academic literature treats the HOS model's predictions as only a matter of equalization of *relative* factor prices. For instance, Daniels and VanHoose (2014) affirm that 'International trade will tend to cause the relative wages of U.S. and Chinese workers possessing similar skills to converge' (DANIELS & VANHOOSE, 2014, p.326).

Apart from the problem of abstracting the Chinese historical and systemic specificities – which entailed a starting point of virtual real wage equality among skilled and unskilled labor industries –, the path of relative real wages in China is of divergence even long after the labor market reforms in the middle of the 1990s and wage-setting becoming a byproduct of the market. Notwithstanding, the HOS model is not just about relative factor prices

equalization, but also about absolute equalization, which is supposed to materialize in a way that the real wages of the less-skilled in the US and the real wages of the skilled in China should "necessarily be lower, not only relatively but also absolutely, than under autarky" (SAMUELSON, 1948, p.170).[72]

Therefore, if factor prices are to equalize, necessarily, before trade, not only the real wages of the less-skilled in the US/EZ should be higher than in China in absolute terms, but also the real wages of the skilled in China should be superior to their counterparts in the US/EZ previously of their engagement in commodities exchange. Table 4.1 synthetizes the all-around stylized facts that should hold if one is to talk about a tendency towards factor price equalization in the context of free trade between China and the US and the EZ as modeled by the HOS.

Table 4.1 – Stylized facts implied by the factor price equalization theorem: free trade between China and the US and EZ

	Manifestation of the tendency		
	Ws	wu	ws/wu
US and EU	↑	↓	↑
China	↓	↑	↓
	Pre-trade situation		
Skilled	wChina > wUS; wChina > wEU		
Unskilled	wUS > wChina; wEU > wChina		

Source: Author's own elaboration.
Notes:
(1) 'w' stands for wages, whereas 'ws' for skilled workers' wages and 'wu' for unskilled workers' wages.

4.1.3.3.1 The application of the HOS model over Chinese factor prices stylized facts

The real wages of skilled laborers in China before trade were not superior to their US counterparts and are still below it. In the neoclassical framework, considering all the assumptions discussed to hold, what could account for this 'odd' result? Furthermore, are the trends predicted by the HOS model the same if the pre-trade situation is different than the one assumed by the model? In order to discuss these questions, one needs to go back to the

[72]"To the extent that commodity movements are effective substitutes for factor movements, world productivity is, in a certain sense, optimal; but at the same time, the imputed real returns of labor in one country and of land in the other will necessarily be lower, not only relatively but also absolutely, than under autarky." (SAMUELSON, 1948, p.170)

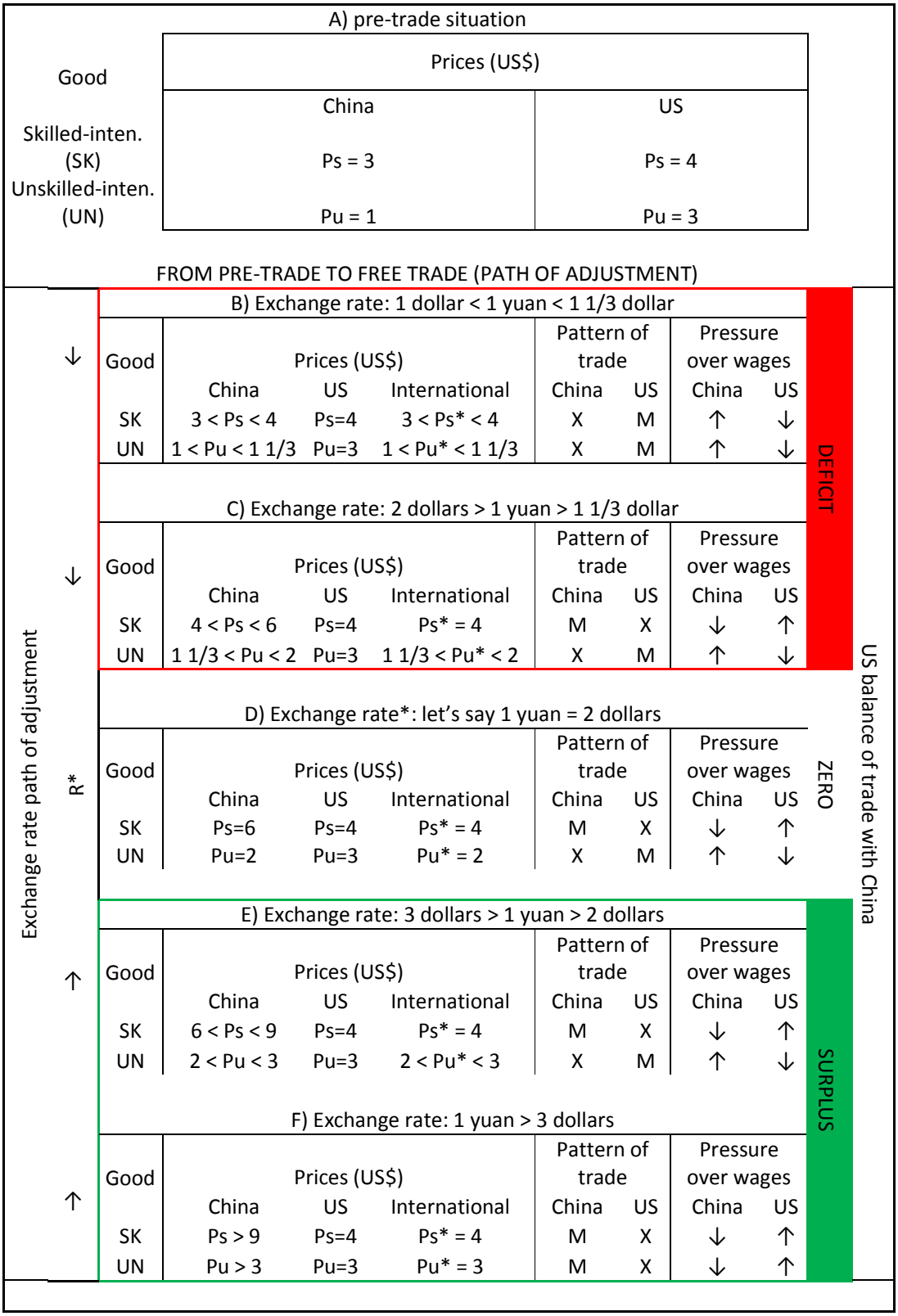
mechanism of adjustment that transforms absolute cost efficiency in comparative cost advantage, as described by Ricardo, and which, as emphasized by Shaikh, is generally absent in the neoclassical explanations of changes from the pre-trade to the free trade situations.

If China had the same technology of advanced countries and had lower real wages for both unskilled and skilled laborers, this would mean that, when free trade starts, China would produce both unskilled and skilled labor intensive manufacturing goods cheaper than advanced economies. Advanced economies would have a deficit with China, being undersold in both types of commodities. Recovering Ricardo's mechanism of adjustment in the context of the gold standard, money inflows from advanced economies would elevate China's price level and reduce price levels in advanced economies, until one of the products would become cheaper in the developed world – the one with relatively cheaper cost – which we are assuming to be the manufacturing goods intensive in skilled labor. In the case of flexible exchange rates, the yuan should appreciate in relation to the dollar/euro, and the exchange rate would assume a value at some point between the relative prices experienced in China and those in the advanced economies, making their skilled intensive manufactures cheaper than China and the imbalances disappear.

Let's assume a numerical example that would express, into the prices of goods, lower real wages for both unskilled and skilled labor in China than in the US (table 4.2). The pre-trade price of the manufacturing good that is intensive in skilled labor equals US$ 3 in China, while it amounts to US$ 4 in the US. The unskilled labor intensive good costs US$ 1 in China and US$ 3 in the US, entailing that the latter has a lower relative cost in the skilled-intensive good. If free trade starts at an exchange rate of 1 yuan to 1 dollar, China will export both goods to the US, which will have a trade deficit with China. In this scenario, China would put a downward pressure on the real wages of both skilled and unskilled laborers in the US.

However, this wouldn't endure, for the theory predicts that the yuan would start appreciating. When the exchange rate becomes higher than 1 yuan to 1 1/3 dollars, the US would start exporting skilled intensive goods to China, but would still hold a deficit with China until the exchange rate would assume the equilibrium value of, let's say, 1 yuan to 2 dollars – in which the balance of trade is equal to zero. The symmetrical reasoning can be found in table 4.2 for the exchange rate being higher than 1 yuan to 2 dollars – all the situations in which the US holds a trade surplus with China.

Table 4.2 – From autarchy to free trade



A) pre-trade situation

Good	Prices (US$)	
	China	US
Skilled-inten. (SK)	Ps = 3	Ps = 4
Unskilled-inten. (UN)	Pu = 1	Pu = 3

FROM PRE-TRADE TO FREE TRADE (PATH OF ADJUSTMENT)

Exchange rate path of adjustment

B) Exchange rate: 1 dollar < 1 yuan < 1 1/3 dollar

↓

Good	Prices (US$)			Pattern of trade		Pressure over wages	
	China	US	International	China	US	China	US
SK	3 < Ps < 4	Ps=4	3 < Ps* < 4	X	M	↑	↓
UN	1 < Pu < 1 1/3	Pu=3	1 < Pu* < 1 1/3	X	M	↑	↓

DEFICIT

C) Exchange rate: 2 dollars > 1 yuan > 1 1/3 dollar

↓

Good	Prices (US$)			Pattern of trade		Pressure over wages	
	China	US	International	China	US	China	US
SK	4 < Ps < 6	Ps=4	Ps* = 4	M	X	↓	↑
UN	1 1/3 < Pu < 2	Pu=3	1 1/3 < Pu* < 2	X	M	↑	↓

D) Exchange rate*: let's say 1 yuan = 2 dollars

R*

Good	Prices (US$)			Pattern of trade		Pressure over wages	
	China	US	International	China	US	China	US
SK	Ps=6	Ps=4	Ps* = 4	M	X	↓	↑
UN	Pu=2	Pu=3	Pu* = 2	X	M	↑	↓

ZERO

E) Exchange rate: 3 dollars > 1 yuan > 2 dollars

↑

Good	Prices (US$)			Pattern of trade		Pressure over wages	
	China	US	International	China	US	China	US
SK	6 < Ps < 9	Ps=4	Ps* = 4	M	X	↓	↑
UN	2 < Pu < 3	Pu=3	2 < Pu* < 3	X	M	↑	↓

F) Exchange rate: 1 yuan > 3 dollars

↑

Good	Prices (US$)			Pattern of trade		Pressure over wages	
	China	US	International	China	US	China	US
SK	Ps > 9	Ps=4	Ps* = 4	M	X	↓	↑
UN	Pu > 3	Pu=3	Pu* = 3	M	X	↓	↑

SURPLUS

US balance of trade with China

Source: Author's own elaboration.
Note: The equilibrium exchange is arbitrarily assumed as being US$2,0.

Thus, one possible explanation inside the HOS model for China to have lower prices in both goods – which would reflect lower real wages for unskilled and skilled laborers – would be that something is preventing the mechanism of adjustment to fully operate – in general, here comes into play the currency manipulation argument –, making bilateral trade to be stuck in situation B presented in table 4.2. This would mean that China would export both goods to the US, putting downward pressures in both skilled and unskilled workers' real wages in the US, and subverting the stylized facts derived from the factor price equalization theorem. Much of the discussion in the 2000s in mainstream economics regarding the impact of trade with developing countries on advanced economies has touched this question, as it will be discussed in the next section through the works of Samuelson (2004), Freeman (2006, 2010) and Krugman (2008)

As a matter of fact, the actual point to be claimed at the moment is that, inside the HOS model, it is impossible for China's pre-trade situation to be (even considering the period after the labor market reforms) one in which both factors of production have lower real returns than in the US at the same time that both countries have the same technology. Not only does the behavior of relative real wages in China not fit the predictions of the factor price equalization theorem, but also the pre-requirements for its application are not verifiable. If the real wages of the skilled go down in China and go up in the US, as predicted by the HOS model, they are not converging and factor prices are not equalizing. Nevertheless, most of the mainstream literature just ignores these inconsistencies, as their focus is restrained only to the supposed effects of the factor price equalization theorem in the US labor market and the Eurozone.

4.1.4 Assessment of the Transatlantic Consensus

Forged in the 1990s, the *Transatlantic Consensus* accrued to trade with developing countries a potential source of rising income inequality and unemployment in advanced economies. The bulk of empirical results produced within neoclassical academic literature, *grosso modo*, pointed to little or even negligible role for free trade in such explanation, in a great extent due to the inconsistencies with data from advanced economies (subsection 4.1.3.2). From the theoretical standpoint, the HOS model and the factor price equalization theorem were not only widely accepted as theoretically correct, but also adequate to treat

developing and advanced countries as being in the same technological frontier and having equal demand structures.

Nevertheless, even conceding to its strong unrealistic assumptions, Atkinson argued that the predictions of the *Consensus* for the EZ and the US could not be held at the same time in the HOS framework and were a wrong derivation of the model. Regarding the developing world, the core predictions for factor prices in China were in blatant opposition to actual trends. Moreover, these prognoses were contradictory in their own terms – while convergence of wages in China would dictate an absolute drop on skilled workers' real wages, the latter would need to increase if they were to equalize with advanced economies –, for the initial autarchy conditions presupposed by the model were not verified.

Most of the discussion around the factor price equalization theorem during the 1990s dealt implicitly or explicitly with the equilibrium position of balanced trade and its effects in the US. The mechanism of adjustment to free trade equilibrium and the impact on developing countries were in a large extent neglected. Notwithstanding, in the 2000s, the debate was significantly reshaped. The increased sophistication of Chinese exports and other developing nations to the US, coupled with the latter's massive trade deficit, brought new fissures to the debate in mainstream economics.

4.2 THE GREAT DOUBLING AND CHINA'S EFFORTS TO CATCH-UP: IMPOVERISHMENT OF ALL LABORERS IN ADVANCED COUNTRIES

The prospect of China succeeding in catching-up and even overpassing the US has shaken drastically the terms of the debate as proposed by Samuelson (2004) and by Freeman (2006, 2010). Three main overturns can be distinguished in the formulations of either the former or the latter: *i*) the abandon of the assumption of equal technologies; *ii*) the shifting away from an analysis in which the exclusive focus was on relative factor endowments to an interpretation that incorporates considerations of absolute magnitudes; *iii*) the glancing out of the polarity skilled versus unskilled labor to make some space for taking into account capital as a factor of production.

4.2.1 Unevenness of technologies and the 'Ricardian' trade model

It is at least quite curious that, in general, US mainstream economists would extensively use a model of international trade that presupposes equal technologies to treat trade between the US and developing countries from the 1970s to the 1990s – when the US clearly had tremendous technological superiority –, but are willing to dismiss it at any possible sign of curtailing and eventually defying such ascendancy from a developing nation. The matter becomes even more intriguing when the results of the 'same technology model' (HOS) are that all countries win from international trade, whilst the 'uneven technologies model' ("Ricardian") can lead to permanent losses for the US.

In Samuelson's case, it should be noted that his use of the Heckscher-Ohlin model for the development of the factor price equalization theorem in the 1948 and 1949 papers was modeled upon US ('America') trade with Europe. Thus, the assumption of same technology was not an extreme one. In contrast, Freeman (1995) – along with the bulk of mainstream academic literature – applied Samuelson's theorem in the context of marked technological differences between developing and developed countries. Freeman's (1995) justification for the use of such an assumption was that the "diffusion of technology through multinational firms has arguably put less-developed countries and advanced countries on roughly similar production frontiers" (FREEMAN, 1995, p.20). If this argument is to be accepted, then it only misses Samuelson's whole point when constructing the factor price equalization theorem: that is, to sustain that free trade was a perfect and preferable substitute for factor mobility. Therefore, in Freeman's justification for the case of trade between developed and developing countries, what ultimately equalizes factors' prices is not free trade, but foreign direct investment, which is only mentioned *en passant* in his analysis.

Dealing with free trade between China and the US ('America'), Samuelson (2004) makes use of a Ricardian-Mill model of comparative advantage – which assumes different technologies – with labor as the only factor of production. The model presupposes full employment, with adjustments being made through flexible real wage rates. The author presumes that China has lower productivity in both goods analyzed, although "my example stipulates that in good 1, China's inferiority of productivity is much worse than one-tenth; in good 2 China's inferiority vis-à-vis the United States is not as bad as one-tenth" (SAMUELSON, 2004, p.136). Therefore, China has a comparative advantage in good 2. In this context, Samuelson proposes to investigate the effects of innovation in Chinese industries over the pre-innovation free fair trade scenario on both China and the US.

In short, if innovation takes place in the good that China has comparative advantage, both countries gain under the assumption of a Mill-like demand. In the case in which demand is more inelastic, the deterioration of Chinese terms of trade can lead to impoverishment (SAMUELSON, 2004). Nevertheless, if innovation was to occur in the good that the US holds comparative advantage, then it could inflict permanent losses to the US relative to the gains obtained in free trade prior to the innovation (SAMUELSON, 2004). In Samuelson's example, innovation in good 1 makes relative productivities equal in both countries, muting comparative advantages and terminating the forces that lead both nations to engage in free trade. China's innovation in good 1 curtails the productivity gap between China and the US in the mentioned good, though China doesn't even need to catch-up or overpass the US to inflict permanent losses to the latter: China exogenous productivity gain needs only to be enough as to diminish US' production of good 1.

Thus, the 'diffusion of technology through multinational firms' – the supposition that would put all countries in the same technological frontier in order for the factor price equalization theorem to hold (FREEMAN, 1995) – could bring losses to advanced economies in relation to the gains they could obtain in the free trade pre-technological diffusion scenario. As labor is the only factor of production, with constant labor forces fully employed, the losses and gains discussed above are all reflected in, respectively, dwindling and growing real wages. Thus, free trade is only a win-win situation for all countries involved if the developing world is stuck in the traditional pattern of specialization which relegates to it activities intensive in unskilled labor and/or natural resources. Third World's productivity gains in industries that developed economies are specialized could harm the latter, reducing permanently real per capita income and, consequently, real wages – though rising real wages would be experienced in developing countries. These productivity gains, as Samuelson (2004) highlights, could be achieved by imitation, home ingenuity and/or outsourcing:

> Therefore, as a result of my 1948–1949 revival and perfecting of the 1919–1933 Heckscher-Ohlin argumentation of *factor price quasi-equalization by trade in goods alone*, one could have foreseen the following at World War II's end. Historically, U.S. workers used to have kind of a *de facto* monopoly access to the superlative capitals and know-hows (scientific, engineering and managerial) of the United States. All of us Yankees, so to speak, were born with silver spoons in our mouths— and that importantly explained the historically high U.S. market-clearing real wage rates for (among others) janitors, house helpers, small business owners and so forth. However, after World War II, this U.S. know-how and capital began to spread faster away from the United States. That meant that in a real sense foreign educable masses — first in western Europe, then throughout the Pacific Rim — could and did

> genuinely provide the same kind of competitive pressures on U.S. lower middle class wage earnings that mass migration would have threatened to do.
>
> Post-2000 outsourcing is just what ought to have been predictable as far back as 1950. (SAMUELSON, 2004, p.144)

Samuelson's adoption of a "Ricardian" model – which at the beginning seemed as a choice for a conflicting model relative to the Heckscher-Ohlin one – is an operation in which the author subsumes the factor price equalization theorem as a moment or a particularity/special case of the Ricardian model. In order for the factor price equalization theorem to take place, its pre-condition need to be verified: all countries must be in the same technological frontier. Without negating its own theorem – moreover, confirming it –, Samuelson is able to re-signify its outcomes from being a win-win scenario to all countries to a loss for the US, through comparing it with the situation which would have existed before its pre-condition could even be verified. If factor prices were to equalize among already developed nations, this would be a win-win situation for the countries involved. Nevertheless, the diffusion of technology from the US to the developing world, necessary for factor prices to equalize, is what harms the US.

Freeman (2006) endorses Samuelson's position that advanced countries could have losses if the developing world would start to compete in the sectors that the former have specialized. According to Freeman (2006), the argument made by mainstream academics that US skilled workers would be the winners of free trade[73] with developing countries could be compromised by China and India catching-up: "these analyses ignore the second challenge that the advent of the highly populous low wage countries to the global economy poses for the US and other developed countries. This is that these countries are becoming competitive in technologically advanced activities" (FREEMAN, 2006, p.5). As in Samuelson, it is the unmaking of the technological monopoly or the diffusion of technology that would inflict losses to the US by reducing real wages:

> The model that economists use to analyze trading patterns between advanced countries and developing countries assumes that the advanced countries have highly educated workers that enable them to monopolize cutting edge innovative sectors

[73] "Their joining the global labor pool reduces the prices of the manufacturing goods the US buys and raises demand and prices for the high-tech goods and services the US sells, which benefits educated labor. Lower prices for shoes, t-shirts and plastic toys and higher prices for semi-conductors and business consulting and finance would be in the interest of all US workers save perhaps for the last shoemaker or seamstress." (FREEMAN, 2006, p.5)

> while the developing countries lack the technology and skilled work force to produce anything beyond lower tech products. In this model, American workers benefit from the monopoly the US has in the newest high tech innovations. The greater the rate of technological advance and the slower the spread of new technology to low wage countries, the higher paid are US workers compared to workers in the developing countries. (FREEMAN, 2006, p. 5-6)

Nevertheless, the losses and real wage pressures that the authors are referring to are not exactly the same. Samuelson (2004) is reinterpreting the traditional pressure derived from the theorem of factor price equalization in a negative light for the US; in this case, the spread of technology paves the way for the constitution of a downward pressure over US unskilled workers' real wages, as he refers to the 'competitive pressures on U.S. lower middle class wage earnings' and to what would be equivalent to the immigration of workers similar to "a third of Americans [that] are not highly educated and not energetic enough to qualify for skilled professional jobs" (SAMUELSON, 2004, p.144).

In contrast, Freeman (2006) is expanding Samuelson's considerations to encompass also skilled laborers, as he worries about "many engineers and computer specialists troubled over the off-shoring of skilled work" and that "the spread of higher education and modern technology to low wage countries can reduce advanced countries comparative advantage in high-tech and adversely affect workers in the advanced countries" (FREEMAN, 2006, p.6). Defending Samuelson (2004), Freeman claims that "the assumption that only advanced countries have the educated work force necessary for innovation and production of high-tech products is no longer true" (FREEMAN, 2006, p.6).

By extending Samuelson's argument, Freeman proposes that China's integration in the global economy through the making of a catch-up trajectory would be putting also a downward pressure on the real wages of advanced countries' skilled workers: "China has moved rapidly up the technological ladder; expanded its high tech exports, and achieved a significant position in research in what many believe will be the next big industrial technology nano-technology" (FREEMAN, 2006, p.7).

Notwithstanding, posing a Chinese downward pressure over the real wages of skilled laborers in advanced economies is not Freeman's only point of departure from the traditional factor price equalization story.

4.2.2 The great doubling and the making of a global labor market

Dismissing the fission of the working class in unskilled and in skilled workers as the main analytical polarity supposed to give intelligibility to the process of globalization and its effects on the laboring classes, Freeman (2006, 2010) brings capital – as a factor of production – to neoclassical economics discussions. The change in perspective is motivated by the catch-up efforts being executed by China and India, as the author concludes that "the massive investments that the large developing countries are making in human capital" makes obsolete analyses based in the presumption of advanced countries having skilled workers, while developing, unskilled (FREEMAN, 2010). The factor proportion interpretation is thus re-directed to the dichotomy between capital and labor, whilst the examination of the pressures on skilled workers' wages is submitted to considerations of absolute magnitude.

The integration of China, India and the ex-Soviet bloc in the global capitalist economy in the 1990s has provoked what Freeman (2006, 2010) has called "The Great Doubling", referring to the twofold increase of the 'global labor pool'. According to the author, from 1.46 billion workers in the pre-integration period, the global labor pool was increased to 2.93 billion workers in 2000 (FREEMAN, 2006). Notwithstanding, the core question is that these countries have not brought much capital along with them, reducing the proportion of capital to labor in the global economy to "61 percent of what it would have been" prior to their entrance (FREEMAN, 2006, p.2). In Freeman's calculations, around three decades will be needed to restore such ratio to the level verified before the Great Doubling.

Although Freeman (2006, 2010) considers the issue of the impact of China's integration in the global economy on the wages in advanced countries through a factors' proportions perspective, he does not attempt to apply the HOS model and the theorem of factor price equalization in his analysis. If China is 'becoming competitive in technologically advanced activities', the HOS model could be employed through the assumption of same technology, letting the factor proportions of capital to labor establish the patterns of trade along with the pressures over real wages and real profits that such flows would entail.

In this framework, the US and the Eurozone would be abundant in capital, while China in labor. Therefore, China would export labor-intensive goods and developed countries capital-intensive ones. In autarchy, the real rate of profit should be higher in China than in the advanced economies, while real wages should be lower in the former relative to the latter.

Free trade would put in motion the forces for factor price equalization. Analogously with the case of skilled versus unskilled labor, the tendency in advanced economies would be towards increasing inequality by growing real rates of profit and dwindling real wages; whilst China would experience a convergent trend in the remuneration of factors, as real wages would rise and the real rate of profit would fall (table 4.3).

Table 4.3 – Stylized facts implied by the factor price equalization theorem for capital and labor: free trade between China and the US and EU

	Manifestation of the tendency		
	r	W	r/w
US and EU	↑	↓	↑
China	↓	↑	↓
	Pre-trade situation		
Capital	r China > r US; r China > r EU		
Labor	w US > w China; w EU > w China		

Source: Author's own elaboration.
Notes:
(1) 'w' stands for the wage rate, whereas 'r' for the rate of profit.

All these pressures predicted by the factor price equalization theorem could be tested by analyzing the behavior of the labor share (and capital share) on GDP. Once again, the stylized facts fit well the case of advanced economies, for labor shares on GDP have been falling since the 1970s in many advanced countries. As with the traditional stylized facts regarding unskilled/skilled laborers that inform factor price equalization analyses, the problem lies in the predicted outcomes for developing countries. In China, as well as in many developing countries, the labor share on GDP has been declining over the last decades (at least until 2008). Moreover, as there were no private property and profits in the Maoist period, the assumption that the real rate of profit and inequality was higher in China than in advanced economies in autarchy does not hold. Nonetheless, these facts do not seem to be the reason why neoclassical economics appears to avoid discussing the shrinking of the labor share in developed countries and their possible links to globalization and free trade, for the contradicting stylized facts in developing countries were not a hindrance to the application of the HOS model in the case of unskilled/skilled laborers.

Even though Freeman (2006, 2010) recurs to an explanation based on factor proportions, he abandons the HOS model. The claim that the ratio of capital to laborer has

drastically shrunk with the Great Doubling serves the author to restore the conflictive content of labor/capital relations through its effects on the bargaining power:

> This [the great reduction in the capital to labor ratio] has shifted the global balance of power to capital. With the new supply of low wage labor, firms can move facilities to lower wage settings or threaten to do so if workers in existing facilities do not grant concessions in wages or work conditions favorable to the firm. Retailers can import products made by low-wage workers or subcontract production to lower cost locales. (FREEMAN, 2006, p.3)

The considerable change in Freeman's approach to the subject has led the author to propose quite different effects of China's integration into the global economy on wages. From the perspective of China (and India), the low wages practiced in the country would suffer an upward pressure, which, nonetheless, would emanate from capital inflows instead of from the traditional pure free trade story. Freeman (2006) highlights that even though inequality has significantly risen in China, "the real earnings of urban workers more than doubled between 1990 and 2002" and "poverty fell sharply" (FREEMAN, 2006, p.4). Therefore, although the author claims the capital to labor ratio to be the key parameter to capture the effects of China's integration in the global economy on wages, the inflow of capital to China – augmenting the capital to labor ratio in the country and increasing labor's marginal productivity – does not entail to Freeman a correspondent increase on the labor share on GDP as it would be expected in a factor proportion explanation.

In relation to the effects in other countries, according to Freeman (2006), China's integration in the global economy would put downward pressures over wages almost all around the globe, simultaneously pressuring wages in the traditional periphery and in advanced countries. Latin America, Africa and other developing countries in Asia – which were the prior low wage producers to compete with advanced economies – "can no longer develop by producing generic low wage goods and services for the global market place that the Washington Consensus model of development envisaged that they would do" (FREEMAN, 2006, p.4).

On developed economies, the downward pressures would have a double nature, impacting both unskilled and skilled laborers. In the former case, the effect is a result of "trade and immigration", which would not be restrained to earnings but also affect employment[74]. Nevertheless, the traditional prescription of neoclassical economists to

[74] In the traditional periphery, the impact would be the informalization of employment (FREEMAN, 2006).

counteract this impact by raising the skills of the workforce would be innocuous, as China (and India) would also be exerting downward pressures over the wages of the skilled.

At this point, the issue for Freeman (2006) ceases to be about factor proportions and becomes a matter of absolute magnitude. Even though China (and India) still has a high proportion of unskilled laborers in its workforce, the absolute effect of investments to increase higher education in the country would be the relevant variable: "China and India have increasing footprints in high tech because as large populous countries, they can produce as many or more highly educated scientists and engineers as advanced countries even though the bulk of their work force is less skilled" (FREEMAN, 2006, p.7).

The pressure over skilled workers' wages would be exerted mainly by transnational corporations' FDIs. According to the author, more than 750 of those corporations had already placed R&D installations in China, since "the combination of low wages and highly educated workers in large populous countries makes them formidable competitors for an advanced country" (FREEMAN, 2006, p.8). In this sense, the author acknowledges the stylized fact that factor price equalization analyzes failed to, namely, that skilled workers' real wages in China were also lower than in advanced economies, violating the assumption/requirements supposed by the HOS model.

Freeman (2006) affirms that China and India would be "moving up the technological ladder by educating large numbers of students in science and engineering" – calling such phenomenon as "human resource leapfrogging" –, which would enable these countries to "use human resources to leapfrog comparative advantage from low tech to high tech sectors" (FREEMAN, 2006, p.8). Notwithstanding, if China can exert downward pressures over both unskilled and skilled workers' wages, it is not clear how China would 'leapfrog comparative advantage from low tech to high tech sectors', as it seems that the country would have 'comparative advantages' in both low tech and high tech industries, which is a contradiction in its own terms.

Finally, according to Freeman (2006), at some point in the distant future, wages in China and India will get close to the US. This would signal the end of the "long and epochal transition toward a single global economy and labor market" (FREEMAN, 2006, p.13). Ultimately, if the transition is successful, factor prices are going to equalize, not through free trade alone, but through "the triumph of global capitalism [which] has the potential for creating the first truly global labor market" which would bring "modern technology and

business practices to most of humanity" (FREEMAN, 2006, p.13). For Freeman (2006), there could be a good and a bad transition scenario to this truly global labor market. Nonetheless, free trade and 'technological transfer' – which seems to be an equivalent for FDI in Freeman (2006) – underpin the good scenario, while their hindrance is relegated to the bad one.

4.3 DON'T PANIC: SKILLED WORKERS CAN BE SAFE!

As the diagnosis put forward by the *Transatlantic Consensus* affected negatively only the wages of the unskilled, it opened two lines of policy prescriptions among neoclassical economists aimed to remediate the adverse effects of trade with developing countries: *i*) to capacitate blue collar laborers to become able to perform skilled work through professional training and educational attainment; and *ii*) to implement re-distributional policies aiming to compensate the losers with the gains achieved by the winners of globalization.

In the latter case, it was assumed that these gains were more than enough to do the compensation and still improve the situation of the winners relative to the autarchy scenario. Nevertheless, Samuelson (2004) shook the foundations of this discourse inside neoclassical economics not only by pointing out that the gains were not necessarily enough and could even transmute to overall losses, but also by stating that the potential to compensate is not a sufficient criterion "if there is no evidence that compensating fiscal transfer have been made or will be made" (SAMUELSON, 2004, p.144).

Apart from its blatant contradiction with the neoclassical core recommendation of 'sound fiscal policies' – which entail reducing educational public spending –, the main policy prescription of capacitating labor to counteract the adverse effect of free trade would put the latter's enthusiasts behind the eight ball if China's integration in the global economy were to put downward pressures on the wages of both skilled and unskilled laborers. Notwithstanding, the diagnosis of an existing downward pressure over the wages of skilled workers resulting from China climbing the ladder was far from achieving consensus in mainstream economics.

In this sense, the present section is dedicated to present two views against this diagnosis: the first asserts that the pressure over skilled workers' wages would be the fruit of the distorting effects of politics on 'natural' market outcomes; while the second reaffirms the *Transatlantic Consensus* through the qualification of China as a mere assembly base for skilled intensive goods produced through global value chains.

4.3.1 It is all about politics: the currency manipulation argument

According to Article IV, Section 1 (iii) of the International Monetary Fund's Articles of Agreement, all members of the Fund are obliged to "avoid manipulating exchange rates or the international monetary system **in order** to prevent effective balance of payments adjustment or to gain an unfair competitive advantage over other members" (IMF, 2006, p. 8, emphasis added). As the IMF itself highlights, currency manipulation is not determined by the effect of policies that actually prevent the adjustment, but by measures that have the deliberate purpose of achieving such result through either an overvalued or undervalued exchange rate (IMF, 2006).

Examples of potential exchange rate manipulation – that might compel the IMF to scrutinize and discuss the behavior of its members – "could occur through excessive intervention in the exchange markets or through the imposition of capital controls. […] In some cases, the manipulation may be designed to prevent movement in the [exchange] rate" (IMF, 2006, p. 15). Although the IMF claims to determine independently whether a member has been a currency manipulator, it also recognizes that "the determination as to whether the competitive advantage obtained by a member through manipulation is 'unfair' would require the exercise of considerable judgment" (IMF, 2006, p.15).

For more than a decade, China has been at the center of the debate on currency manipulation. According to Krugman (2010a), accusations that the country would be a 'manipulator' started around 2003, although the US Treasury had already listed China as a currency manipulator in 1994. In consonance with this line of reasoning, currency manipulation by China would be hindering the adjustment to the free trade equilibrium position, contributing for the large US trade deficit. Defending protectionist measures in the US against China, Krugman went as far as to affirm that China's currency manipulation "is the most distortionary exchange rate policy any major nation has ever followed. China, by engineering an unwarranted trade surplus, is in effect imposing an antistimulus on these economies, which they can't offset." (KRUGMAN, 2010a)

A heated controversy has been built around these claims, enduring up to the moment of the writing of this chapter. The latest episode occurred on August 11, 2015, when the Chinese central bank devaluated the yuan after a long period of slow though sustained appreciation. The move sparkled once again innumerous accusations of China being a

currency manipulator, aiming to unfairly gain competitive advantage over its trade partners. Notwithstanding, by 2015, the IMF had finally declared that the Chinese currency was no longer overvalued or 'misaligned'. Lest being mistaken for Donald Trump, Krugman also announced that his position was no longer the same, stating that 'China 2015 is not China 2010', and that the yuan was probably overvalued (KRUGMAN, 2015).

4.3.1.1 The soft version of the distorting effects of China's currency manipulation and its impacts over real wages

To gauge the way in which currency manipulation would alter the predictions of the factor price equalization theorem, it is of use to go back to the adjustment path from autarky to free trade in table 4.2. In this context, the supposedly unfair Chinese trade practice would be responsible for 'locking' the US in the either position B or C. In the latter case, currency manipulation would be softer than in the former, as China would still export unskilled labor intensive goods and import skilled labor intensive manufacturing goods, allowing for the 'correct' pattern of trade – that is, the one based on countries' comparative advantages. Nonetheless, since its currency would be artificially undervalued, it would export more and import less than in free trade equilibrium, benefiting China over the US: "The consequences of this policy are also stark and simple: in effect, China is taxing imports while subsidizing exports, feeding a huge trade surplus" (KRUGMAN, 2010b).

From the standpoint of the US, in situation C relative to the equilibrium position, China would be putting a much stronger downward pressure over the real wages of the unskilled. As the international price of the unskilled intensive good would be lower than with free 'fair' trade, the Stolper-Samuelson theorem predicts that such a drop in the good's price should be matched by a more than proportional reduction in the real return of the factor that was used intensively. In contrast, the upward pressure over the real wages of the skilled would be much more limited, since the Chinese demand for US skilled labor intensive goods would be restrained.

Thus, if one wants to add up the currency manipulation story with the attempts to apply the factor price equalization theorem to the stylized facts in the US, one should expect rising inequality dominated by falling real wages of the unskilled and not by hiking real wages of the skilled. Inversely, in China, unskilled workers' real wages would have their growth artificially limited, whilst the predicted drop in the real wages of skilled laborers

would be smaller than with free trade, since they never achieved the heights supposed by the equilibrium exchange rate.

The effects over real wages resulting from China's currency manipulation would be quite different in Krugman's view (2010b). In the specific context of a 'depressed world economy', the result would be unemployment in the US and other nations. Nonetheless, we are abstracting this scenario since all the modeling in neoclassical international trade theory supposes full employment. In China, Krugman states that currency manipulation to keep the Renminbi undervalued "promotes inflation, erodes the real wages of Chinese workers and squanders Chinese resources" (KRUGMAN, 2010b). Nevertheless, according to Laffer (2014) – an enthusiast of free trade and an adherent to the neoclassical theory –, to characterize the practice of currency manipulation, the devaluation should be met by sterilization, allowing the country to interfere in the real exchange rate:

> Sterilization essentially removes the potential inflationary effect of the devaluation on the money supply by absorbing the excess currency that was introduced from the devaluation. When a country takes persistent, unilateral efforts to devalue its currency and sterilize price changes, it is trying to change its real exchange rate and is often called currency manipulation or "beggar-thy-neighbor" policies. (LAFFER, 2014, p.1)

4.3.1.2 The hard version of the distorting effects of China's currency manipulation and its impacts on real wages

The narrative could get even worse for the US, as China's unfairness reaches higher levels, making the US stuck in situation "B". The hypothesis that US trade with developing countries would be a "B" scenario is cogitated by Krugman (2008), although subsequently dismissed by him. Highlighting the facts that *i)* US trade with developing economies had increased significantly more since the studies of the early-1990s; *ii)* that non-traditional partners with even lower wages in the developing world became the major exporters to the US – namely, China followed by Mexico –; *iii)* that the US started accumulating large trade

deficits[75]; and *iv)* that a great amount of such imports from China/developing countries were composed by electronics, particularly computers, Krugman states what would be situation B:

> […] even if a country runs so large a trade deficit that it is implicitly an importer of both skilled and unskilled labor, trade still raises the skill premium as long as constructing the hypothetical no-trade economy requires increasing the quantity of unskilled labor by more, in percentage terms, than the quantity of skilled labor. (KRUGMAN, 2008, p. 121)

By playing unfairly, China would be able to export goods that it has no comparative advantage, extensively contributing for the massive US trade deficit. According to Krugman's theoretical scheme, in such hypothesis the "rising trade deficits have made the United States a consistent importer of goods produced both by highly educated and by less educated labor […] factor content arises from a trade deficit as well as from comparative advantage" (KRUGMAN, 2008, p.122).

In scenario B, China's 'currency manipulation' would affect drastically the pressures for factor price equalization as predicted by the theorem. Preventing international relative prices to correctly express comparative advantages, currency manipulation would allow China to produce both goods cheaper than in the US, entailing lower real wages for both kinds of Chinese laborers relative to their counterparts in the US. Through exports of unskilled labor intensive and skilled labor intensive manufacturing goods, China would put downward pressures on the real wages of both unskilled and skilled US laborers, though in a much more intense degree on the former than in the latter or relative to situations C and D of table 4.2.

The accentuated downward pressure over the real wages of the unskilled would guarantee Krugman's (2008) affirmation that "trade still raises the skill premium". Nonetheless, this increase would result from a substantially different process than the one supposed to emanate from free trade: the skill premium rises in the US because the fall of unskilled workers' real wages is much sharper than the one that should be suffered by the skilled. In the meanwhile, real wages of both types of laborers in China would experience upward pressures, although the gains of the unskilled would be severely restrained in relation to the equilibrium position.

[75] "One qualification that needs to be made right away [to the dramatic rise in U.S. imports of manufactured goods from developing countries since 1989] is that to some extent this rise reflects the movement of the United States into massive trade deficit." (KRUGMAN, 2008, p.107)

In tandem with the hypothesis raised above, as a trade deficit is always 'artificially' provoked by hindrances to free trade, China success in exporting skilled intensive goods to the US would also be the result of 'artificially' competitive prices for such Chinese sophisticated goods, both being the results of unfair Chinese trade practices. Thus, in this story, the Chinese government has been deliberately holding back the adjustment mechanism that leads trade to equilibrium, enabling the country's exports of skilled labor intensive goods, which would inflict material losses or real wage reductions for all workers in the US.

4.3.2 Statistical illusion

The second line of reasoning is the central point made by Krugman in *Trade and Wages Reconsidered*: namely, that the sophistication of Chinese/developing countries' exports is a mere statistical illusion or a measurement error, that is, China/these countries was/were still specialized in unskilled labor intensive manufacturing. This phenomenon has been vastly analyzed by the academic literature on international trade. As Krugman (2008) highlights, in general, US imports from developing countries are in unskilled labor-intensive industries, except for the outlier case of computers and electronics, mainly exported by China.

The fragmentation of productive processes through the development of global value chains has been inextricably intertwined with the blooming of the electrical machinery and electronics industry. In Asia, the building of these chains has relegated for low wage countries the unskilled labor-intensive stages in the productive processes of these high-tech goods. Modularization, scale effects, product portability, time sensitivity and technological diversity – factors that enable for a greater degree of fragmentation in a particular industry along with the policy environment (KIMURA, HAYAKAWA & JI *apud* PAPRZYCKI & ITO, 2010) –, are "characteristics of the electrical machinery/electronics industry [which] are particularly conducive to production fragmentation" (PAPRZYCKI & ITO, 2010, p.8). As a result, there can be a marked contrast between the level of sophistication of developing Asian countries' exports lists and the nature of the economic activities performed by them.

In this context, Krugman (2008) affirms that the sophistication of China's exports is a mere statistical illusion as the country functions as "an assembly base that is dependent upon overseas parts, intermediary goods, and capital goods" (KRUGMAN, 2008, p. 128), in which the skilled labor intensive inputs are imported from developed countries. China's specialization in unskilled labor-intensive stages of global value chains can be identified by

the analysis of its exports and imports by stage of production. The predominance of consumer goods in the exports and capital and intermediary goods in the imports reveals China's insertion in the assembling activities of global value chains. According to Gaulier, Lemoine and Ünal-Kesenci (2005), the presence of deficit in intermediary goods would be the main indicator of China's specialization in assembling.

At the beginning, international productive fragmentation in manufacturing has assumed the simple form of detaching the assembling of imported parts and components from the rest of the productive process. Therefore, developed countries exported parts and components to the developing world for assembling and then imported the consumer goods back into their markets. In this sense, the direction of the trade flows of parts and components revealed the existence of a well-defined technological hierarchy between the economies involved.

Notwithstanding, the deepening of fragmentation in some industries, particularly in the electrical machinery and electronics industry, has engendered the splitting of the own productive processes of parts and components into different stages (PAPRZYCKI & ITO, 2010). The semiconductor industry is an exemplary case of the furthering of fragmentation. Semiconductors, particularly integrated circuits, are the 'intelligence' of all electronics and electrical machinery and respond for bulky shares of value added in final goods. In the productive processes of semiconductors, fragmentation has separated production into activities that are intensive in unskilled labor, in capital and in skilled labor. Each stage has a totally different pattern of geographical localization, entailing multidirectional international trade flows of semiconductors between and across developed and developing countries.

The enhancing of fragmentation has contributed to accentuate the apparent contradiction of existing export lists that are increasingly sophisticated in terms of technology, though are a byproduct of activities eminently intensive in unskilled labor, as in the case of low wage Asian countries. Moreover, the direction of the trade flows of parts and components ceased to be an adequate parameter to the construction of a technological hierarchy among countries, as well as to assess their positions, in terms of value added, in global value chains.

Therefore, in Krugman's (2008) view, China's and developing countries' export sophistication was a substantially distorted effect on trade data of their insertion in unskilled intensive stages of production inside high-tech industries. As examples of industries in which

fragmentation has separated production in unskilled and skilled labor intensive stages, Krugman highlights the cases of computers, the iPod, semiconductors and auto parts – the first three extensively involving China and other Asian economies, while the latter is mostly associated to Mexico's exports to the US[76]:

> The broad picture, then, is that the apparent sophistication of imports from developing countries is in large part a statistical illusion. Developing countries in general, and China in particular, are probably specializing in very different niches within industries than the United States. But how does all of this bear on the question of whether rising trade with developing countries has led to rising wage inequality in the United States? (KRUGMAN, 2008, p. 128)

According to Krugman, the failure to notice the process of vertical specialization behind China's and developing countries high-tech exports has led some studies to consider that US trade with such nations was no longer changing the relative supplies of factors in the US economy, as a large share of these imports was deemed skilled labor intensive. Therefore, trade with developing countries would no longer be putting pressures on real wages in developed economies towards inequality. Nonetheless, in unveiling this apparent sophistication and showing that through vertical specialization China and other developing countries were still performing unskilled labor intensive activities, Krugman (2008) reaffirms the traditional effects predicted by the HOS model: "the consequences can closely resemble the textbook effect" (KRUGMAN, 2008, p.103); "the actual effects on workers in the developed economy reflect a sort of Stolper-Samuelson effect: the real wages of skilled workers rise, while those of unskilled workers fall" (KRUGMAN, 2008, p.134).

Notwithstanding, the statistical distortions in trade data – "that lump unskilled labor-intensive 'assembly' operations together with skilled labor-intensive 'component' manufacture" (KRUGMAN, 2008, p.134) – would make the impacts of trade on wages impossible to measure, as the import content of China's and developing countries' exports became very high, reflecting the skilled intensive labor parts and components used in assembling (KRUGMAN, 2008).

[76]This pattern of localization is probably linked to higher transportation costs relative to the value added in the auto industry vis-à-vis the others cited: "For example, electrical machinery/electronic parts and components, such as semiconductors, tend to be small and light, yet high in value, so that transportation costs are far outweighed by the cost savings achievable through fragmentation. This contrasts, for example, with many transport equipment parts and components, which are often bulky, such as air conditioner ducts for automobiles." (PAPRZYCKI & ITO, 2010, p.8)

Establishing if China's exports are in fact the result of China climbing the ladder or just a statistical illusion cannot be solved by merely focusing on trade data. The deepening of fragmentation in the production of parts and components has accentuated the insufficiency and precariousness of trade data as an instrument for assessing the type of insertion China and other Asian economies have in global value chains, along with the corresponding degree of technological sophistication involved in the productive activities executed in these economies.

4.4 CONCLUSION

Referenced in the idea that free trade is a perfect substitute for factors' mobility, neoclassical economics has discussed the impacts of China's integration in the global economy on advanced countries' wages mainly through its theory of international trade. The role of foreign direct investment and transnational corporations in this debate is peripheral, or, in many cases, totally neglected. Moreover, the debate has been set in such a way that globalization and the impoverishment of laborers became completely dissociated from profits, as the dichotomies that structure the debate are *i*) between countries, which are the agents of trade; and *ii*) between laborers, which compose the distinct factors of production.

Despite the different neoclassical interpretations, a core denominator among them is the idea of a unified, single, homogenizing global labor market. The factor price equalization theorem is nothing more than a story about how international trade creates a unified global market for each factor of production (even for land!). Samuelson's (2004) Ricardian model does not substantially change this reading, but instead is an attempt to put it in a dynamic context, discussing how changes in a technologically asymmetrical world can, through trade, promote the reconfiguration of these unified global markets for factors of production. Freeman (2006), in an incipient, doubtful and inconsistent to the neoclassical framework manner, brings capital as a factor of production and FDI in his explanation of the making of the 'first truly global labor market'.

The only phenomenon of economic nature that could disrupt this homogenizing tendency towards the making/consolidation of a unified global labor market is the exceptional scenario in which technological change brings about a situation where 'all comparative advantages have been emasculated' (SAMUELSON, 2004, p. 141). Such extreme hypothesis of the neutralization or inexistence of comparative advantages – expressed by equal autarchy relative prices – which was inscribed as possibility since Ricardo's proposition of the

principle of comparative costs, would be the unique economic compulsion or ‘natural’ market outcome that could fracture this unified global labor market, disintegrating it in completely isolated and independent national labor markets.

Definitely, the incorporation of Chinese laborers – along with those in India and the ex-Soviet bloc – to the global capitalist workforce represents a homogenizing and unifying force, as it entails processes which tend to transform an enormous contingent of humankind in laborers freed to sell their labor power to international capitals, becoming qualitatively indifferent in their capacity of being labor-power. Nonetheless, this homogenizing force is not absolute, since the own existence of a labor market presupposes the distinction of workers in different groups and strata, in which we should mention the fundamental polarity between employed and unemployed as a constituent element.

Chapter 5. THE INTERNATIONALIZATION OF MANUFACTURING PRODUCTIVE PROCESSES AND CHINA'S ROLE AS THE FACTORY OF THE WORLD

If international trade flows are spontaneous processes that emanate from given diverse national sets of factors' endowments, benefiting the whole world and each and every single nation, it definitely makes no sense for those who own factors of production to displace them across borders, in pursuing an outcome that is bound to occur regardless of such actions. Therefore, in neoclassical theory, international trade in the channel *par excellence* through which China's integration in the global capitalist economy affects wages in advanced countries, with some laborers losing, other gaining, and the trading nations becoming economically more puissant. Moreover, Chinese laborers appear as the greatest beneficiaries of free trade, for not only their rewards were increased, as skilled workers in advanced countries, but, more importantly, they were lifted out of poverty.

In Part I of the present thesis, we already discussed that, quite on the contrary, there was nothing spontaneous on the rising Chinese wages, which were the product of more than a decade of intensified clashes between peasant-workers against the state and capital, forcing the former to change the direction of its policies and to promote institutional changes in order to assure the viability of the political regime and capital accumulation in the country. Furthermore, capital accumulation in China was not met by increasing absolute poverty for the 'factor of production' land was just gradually and still not fully commodified.

In the present chapter, by rejecting the neoclassical narrative, we aim to situate China's integration in the global capitalist economy in the context of the internationalization of manufacturing productive processes led by transnational corporations (TNCs) from advanced countries. Though international trade definitely has a prominent role in this process, in a large extent it constitutes an epiphenomenon of advanced countries TNCs' strategies of offshoring, through green field FDI, and outsourcing – or what UNCTAD (2011) calls 'non-equity modes of international production' – to China, aiming to increase profitability and their competitive position in the global market by drastically reducing unit labor costs.

The dramatic and immediate cost reductions capital obtained by off-shoring and outsourcing industrial production to China occurred essentially in wage-goods industries, first in those with low organic composition of capital, such as textiles, footwear and toys, and subsequently in labor intensive productive stages of industries with high technology and

organic composition of capital, as the assembling of electronics and ICT goods, boosting the development of global value chains (GVCs).

In this context, the present chapter is divided in six sections. Section one discusses international trade's intrinsic connection with the internationalization of manufacturing productive processes enabled by neoliberal globalization and led by TNCs, which engendered a new international division of labor. Firstly, based on Anwar Shaikh criticism to neoclassical theory of international trade and abstracting from internationalization of productive processes, the section denies that comparative costs are the ruling principle of international trade, which transformed in comparative advantages by neoclassical theorists, underpins the HOS model and the theorem of factor price equalization, to affirm that international trade, as trade inside a nation, is determined by absolute costs. As absolute costs depend on productivity and wage levels, differences in wage levels between center and periphery can potentially be a source of costs reduction, and therefore higher profits, for advanced countries' capitals. The liberalization of trade and FDI flows, as well as the reduction in costs of communications and transportations coupled with and resulting from technological advances, has transformed this potential in actuality. Therefore, secondly, the section discusses the internationalization of manufacturing productive process through the formation of global value chains led by TNCs, which largely granted international trade flows an epiphenomenal character and changed the traditional center-periphery patterns of trade.

Whereas section one discusses these processes along the lines of the dichotomy center/periphery or global South and global North, section two claims that the internationalization of manufacturing productive processes was by large a process of industrial delocalization of advanced countries' production towards China, transforming it in the 'factory of the world'. The section discusses the reasons that lead China to acquire such predominance and to become the gravitational center of the internationalization of manufacturing productive processes. The attractiveness of China to advanced countries' capitals was its extremely low labor costs, based on the exploitation of the labor-power of rural migrant workers. Nevertheless, low labor costs are traits of most of the global South, falling short in explaining why China acquired a *primus inter pares* position in terms of attractiveness to advanced countries' capitals. We aim to stress these particularities, which are heavily marked by the state action, in order to explain China's sui generis position, without obscuring its fundament, the low labor costs, through a critical engagement with Samir Amin position on China, who downplays the role of advanced countries' capitals in the country and

the higher than average profits and rents made by the latter through the exploitation of China's labor force.

Sections three to six aim to provide a panorama of China's prominence in the internationalization of manufacturing productive processes and the changes in such position over the last decade, through an analysis that contemplates both international trade and offshoring and outsourcing parameters. In these sections we undertake a statistical analysis which reveals China's status as 'factory of the world', offering a broad assessment of the different dimensions of China as world manufacturing center. Section three focuses on China as the center of attraction to advanced countries' FDI, while section four provides a picture of China as a sectorial diverse manufacturing export power. The fifth section assesses China's centrality to internationally fragmented manufacturing productive processes. Finally, the last section depicts the counterpart movement of China's centrality in the internationalization of manufacturing productive processes led by TNCs, namely, the overreliance of advanced countries' consumer markets on China as foreign supplier.

5.1 INTERNATIONAL TRADE AND THE INTERNATIONALIZATION OF MANUFACTURING PRODUCTION THROUGH GLOBAL VALUE CHAINS

In the neoliberal era, international trade cannot be understood without its intrinsic connection with the internationalization of manufacturing productive processes led by TNCs and manifested in the formation of global value chains. Therefore, the HOS model and the theorem of factor price equalization can be easily dismissed by the claim that capital mobility is a reality and has achieved dimensions previously unseen, breaking the assumption of factors' immobility across national boundaries. Nonetheless, even abstracting from internationalization of productive processes, the core principle underlying neoclassical theory of trade, Ricardo's principle of comparative costs – which was disfigured into comparative advantages by neoclassical theorists – fails to explain the operation of international trade. Instead, based on Shaikh's critique, we argue that, as inside a nation, absolute costs are the ruling principle of international trade. Once absolute costs become the theoretical instrument explaining the workings of international trade, not only persistent trade imbalances and 'win-lose' instead of 'win-win' situations appear as coherent outcomes, but also it becomes intelligible why capital in its productive form move across national borders, instead of just

waiting for the 'inevitable' and 'preferable' outcome of factor price equalization deriving from international trade.

5.1.1 Absolute costs as the ruling principle of international trade

At the core of the HOS model lies the principle of comparative advantage, which is a modification of Ricardo's theory of comparative costs (or comparative prices of production)[77] as the ruling principle of international trade (SHAIKH, 2016). Differently from trade inside a nation, where absolute costs are the ones that matter (i.e., consumers will buy from the producers who sell the cheapest and the latter will be those with the smallest absolute costs), Ricardo sustains that, in a world with no capital and labor mobility, international trade flows are determined by comparative costs.

Whereas Ricardo's comparative costs theory of international trade assures that all nations will be competitive in the world market, being able to export those goods in which they have the highest relative efficiency or the smallest relative disadvantage; neoclassical theory, by assuming full employment everywhere, guarantees that, at the end, the passage from autarchy to free trade will be 'painless': it implies that labor will be just relocated across the different sectors of the national economy, in such a manner that any sort of unemployment is bound to be short lived due to its transitional or 'frictional' character (SHAIKH, 2007).

Ruled out the possibility that free trade might bring permanent unemployment, nations are thus ready to collect the wonders of free (and therefore balanced) trade: increased GDP for each country – materializing in a larger income for the whole world – and true equanimity brought about by factor price equalization. It does not matter if you are Chinese, Brazilian, Congolese, French or American, if you are a laborer you are going to have your fair share, what you contributed to the augmented world pie, which is absolutely the same regardless of the national borders in which you are voluntarily or involuntarily stuck into. Moreover, free trade supposedly has benefits that transcend the economic arena: it promotes peace and sisterhood among nations due to the mutual gains they provide to each other, being one of the

[77] "Comparative costs are said to be relevant here, not the absolute costs. It should be said that the term 'cost' in the Ricardian literature refers to prices of production (i.e., cost-based competitive prices). Neoclassical theory builds the normal profit rate into average costs so that it represents a price of production (chapter 7, section I). On the other hand, Smith and Marx distinguish between unit cost (unit wages, materials and depreciation) and price of production, since no capital is guaranteed a normal rate of profit." (SHAIKH, 2016)

pillars of complex interdependence which gives substrate to the existence of an international 'community'.

We already pointed out in the previous chapter that it is Ricardo's endorsement of the quantity theory of money which asserts the operation of an automatic mechanism that transforms the responsiveness of international trade flows from absolute cost advantages to relative cost advantages (SHAIKH, 1980, 2016; MILBERG, 1994), "that is, a situation of comparative cost differentials must automatically become one of absolute money cost and price differentials" (MILBERG, 1994, p.220). Therefore, an all-around more efficient nation would see the international currency prices of its commodities increase – either through the exchange rate or national price levels – until the ones it has less absolute advantage become dearer than those produced by other less efficient nations, up to the point in which trade is balanced[78].

Generally, this result appears in neoclassical theory as the byproduct of nations' choosing to specialize according to their comparative advantages. Notwithstanding, the outcome of the automatic mechanism is indifferent if we take, as Ricardo, the actual agents of international trade: firms, whose aim is not to increase national product, but its own profits[79] (SHAIKH, 2016). The matter lies in the fact that there is no such automatic mechanism that transforms 'comparative cost differentials' into 'absolute money cost and price differentials', as stressed by Milberg (1994). Drawing from Smith, Marx and Keynes, Milberg (1994) and Shaikh (1980, 2007, 2016) sustain that absolute costs, as in the case of national trade, are the basis of international trade and accrue for persistent trade imbalances, since net flows of international money generated by trade imbalances affect the interest rate and not price levels.

In Ricardo's example, Portugal starts exporting both wine and cloth because they are produced cheaper than in England. The flow of gold from England to Portugal, corresponding to the former's trade deficit, instead of resulting in higher price levels in Portugal and lower, in England, will increase liquidity in Portugal, reducing its interest rate, while having the opposite effect in England. The differential in the interest rates will trigger short term capital flows from Portugal to England until the rates are equalized; Portugal's excess liquidity is

[78] To this outcome other assumptions are needed regarding the responsiveness of the balance of trade to changes in the terms of trade. See Shaikh (2007).

[79] "In neoclassical economics, this switch in focus is greatly abetted by treating international trade as an exchange process between two individuals called England and Portugal, each of whom trades in order 'gain' something. This procedure has the additional virtue of instilling the false notion that the very purpose of free trade is to benefit all nations, rather than to make profits for their business" (SHAIKH, 2016)

recycled as loans to cover England's trade deficit, resulting in a persistent trade deficit and chronic indebtedness for England (SHAIKH, 1980), as "the country with a competitive advantage will enjoy a trade surplus which will enable it to be an international lender, while the country at a competitive disadvantage will suffer a trade deficit and become an international borrower" (SHAIKH, 2016). In the case of flexible exchange rates, its movement or lack of cannot be assessed a priori, once it is contingent on both the effects emanating from short-term capital flows and the trade imbalance (SHAIKH, 2016)[80].

Actually, these net flows generated by trade imbalances might affect prices and the own trade balance, though through other channels and definitely not in a self-correcting fashion bound to bring trade to balance. On the one hand, as Marx qualifies the argument, they affect price levels in so far as "fluctuations in the interest rate enter into the determination of cost-prices, or in the determination of demand and supply, [if not for that] commodity prices would be wholly unaffected by them [the net inflows or outflows of gold]" (MARX *apud* SHAIKH, 1980, p.224). On the other hand, variations on the interest rate, led by the net flows of money accrued to trade imbalances, influence the level of investment and – in as much as the level of imports of a country is related to the size of its GDP – indirectly impact the balance of trade, through what Shaikh (2016) identifies as the Keynesian channel. According to Shaikh (2016), the Keynesian channel will affect the size of the trade balance of a nation, which depends on relative national incomes; though the direction of the trade balance is determined by "absolute cost advantage or disadvantage", identified as a classical channel (SHAIKH, 2016).

Nonetheless, even if trade imbalances led to a change in national price levels or in the nominal exchange rate as postulated by the quantitative theory of money, this would not necessarily entail the transformation of relative costs advantage in absolute money cost advantage necessary to achieve balanced trade as supposed by the Ricardian automatic mechanism. Shaikh (2016) stresses that Ricardo, as well as the literature on international trade in general, when discussing relative costs are actually dealing with relative prices of production. Once allowed for the differentiation between prices of production from 'costs' as treated by businesses and identified by Smith and Marx – that means, the cost of a unit of

[80] "Ricardo proceeds as if commodity trade flows are completely separated from financial flows, so that a trade balance is synonymous with a balance of payments. Money appears in his story as a medium of circulation, but never as financial capital. This is extremely odd from a historical point of view, since the export and import of financial capital (international borrowing and lending) is intrinsically linked to the flow of funds arising from the export and import of commodities. More important, it is equally odd from a theoretical point of view because it *implies that money and finance are completely divorced from each other*." (SHAIKH, 2016)

product being given by wages, materials and depreciation needed to produce that unit –, Shaikh (2016) highlights that the interrelation between prices and costs as worked out by Sraffa, in accounting for the feedback of prices of production on costs, would mean "that even if the real exchange rate did automatically vary with the trade balance, as Ricardo supposes, comparative costs will not move in the Ricardian manner as long as real costs (real wages and productivity) are determined at the national level" (SHAIKH, 2016).

Therefore, we have a complete inversion of perspective from neoclassical theory: instead of free trade determining real wage levels – through the equalization of production factors' relative scarcities across countries – in a world where technological progress is diffused to all nations; real wages and productivity differentials appear as the fundamental determinants of trade flows: "international competitiveness will be tied to differences in efficiency, real wages and technical proportions, and there is nothing in free trade itself that will eliminate absolute cost advantages or disadvantages" (SHAIKH, 2016). Structural differences setting nations' competitiveness are, thus, expressed in the form of persistent trade imbalances.

Considering the effects of free trade and short term financial capital flows only, Shaikh (2016) sustains that, as unevenness in development among nations is expressed in higher organic composition of capital in the center and lower in the periphery, the center will be generally more competitive than the periphery, which will tend to have persistent trade deficits. International borrowing to offset these deficits tends to aggravate unevenness in the development of countries, in as much as the payments of interests from less to more competitive nations acts as an additional obstacle for the former's process of domestic capital accumulation (SHAIKH, 1980, 2016).

5.1.2 Off-shoring, outsourcing and global value chains

Nonetheless, enabled by the liberalization of trade and foreign direct investments, as well as technological advances, TNCs would bring their high productivity facilities to where labor costs were low with the aim to supply the large consumer markets of advanced countries, a process that would radically change the pattern of trade between center and periphery:

> Once we admit the possibility of international movements of industrial capital, however, wage disparities between capitalist nations become an important factor in their own right. Consider the case of an individual capital in the DCC [developed capitalist country]. If we ignore transportation costs, then the same price rules everywhere. Thus, it will take more or less the same amount of gold to build and supply a given type of plant anywhere in the world: the sole difference between countries will therefore arise from the differing costs of labor-power; that is, from the combined effects of the differences in direct productivity and the differences in wage rates. (SHAIKH, 1980, p.210)

Neoliberal globalization, in significantly throwing down the institutional barriers that protected national economies, has allowed capital to drastically increase profits through what came to be known contemporarily as 'global labor arbitrage'. Nevertheless, not all capitals can engage in such pursuit, which presupposes significant levels of concentration and centralization: "to project itself there where the labor force is abundant and without defense is only on the reach of the large financial groups with industrial and commercial dominance"[81] (CHESNAIS, 2015, our translation). For these large groups' new investment decisions, in as much as technology is concerned, productivity is to be seen broadly as firm specific, moving along with TNCs to their location of choice, "in other words, TNCs can take advantage of low wages but do not need to accept prevailing productivity levels, enabling them to reap super-profits" (SMITH, 2010, p.212). Internationalization of productive processes led by TNCs, on the one hand, was predicated on the availability of vast pools of cheap labor-power while, on the other hand, engendered "the emergence of a massive global industrial reserve army of labor", as stressed by Foster, McChesney and Jonna (2011) drawing from Stephen Hymer work:

> The vast "external reserve army" in the third world, supplementing the "internal reserve army" within the developed capitalist countries, constituted the real material basis on which multinational capital was able to internationalize production—creating a continual movement of surplus population into the labor force, and weakening labor globally through a process of "divide and rule."**2** [HYMER, 1979]
> A close consideration of Hymer's work thus serves to clarify the essential point that "the great global job shift"**3** from North to South, which has become such a central issue in our time, is not to be seen so much in terms of international competition, deindustrialization, economic crisis, new communication technologies—or even such general phenomena as globalization and financialization—though each of these can be said to have played a part. Rather, this shift is to be viewed as the result primarily of the internationalization of monopoly capital, arising from the global spread of multinational corporations and the concentration and centralization of production on a world scale. Moreover, it is tied to a whole system of polarization of

[81] « Se projeter là où la force de travail est abondante et sans défense est à la portée seulement des grands groupes financiers à dominante industrielle et commerciale. » (CHESNAIS, 2015)

> wages (as well as wealth and poverty) on a world scale, which has its basis in the global reserve army of labor. (FOSTER, MCCHESNEY & JONNA, 2011)

In this context, whole industries in which labor accrued for the most substantial part of costs, as textiles, footwear and toys, were massively relocated towards low labor cost countries; whereas fragmentation of productive processes in industries "[…] in which the final goods are marked by a coexistence and combination of 'high technologies' based on R&D and middle standardized technologies"[82] (CHESNAIS, 2015, our translation) has allowed for the labor intensive stages, particularly the assembling, to also be subjected to relocation. Productive processes' fragmentation has assumed such a depth that it encompasses not only the partitioning of final goods' manufacturing production, but also the own splitting up of the productive processes of intermediary goods, particularly of parts and components, such as the case of the semiconductor industry. In terms of international trade, fragmentation of production was expressed by the growing proportion of intermediary goods in total trade. Many peripheral countries became net exporters of final manufacturing goods, due to their specialization in labor intensive industries and/or the assembling stage of high-tech industries, while relying heavily in imports of intermediary goods[83].

Notwithstanding, internationalization of productive processes underpinning the major shifts in international trade and engendering a new international division of labor led by TNCs were not just the result of FDI (offshoring), but also of strategies of outsourcing. By focusing on core competencies, TNCs have outsourced a large part of their productive processes to other firms:

> Many management experts have remarked on the increasing tendency of firms to focus on "core competence" and to otherwise rely on arm's length outsourcing. Such a shift permits firms to focus on aspects of the process in which entry is difficult, mainly because of the skill and technology they require. Firms reduce their scope to their core competence not only for the obvious reason that this is what they are best at, but also because this is the aspect of the integrated production process that generates rents and which maximizes the possibility of retaining those rents over time. Thus, core competence is difficult to isolate from market power. (MILBERG, 2004, p.21)

[82] «[...] dans les industries dont les marchandises finales sont marquées par une coexistence et combinaison de « hautes technologies » reposant sur la R-D et de moyennes technologies standardisées. » (CHESNAIS, 2015)

[83] "Such increased verticality may account for the fact that international trade and foreign direct investment, once seen as substitute means of serving foreign markets, are now complementary, with foreign direct investment often resulting in more imports and exports." (MILBERG, 2004, p.9)

Outsourcing strategies have led to the formation of global value chains, which are "organizational mechanisms of capturing value produced in weaker enterprises by TNCs''[84] (CHESNAIS, 2015, our translation), differentiating them from the trade in intermediary goods that accrue to intra-firm or intra-industry exchanges. Through outsourcing strategies, TNCs "can create competition among suppliers, reducing costs and raising flexibility beyond what could be accomplished within the realm of internal operations" (MILBERG, 2004, p. 22). While suppliers are submitted to intense competition, leading firms compete in oligopolistic market structures (MILBERG, 2004): "oligopolistic, or monopolistic, structures in advanced economies are explicitly linked to competitive conditions in developing country manufacturing" (HEINTZ, 2003, p.8).

According to Milberg (2004), "this competitive pressure on suppliers could also translate into pressure on labour costs or on labour standards" (MILBERG, 2004, p.22); which we would add that not only could, but is one of the main ways in which suppliers can survive competition – the other main one being increasing organic composition of capital –, particularly in the cases in which TNCs set the buying price of the goods. In the production of clothing led by global brands, the wages practiced by Asian suppliers are significantly inferior to the local average (CHESNAIS, 2015), which would characterize superexploitation understood as wages below the value of labor power.

Commonly, offshoring and outsourcing have been opposed to each other as strategies of productive internationalization:

> […] the relation between northern capitalist and southern wage-labourer takes two forms: offshoring, when the production process is offshored but kept in-house, i.e 'foreign direct investment', and outsourcing, when a firm outsources the production process to an independent supplier, even though the outsourcing firm may retain effective control over the production process and continue to capture the largest share of the proceeds. According to the conventional definition, only the first type of firm is a 'transnational corporation'. (SMITH, 2010, p.233)

Nevertheless, this kind of opposition may hide the significant entanglements both forms of internationalization of production assume when materializing in low wage countries. Offshoring and outsourcing are just exclusive strategies from the standpoint of single investment decisions of the TNC. From the perspective of the low wage country where

[84] «[...] les mécanismes organisationnels de captation par les STN de valeur produite dans des entreprises plus faibles auxquels le terme « chaînes de valeur globales » (CVG) *devrait être réservés strictement »* (CHESNAIS, 2015)

production will be based, the outsourcing strategy of a TNC can be translated in the offshoring – and therefore inflows of greenfield FDI – of another TNC to the country, particularly in high-tech industries, as in electronics and semiconductors (UNCTAD, 2011). In the latter, it is quite common to have leading TNCs who both offshore and outsource production, which can be materialized through other TNCs offshoring; whereas the leading TNC might also put some of its productive capacity to be subject to contracting by other firms, reflecting the latter's decision of outsourcing. These cross-strategies tend to reduce excess capacity in an industry in which the addition of one state-of-the-art plant, whose minimum scale of production is enormous, can have industry-wide effects in existing capacity. In both the electronic and semiconductor industries, outsourcing of US TNCs generally involves large greenfield FDI outflows of Taiwanese TNCs, as in the cases of Foxconn and ASE, respectively.

In this context, outsourcing does not necessarily hamper the TNC character of a firm in this strict meaning and cannot be equated with the stepping-in of domestic capitals of low wage countries in the productive process, as antagonist with greenfield FDI. Unctad (2011) broader description of the outsourcing strategies of TNCs takes these dimensions into account when dealing with the proliferation of 'non-equity modes of international production':

> Over time, TNCs have also externalized activities throughout their global value chains. They have built interdependent networks of operations involving both their affiliates and partner firms in home and host countries. Depending on their overall objectives and strategy, the industry in which they operate, and the specific circumstances of individual markets, TNCs increasingly control and coordinate the operations of independent or, rather, loosely dependent partner firms, through various mechanisms. These mechanisms or levers of control range from partial ownership or joint ventures, through various contractual forms, to control based on bargaining power arising from TNCs' strategic assets such as technology, market access and standards. Such mechanisms are not mutually exclusive and they can be as much complements as substitutes to FDI. (UNCTAD, 2011, p.124)

The entanglements of the different forms of productive internationalization underpinning global value chains is manifested in the "establishment by the [financial] groups [with industrial and commercial dominance] of different mechanisms of appropriation of surplus value which fuse profit and rent in the own industrial production"[85] (CHESNAIS, 2015, our translation).

[85] «[...] la mise en place par les groupes de mécanismes d'appropriation de la plus-value qui fusionnent profit et rente dans la production industrielle elle-même. » (CHESNAIS, 2015)

Depending on the industry in question, global value chains can accommodate all sizes of capital, the smaller the latter the more likely domestic capitals of low wage countries will be involved. In labor intensive industries such as textiles, footwear and toys, suppliers can be small-sized capitals and encompass the domestic industry, in which "the appropriation-centralization by oligopolistic groups of the surplus value created by small enterprises or by 'independent laborers' is the central trait which leads to the forms and situations of labor exploitation particularly ferocious of today"[86] (CHESNAIS, 2015). In these industries in which the product is simple and indistinct, brand and access to consumer markets are fundamental determinants of leading TNCs. Whereas through branding "retailers and multinational producers earn rents in global commodity chains by differentiating their products and pursuing strategies to limit the availability of close substitutes"; the concentrated power to access advanced countries' consumer markets is also a source of rents, constituting oligopsony (HEINTZ, 2003, p.11).

As the markets to be supplied by the delocalized plants or outsourced production kept mostly being the same, the consumer markets of advanced countries, the peripheral countries chosen as sites of production for advanced countries' capitals have seen the sign of their trade balances invert, holding large trade surpluses. Nonetheless, the change in the profile of their exports towards manufacturing goods was associated with the setting up of many mechanisms of surplus value transfer, which resulted, on the one hand, in the low value 'added' of peripheral productive activities – or the low value retained –, on the other hand, in the superexploitation of labor-power, as at least in the case small enterprises and the domestic industry, whereas in China this can be argued to be the case of the whole active labor army of peasant-workers.

Therefore, if the production and trade profile of peripheral countries have significantly changed with the internationalization of manufacturing productive processes led by TNCs, this has not led to the surmounting of the mechanisms of surplus value transfer from the periphery to the center, but in their transformation. Debt services which were the prominent mechanism to the more closed national economies of the previous international division of labor increasingly were substituted for repatriation of profits and extraction of rents through pricing transfer inside TNCs, royalties, licenses, intellectual property, etc. The ultimate

[86] « L'appropriation-centralisation par les groupes oligopolistiques de plus-value créée par de petites entreprises ou par des « travailleurs indépendants » est le trait central qui conduit à son tour aux formes et aux situations d'exploitation du travail particulièrement féroce d'aujourd'hui. » (CHESNAIS, 2015)

materialization of these processes was the transformation of China in the factory of the world and a central piece in the new international division of labor engendered in the neoliberal era.

5.2 CHINA'S ATTRACTIVENESS TO TRANSNATIONAL CORPORATIONS

5.2.1 Not all is about cheap labor: China's sui generis position in the global South

If low labor compensation costs were the driving force underpinning China's attractiveness to advanced countries' productive capitals, they were not the only reasons which made the country the central piece for industrial delocalization promoted by TNCs:

> Cheap labor is not the only source of attraction for foreign investment. Other things being equal, cheap raw materials, a good climate, and a good location (if transportation costs are taken into account) are also important in making individual sectors of production attractive to foreign capital. But these factors are specific to certain branches only; cheap wage-labor, on the other hand, is a general social characteristic of underdeveloped capitalist countries, one whose implications extend to all areas of production, even those yet to be created. (SHAIKH, 1980, p.228)

In this sense, in as much as cheap labor is a characteristic of the whole global South, other factors should be considered when explaining the gravitational force of China in concentrating the world's industrial production as a result of TNCs decisions of production and purchasing, not only relative to the center but also the periphery as a whole. Furthermore, these elements should also hold general characteristics affecting all areas of industrial production.

On the one hand, China's transformation in the prime destination for advanced countries' productive capitals was related to the particular characteristics of its labor force, in which scale and high direct productivity were the most fundamental features. On the other hand, its attractiveness was derived from the effects of China's whole productive apparatus, as not only "this vast infrastructure that constitutes the built environment is a necessary material precondition for capitalist production, circulation and accumulation to proceed" (HARVEY, 2010), but also the own spatial concentration of industrial production generates gravitational repercussions to choices of industrial location.

All these elements provided a combination of cheap labor and high productivity that went beyond the productivity parameters of the own productive plant, which can be delocalized to virtually anywhere. Although Shaikh (1980) considers the particularity of

national labor forces' productivities, he neglects what in Harvey (2010) appears as fundamental, the role of the built environment, a generally chronic problem of peripheral countries that not only hampers their attractiveness to FDI, but also is a major obstacle to indigenous capital accumulation.

Shaikh (1980) distinguishes two aspects of labor productivity – under the label of productive efficiency – namely, that which is accrued to diverse technologies and that which responds to the 'direct productivity' of national labor forces. The author sustains that advanced countries have not only superior technology – the aspect of productivity that can be off-shored through FDI –, but also a labor force that "is likely to be able to produce more output, because of its greater conditioning to capitalist production, its greater familiarity with machines, etc" (SHAIKH, 1980, p.228). For this reason, Shaikh (1980) argues that the productive efficiency of an industrial plant in the periphery would not be as high as if it were placed in advanced countries, though this difference would be more than compensated by wage differentials.

Even if this reasoning cannot be sustained for a significantly long span of time, – as workers in the periphery would acquire 'conditioning to capitalist production' and 'familiarity with machines' – and we restrain the argument to the short-run, this does not seem to be applicable to China. Not only China had a significant industrial development prior to its integration to the global capitalist economy – and therefore a non-negligible share of its work-force was familiar with machines, though not necessarily state-of-the-art equipment –, but also the hierarchy and discipline imposed during the Maoist period on rural China, through the particular *modus operandi* of communes and brigades, has 'conditioned' its rural labor force to work in top-down chains of decisions, imposing periodic quantitative targets and specifications of production, which share similitudes with the despotism of capitalist factories.

The educational legacy of the Maoist period would also distinguish China's labor-force 'direct productivity' from the periphery in general, as the whole of its labor-force is literate and virtually all have the minimum of nine years of education. Hence, we would not assume that Chinese labor-force has a lower direct productivity than advanced economies' labor forces when it comes to unskilled or machine-deskilled tasks, particularly the assembling of parts and components. In contrast, China's labor force direct productivity is probably higher than most peripheral labor forces. And capitalists have been well aware of that when transforming China in the factory of the world, as "Matt Rubel, chief executive of

Collective Brands, the US footwear group that owns the Payless shoe stores chain" (BROWN, 2011) acknowledged when regretting China's rising wages of unskilled workers: "The utopia for one stop sourcing for quality and low price has been China… but utopias never last" (RUBEL *apud* BROWN, 2011).

Notwithstanding, 'direct productivity' is not only a matter of habits and dexterity, but also and fundamentally a question of disputes among workers and capitalists over what Marx called intensity of labor – which Shaikh replaces by a narrower interpretation in the figure of 'direct productivity'. Therefore, the latter tends to be lower when workers are organized and resist capitalists' attempts to increase labor intensity, giving room for significant divergent 'direct productivities' across countries, even among developed ones. Illustrative of this sort of discrepancies is the case of Ford, in Peoples and Sugden (2000), in which the chairman of Ford of Europe, in 1992, complained about the lower productivity levels in the British facilities relative to continental European ones: "It isn't the facilities that are different […], there is not a damn thing wrong with the Halewood facility. It is the way labour is organized and the way labor functions… You have to close the gap […] eventually or you will have to shift capacity" (FINANCIAL TIMES *apud* PEOPLES & SUGDEN, 2000, p.183-184).

Considering that in the export manufacturing sector in China labor is organized and controlled through the 'dormitory labor regime', Smith and Pun (2006), researching 'industrial dormitories in Southern China to examine the role performed by employer-controlled accommodation in the management of human resources' concluded that:

> […] having labour supply 'on tap' facilitates management extending the working day, responding rapidly to fluctuations in product demand and functions as a form of coercive control, whereby employers have power not only over employment but also the housing needs of employees. […] in both scale and systematic application [of employer-controlled accommodation], the current Chinese case is unique in the history of human resource management. (SMITH & PUN, 2006)

If for unskilled or machine-deskilled tasks China's labor force previous socialization and educational levels would not entail a necessary loss of productivity when delocalizing plants from advanced economies to China; accounting for the higher control over labor and increased intensity that result from the labor dormitory regime, it is likely that the direct productivity of China's labor force is higher than advanced countries' ones in the mentioned tasks.

The combination of China's labor force high direct productivity with its cheapness has allowed transnational corporations first movers to the country – mainly from Japan, South Korea and Taiwan – to achieve such significant cost reductions, particularly in labor intensive industries and stages of production, that it impelled their competitors from Europe and the US to adopt the same strategy in order to be competitive in the world market (MEDEIROS, 2006). China's attractiveness was also derived from the great diffusion of modern infrastructure and technologies of telecommunications, in contrast with most countries of the global South, as well as the prices of basic inputs as energy and raw materials (MEDEIROS, 2012, 2013). Insofar as competition unleashed a massive industrial transfer from advanced countries to China, responsible for making the country the 'factory of the world', it has provided productivity gains from scale – the massive scales of the numerous plants in China can only be achieved by the depth of its labor pool – and from clustering to transnational corporations.

Furthermore, the party-state commitment to attracting FDIs in labor intensive stages of high-tech industries, particularly the assembling and testing of electrical and electronic final goods, was manifested in the development of logistics, infrastructure and network of suppliers required for their operations, conferring systemic productivity gains derived from the country's productive structure. In this sense, even in face of wage increases and social security expansion, which led Chinese labor compensation costs to surpass many of its neighbors', unit labor costs in the country might still be more competitive due to the higher productivity of its economic apparatus:

> Higher labour costs alone are not enough to prompt companies to leave China. The country has the world's best supply chains of components for industry and its infrastructure works well. Firms have already invested heavily in being there. And companies that initially came for the low labour costs now want to stay because it has become a huge market in its own right. Nonetheless, "the incremental decision to invest in new production capacity in China has become tricky," says Gordon Orr, Asia chairman for McKinsey. […] One answer is to invest in other low-cost countries, of which there is no shortage. Myanmar, for instance, is attracting interest now that the West is lifting economic sanctions. But the scale, skill and productivity of the labour force there, and in countries such as Vietnam and Cambodia, nowhere near matches China's, argues Mr Sirkin. And workers in those countries, too, are demanding better pay and rights (THE ECONOMIST, 2013)

Although the above passage contains a series of elements affecting investment decisions, such as horizontal instead of vertical FDI and the role of sunk costs in conferring

irreversibility to past investment decisions, that what we aim to highlight is, in as much as it was the search for lower unit labor costs which transformed China in the factory of the world, the mix of low labor costs with high direct productivity of its labor force, systemic productivity gains of logistics, infrastructure, supplier networks, clustering and scale effects resulted in significant productivity impacts that go beyond those that are firm-specific and, then, able to be transferred to other locations. Moreover, the Chinese government has put in place a set of fiscal incentives, as reduced tax on profits, to enhance the attractiveness of the country to FDIs.

Adding to these factors the fact that China's low wages and large industrial reserve army were also a product of state-craft; the Chinese state invited and more than welcomed central countries' capitals to substantially increase their profitability by exploiting its enormous cheap and highly productive labor force, making higher than average profits, and consubstantiating an alliance with capitals from the center, which responded to China's insertion in the international division of labor as 'the' manufacturing producer of labor intensive industries and stages of production.

5.2.2 Cheap labor as condition **sine qua non** *for China as factory of the world: a debate with Samir Amin's position on China*

If one the one hand, cheap labor alone cannot explain China's rise as the factory of the world – instead of a diffuse global South where industrial production takes place –; on the other hand, the fact that the fundamental and underlying drivers of this transformation were the low labor costs associated with the exploitation of Chinese peasant-workers cannot be downplayed or made a secondary element, such as in Amin (2013). Although Amin's (2010) elaboration on the global capitalist economy as an imperial system is largely based on wage differentials between South and North which, in his framework, define the superexploitation of Southern labor power exerted by the collective imperialism of the triad and materialized in the extraction of imperial rents – that being shared with Northern workers is what responds for their higher wages –, this would not exactly be the case with China, as argued in Amin (2013).

Amin's account on China's integration in the global capitalist economy is mostly a history of how China successfully instrumentalized foreign capital for its sovereign project,

keeping in check the former's predatory practices. Foreign capital has a marginal[87] to inexistent[88] role in China's success or emergence, for it was "not multinational capital that built the Chinese industrial system and achieved the objectives of urbanization and the construction of infrastructure" (AMIN, 2013). When Amin concedes it a marginal contribution, it is only in the sense that "the opening to foreign capital has fulfilled useful functions: it has increased the import of modern technologies" (AMIN, 2013). Nonetheless, it can be argued that *implicitly*, in Amin, foreign capital can no longer play any relevant role, for, "because of its partnership methods, China absorbed these technologies and has now mastered their development" (AMIN, 2013).

If Amin highlights the importance of the Maoist legacy – which "put in place the foundations without which the opening would not have achieved its well-known success" –, he goes further to stress the role of China's productive system instead of FDI in China's integration in the global capitalist economy, stating that "China entered globalization in the 1990s by the path of the accelerated development of manufactured exports possible *for its productive system*" (AMIN, 2013, emphasis added). According to the author, although China's integration in the global capitalist economy was a mere coincidence with the triumph of neoliberal globalization, the latter "favored the success of this choice for fifteen years (from 1990 to 2005)"[89] (AMIN, 2013).

For Amin (2013), China's successful sovereign project is what attracted foreign investments to China, and not the other way around. As way of proof of the latter perspective, Amin claims that "the countries of the South that opened their doors much wider than China and unconditionally accepted their submission to financial globalization have not become attractive to the same degree" (AMIN, 2013). Though Amin asserts that China's attractiveness to transnational capital is found in the success of its sovereign project, he concedes that foreign capital benefits from low wages. Nonetheless, the profits obtained through these investments in China are deemed by Amin as 'good profits' – neither extraordinary/super profits nor monopoly/imperialist rents, concepts abundantly employed by the author, but just good profits. These 'good profits' derived from low wages can only be

[87] "The success is 90 percent attributable to the sovereign Chinese project." (AMIN, 2013)

[88] "China's successful emergence is completely the result of this sovereign project." (AMIN, 2013)

[89] "The pursuit of this choice is questionable not only because of its political and social effects, but also because it is threatened by the implosion of neoliberal globalized capitalism, which began in 2007. The Chinese government appears to be aware of this and very early began to attempt a correction by giving greater importance to the internal market and to development of western China." (AMIN, 2013)

made "on the condition that their [foreign investment] plans fit into China's and allow technology transfer. In sum, these are 'normal' profits, but more can be made if collusion with Chinese authorities permits!" (AMIN, 2013).

According to Amin, in 'following the socialist path', China's controlled integration in the global capitalist economy enabled it to evade the inevitable effects engendered by the capitalist path for the peripheries of world capitalism, namely, the absolute pauperization of the working classes[90] – even though he admits the relative pauperization – and evade the extraction by the 'monopolies of the imperialist triad' of "a considerable part of the surplus value produced in the country in question" (AMIN, 2013). China would not be 'open to penetration' by these monopolies (AMIN, 2013). For Amin, "China is different: it is an emergent nation in which the system makes possible the retention of the majority of the surplus value produced there" (AMIN, 2013). From the perspective of the living standards of the working classes, Amin claims that, though in the 1990s the "social dimension had declined before the immediate priorities of speeding up growth", the differentiated integration of China in the global capitalist economy enabled that "at the very moment when the social-democratic conquests of social security are being eroded in the opulent West, poor China is implementing the expansion of social security in three dimensions—health, housing, and pensions" (AMIN, 2013).

The triumph of neoliberal globalization and China's integration in the global capitalist economy are a coincidence. The only concession Amin does to the possible linkage between the two phenomena is – in tandem with the one-sided history of China's instrumentalization of the triad's monopolies and domestication of their predatory drives – that neoliberal globalization favored China's success in opting to integrate in the global capitalist economy through manufacturing exports.

A theoretical delinking comes into play in as much as Amin (2013) ceases to explicitly acknowledge the categories of 'superexploitation', 'imperialist rents' and 'super profits' to talk about 'brutal forms of extreme exploitation of workers' vis-à-vis 'good profits' and 'normal' profits in China. Certainly Amin cannot deny that real wages in China are below that what he defines as the (global) value of labor power, which is deemed as a single value of labor-power for the global capitalist economy obtained as world average; nonetheless, in this

[90] According to Amin, China's growth has excluded no one and diminished the 'pockets of poverty'; moreover, its "urban population is, as a whole, adequately employed [not in the informal economy] and housed [in quarters with comfortable housing for the middle and working classes]". (AMIN, 2013)

case, uneven rates of exploitation – differently from Amin (2010) – do not lead to unequal exchange in his analysis, in so far as China retains "the majority of the surplus value produced there", generating just 'good' or 'normal' profits to foreign capital. In his formulation, it remains unclear why China became the *primus inter pares* country for advanced countries' industrial delocalization towards the global South, if imperial rents and higher than average profits could be made in the rest of the periphery.

Though Amin (2013) contends that it was the success of China's sovereign project that made it attractive, surely transnational capital has not come to China just to use good roads and ports, as they could just stay home in the traditional industrial clusters, even less to solely transfer technology. For the scale of China's absorption of foreign productive capitals, positioning plants in the country must be translated into higher profits, call it imperialist rents, extraordinary profits or 'good profits', but if higher profits could be made elsewhere, China would not have become the factory of the world. Were it not for the low wages and longer working day of the enormous Chinese labor force, China would never have become the main destination for the delocalization of the Northern industrial park:

> It is such *superexploitation* [as wages below the value of labor-power] that lies behind much of the expansion of production in the global South. The fact that this has been the basis of rapid economic growth for some emerging economies does not alter the reality that it has generated enormous imperial rents for multinational corporations and capital at the center of the system. As labor economist Charles Whalen has written, 'The prime motivation behind offshoring is the desire to reduce labor costs…a U.S.-based factory worker hired for $21 an hour can be replaced by a Chinese factory worker who is paid 64 cents an hour…. The main reason offshoring is happening now is because it can.' (FOSTER, MCCHESNEY & JONNA, 2011)

In providing good infrastructure and fiscal exemptions, China made possible to foreign capitals to extract surplus value minimizing the needs to make additional disbursements of capital other than the one's required by the own productive plant. Other peripheral countries were not so attractive because the spending required to place the products back in central markets, where they needed to be sold, would 'erode' part of the gains of 'superexploitation'. Quite on the contrary, the 'success' of the Chinese project in terms of attractiveness to foreign capital was not only to guarantee 'superexploitation', but to assure its fullest conversion into low costs, in as much as it is not undermined by state taxation or infrastructure bottlenecks. Moreover, superexploitation was achieved by using the coercive apparatus of the state to prevent any laborers' independent organization, as highlighted by Chesnais (2007): "China

attracts foreign enterprises by crushing wages notably by means of repression of independent syndicalism as well as political organizations that have tried and will try to be formed against the power of the unique burocratic-capitalist Party" [91](CHESNAIS, 2007, our translation).

Therefore, the Chinese state provided a 'paradise' for 'superexploitation', overcoming the logistic and infrastructure problems found, in general, in the periphery that encroach 'imperialist rents' in their way back to be realized in the center. The fullest translation of 'superexploitation' in lower costs constituted such a decisive advantage in oligopolistic competition in the world market that not having plants in the country would represent a forceful weakening in a firms' position against its rivals. Insofar as transfer of technology can only place problems in the long run, and to arrive there firms need first to survive in the short run; and since transfer of technology is not reflected in higher production costs, not affecting the firm's cost position in the short run, the conditions posed by the Chinese state would not be a hindrance to the short-sided cost calculations to invest in China. Moreover, it is not clear if transfer of technology happened in the most sensible and core technological competencies and that China 'mastered' the latter.

If 'imperialist rents' were substantially diminished by China's capability of retaining most of the surplus value in the country, what would explain all the inflow of productive foreign capitals to China supposing that the triad's oligopolies would be maximizing imperialist rents or value transfer? Still further, what would the significance be of decreased 'imperialist rents' extracted from China to wage setting in advanced countries? One could arrive to the conclusion that, because 'imperialist rents' have declined, there is less from which to share with the Northern labor aristocracy, and therefore this explains real wage stagnation and the dismantling of the social security system. Therefore, workers in the center would be 'losing their privileges' because oligopolies of the triad would be accruing significantly reduced imperialist rents from China. For us, this is far from reality. The same conditions that permitted international capitals to increase the rate of profit by delocalizing to China enabled them to attack back labor at home. The rate of profit was raised not only by 'reestablishing a reserve army' in the North, but also directly by investing in China through lower wages largely to fully converted into lower costs.

[91] "La Chine attire les entreprises étrangères en écrasant les salaires au moyen notamment de la répression du syndicalisme indépendant ainsi que des organisations politiques qui ont tenté et tenteront de se former contre le pouvoir du Parti unique bureaucraticocapitaliste" (CHESNAIS, 2007).

5.3 CHINA AS THE CENTER OF ATTRACTION TO ADVANCED COUNTRIES' FDI

In a great extent, the process of massive industrial delocalization towards the global South is the story of China's ascension as the factory of the world, which simultaneously transformed peasant-workers in the backbone of the active industrial army of labor for the global economy, while globalizing its industrial reserve army. The Chinese party-state not only created a vast industrial reserve army of cheap labor-power, but also simultaneously devised the conditions for foreign capitals to access it and make higher than average profits. If advanced countries' capitals were to enter China, as long hoped for, they should: *i*) enter in their productive form; *ii*) in designated and restricted areas without access to its domestic consumer market, through the state creation of special economic zones destined to be platforms of exportation; *iii*) transfer technology through joint-ventures with Chinese capitals as condition to access its domestic market.

In attracting industrial production from advanced economies for its low labor compensation costs, China held a *primus inter pares* position, whose centrality cannot be subsumed in a discussion of the whole global South. The proliferous number of newspaper and academic articles debating the evolution and trends on China's wage levels reflect the *sui generis* position of China in the global quest of TNCs for lowering absolute costs and increasing profits, with analysts going as far as to proclaim that "Chinese wages are arguably the single most important price in the world" (CAI, 2014). Whether or not they are the most important price, Chinese wages definitely became a key price for the global economy, even if "the medium level of wages are not fixed at the level of the world market, […] the 'China wage', today more likely that of the Vietnamese laborer […] have at least a statute of reference"[92] (CHESNAIS, 2015, our translation).

The transformation of China in the 'factory of the world' was predicated in massive amounts of FDI inflows from advanced countries. For a significant period in the past, FDI flows were mainly concentrated between advanced countries. In the previous phase of capital exports, when national economies were more closed and protected by higher tariffs, in a large extent these North-North flows of FDI reflected horizontal foreign direct investment, "also called 'market-seeking' in that it involves a replication of productive capacity in the foreign

[92] « Sans que le niveau moyen des salaires soit fixé au niveau du marché mondial, ni même en Europe du marché unique, le « China wage », aujourd'hui plutôt celui du travailleur vietnamien, et dans l'UE celui du travailleur « faux clandestin » connu de la police, mais entre les mains du capitaliste local en sa situation de « sans-papier », ont néanmoins un statut de référence. » (CHESNAIS, 2015)

location, presumably for sales there […] such horizontal foreign direct investment is often termed 'tariff hopping'" (MILBERG, 2004, p.6). With neoliberal globalization, North-North flows of FDI would increasingly reflect the role of mergers and acquisition (M&A) – or centralization of capital –, whereas FDIs associated with the transfer of manufacturing productive capacity would be directed to the global South in the form of vertical FDIs, which "involves capital movement aimed at more efficient backward linkages, either in production or in natural resources […] 'efficiency-seeking' vertical foreign direct investment is the movement abroad of productive resources with the aim of lowering costs" (MILBERG, 2004, 7).

In this sense, during most of the period of neoliberal globalization, the predominance of FDI among advanced countries was a particular byproduct of data on FDI also contemplating M&A along with greenfield FDI:

> Every time a company or group of investors acquires or merges with a TNC headquartered in another imperialist country, counted as North-North FDI by the Unctad statisticians, they are likely to be buying into an entity with assets and activities spread on both sides of the North-South divide. No such ambiguity exists in the case of North-South FDI, since southern firms are much less likely to own significant assets in the North. The overwhelming weight of M&As in N-N FDI flows reflects a process of concentration and monopoly-formation among TNCs, in the financial sector and in all industrial sectors, proceeding in parallel to the shift of production processes to 'developing' low-wage economies. […] FDI statistics thus merge two very different trends—the process of concentration of ownership in the hands of northern capitalists and the process of the disintegration of production processes and their dispersion, wherever possible, to the southern nations. (SMITH, 2010, p.78-79)

Although Smith (2010) is right to point that it is of the utmost importance to "distinguish between 'greenfield' FDI, which is unambiguously an investment in a new economic facility, and mergers and acquisitions (M&As), which don't necessarily involve any alterations to, still less expansion of, the production facilities targeted for investment" (SMITH, 2010, p.77), the broad picture of whole FDI flows has changed dramatically in recent years. If it was a common place in the academic literature to highlight that most FDI occurred among developed economies, this ceased to be the case in recent years. According to the UNCTAD annual publication World Investment Report (2013, 2015), the share of developing countries as recipients of FDI flows has surpassed, for the first time, that of developed countries in 2012, with 52% of the total, whereas in 2014 it increased to 55%. Considering Smith's (2010) remark that North-South FDI flows are a unilateral process from

the former to the latter, this would mean either that greenfield FDI has become a larger share of total FDI or that not only advanced countries have been transferring their industrial parks to the South, but also that they have increasingly been buying out their national assets.

Nonetheless, this was not a process between advanced countries and an amorphous global South, as UNCTAD recognizes: "however, the increase in developing-country inflows is primarily a developing Asia story" (UNCTAD, 2015). Particularly, a Chinese story, as in 2014 the country became the first destination of FDI inflows in the world – even if due to the atypical level of US FDI inflows in that year[93] –, capturing 10,5% of world's FDIs inflows, and a third of those destined to East and South-East Asia (UNCTAD, 2015). Moreover, when it comes to contemporary China, the presumption "that southern firms are much less likely to own significant assets in the North" (SMITH, 2010, p.78) starts to be challenged, as state-owned ChemChina in 2016 entered in the process for China's hugest takeover ever of Swiss giant Syngenta, for U$44 billion, which is under scrutiny of US authorities and that could put China in the commanding-highs of food security (DONNAN, 2016).

In this fast changing panorama, one thing remained solid over the last decade: China's top position as recipient of greenfield FDI, which largely reflects its world prominence in attracting new factory floor space. According to UNCTAD data on the value of announced greenfield FDI projects, China has been the main destination of these inflows for all the years which data is available (2003-2014). Table 5.1 exhibits the annual value of worldwide announced FDI projects and its top six destinations. The annual value of announced greenfield FDIs has varied substantially during the period. Its main trends have been of increase between 2004 and 2008, shrinkage after the onset of the global financial crisis and a recent recuperation in the 2013-2014 biennium to levels near of those experienced in the first half of the 2000s.

Despite this evolution, China was the main destination of FDI for every year, followed by the US – exception for 2008 when India took the second position. In the biennium 2003-2004, China absorbed respectively 17% and 19% of the worldwide value of announced greenfield FDI projects; whereas in the 2005-2014 period its share had substantially declined, oscillating around 11%-12% of the total. Even if China sustained its share on the value of announced greenfield FDIs since 2009; in the 2012-2014 triennium, the absolute value of

[93] "FDI flows to developed countries dropped by 28 per cent to $499 billion. Inflows to the United States fell to $92 billion (40 per cent of their 2013 level), mainly due to Vodafone's divestment of Verizon, without which flows into the United States would have remained stable." (UNCTAD, 2015, p.2)

greenfield FDIs attracted by the country declined significantly, representing the lowest figures since 2003, and becoming virtually stagnant.

Considering the period as a whole, the decrease in China's participation was not materialized in a concomitant gain of participation of any particular Southern country, which singly could rival China as top destination for FDI. The Southern countries that appear as top destinations for greenfield FDIs have generally accrued 5% to 3% of annual total value of announced inflows, with the few exceptions of India with 7% in 2006 – when China had the double of the latter's participation –, Brazil with 6% in 2011 and Nicaragua with 6% in 2013. Instead, it was the US the single country which gained significant participation as destination for greenfield FDIs, considerably reducing its distance from China.

Despite increasing labor compensation costs, China has kept being the main destination for new productive capacity of TNCs – even if in a reduced level than that experienced in 2003-2004 – which was largely responsible for transforming and maintaining the country as the factory of the world.

Table 5.1 – Annual value of world's announced greenfield FDI projects and top six destinations, 2003-2014 (USD billion and %)

2003			2004			2005			2006			2007			2008		
WD	736		**WD**	653		**WD**	677		**WD**	832		**WD**	845		**WD**	1.355	
CN	127	17%	CN	121	19%	CN	82	12%	CN	120	14%	CN	102	12%	CN	122	9%
US	29	4%	US	30	5%	US	36	5%	IN	61	7%	US	46	5%	IN	65	5%
BR	28	4%	QA	29	4%	RU	34	5%	US	41	5%	IN	42	5%	GB	62	5%
CA	26	3%	IN	28	4%	BR	34	5%	AU	38	5%	VN	39	5%	US	58	4%
CL	23	3%	AU	27	4%	CA	29	4%	GB	32	4%	RU	36	4%	VN	58	4%
RU	23	3%	RU	24	4%	IN	24	4%	RU	26	3%	GB	28	3%	RU	46	3%

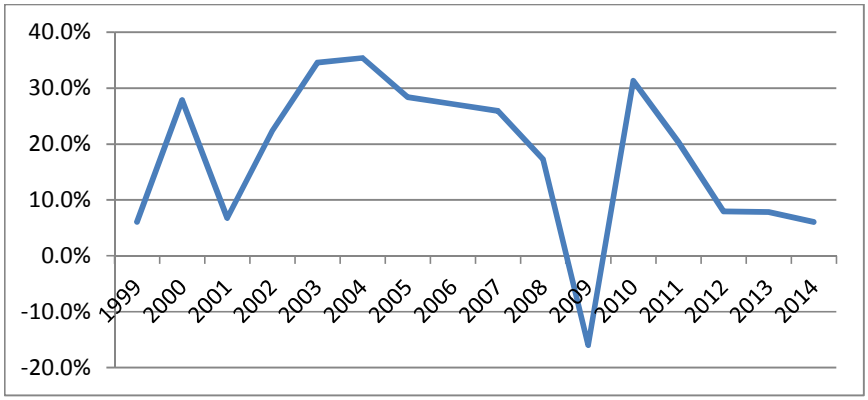
2009			2010			2011			2012			2013			2014		
WD	974		**WD**	825		**WD**	879		**WD**	631		**WD**	707		**WD**	696	
CN	109	11%	CN	96	12%	CN	105	12%	CN	79	12%	CN	76	11%	CN	77	11%
US	77	8%	US	63	8%	US	75	9%	US	62	10%	US	55	8%	US	58	8%
GB	55	6%	BR	42	5%	BR	50	6%	GB	46	7%	NI	41	6%	GB	38	6%
IN	53	5%	IN	41	5%	IN	47	5%	IN	31	5%	MX	31	4%	MX	33	5%
BR	35	4%	AU	41	5%	GB	34	4%	BR	30	5%	GB	30	4%	IN	25	4%
VN	35	4%	RU	30	4%	CA	30	3%	AU	18	3%	BR	28	4%	VN	24	3%

Source: Author's own elaboration with data retrieved from UNCTAD (2015, Web table 19, "Value of announced greenfield FDI projects, by destination, 2003-2014").
Note: 'CN' stands for China, 'US', United States, 'BR', Brazil, 'CA', Canada, 'CL', Chile, 'RU', Russian Federation, 'QA', Qatar, 'IN', India, 'AU', Australia, 'GB', Great Britain, 'VN', Vietnam, 'NI', Nicaragua and 'MX', Mexico.

5.4 CHINA AS A SECTORIAL DIVERSE MANUFACTURING EXPORT POWER

The most evident aspect of China's transformation in the world's manufacturing center was the impressive surge in its exports over the last decades. In 1998, China's exports to the world amounted U$184 billion, whereas in 2014 they had grown to represent U$2.342 billion, almost all of which composed by manufacturing goods (table 5.2). Throughout the 2000s until the global financial crisis, China's exports presented year-to-year rates of growth higher than 20% – except for 2001 –, peaking in 2004 with a growth rate of 35,4% (graph 5.1). The global financial crisis dramatically interrupted such trajectory, reducing the value of China's exports in 16% in 2009. Although in 2010, China's exports augmented in 31%, in a great extent this expressed the re-composition of the pre-crises level, which was followed by the deceleration in exports' growth, stabilizing in modest levels of yearly increases ranging from 8% to 6% for the period 2012-2014.

Graph 5.1 – Annual rate of growth of China's total exports



Source: OCDE STAN Bilateral Trade Database in Goods.

During the 1998-2014 period, the profile of China's manufacturing exports has significantly shifted. Considering the six main broad manufacturing sectors in terms of contribution to the country's total exports value – which together accounted for 87% of total exports in 1998 and increased to 93% in 2014 –, the major transformation was the decreased participation of textile, wearing apparel, leather and related products in favor of machinery and equipment. In 1998, textile, wearing apparel, leather and related products were the main export manufacturing sector, with 30% of the value of total exports, closely followed by

machinery and equipment, with 27%, by chemicals, rubber, plastics and fuel products (10%), furniture and other manufacturing (9%), basic metals and fabricated metal products except machinery and equipment (7%) and transport equipment (4%).

Table 5.2 – Total Chinese exports and composition by main broad manufacturing sectors (USD billion and %)

Year	Textile	Chemicals	Metals	Machinery & Equip	Transport equip.	Furniture & other	∑%	Total
1998	55	18	13	50	7	16	87%	184
1999	56	18	13	59	7	17	87%	195
2000	68	23	17	82	10	20	88%	249
2001	70	25	16	93	10	20	88%	266
2002	80	29	19	127	12	23	89%	326
2003	100	37	26	187	17	28	90%	438
2004	120	50	44	269	23	35	91%	593
2005	145	66	58	353	31	44	91%	762
2006	178	79	88	451	43	53	92%	969
2007	211	104	120	569	61	67	93%	1.220
2008	230	135	151	657	78	78	93%	1.431
2009	209	106	83	574	66	72	92%	1.202
2010	261	149	116	748	97	94	93%	1.578
2011	315	194	154	855	120	123	93%	1.898
2012	328	202	157	937	120	155	93%	2.049
2013	364	217	163	1.023	113	166	93%	2.209
2014	383	236	191	1.056	119	185	93%	2.342

Year	Textile	Chemicals	Metals	Machinery & Equip	Transport equip.	Furniture & other	∑%	Total
1998	30%	10%	7%	27%	4%	9%	87%	184
1999	29%	9%	7%	30%	4%	9%	87%	195
2000	27%	9%	7%	33%	4%	8%	88%	249
2001	26%	9%	6%	35%	4%	7%	88%	266
2002	24%	9%	6%	39%	4%	7%	89%	326
2003	23%	9%	6%	43%	4%	6%	90%	438
2004	20%	8%	7%	45%	4%	6%	91%	593
2005	19%	9%	8%	46%	4%	6%	91%	762
2006	18%	8%	9%	47%	4%	5%	92%	969
2007	17%	9%	10%	47%	5%	5%	93%	1.220
2008	16%	9%	11%	46%	5%	5%	93%	1.431
2009	17%	9%	7%	48%	5%	6%	92%	1.202
2010	17%	9%	7%	47%	6%	6%	93%	1.578
2011	17%	10%	8%	45%	6%	6%	93%	1.898
2012	16%	10%	8%	46%	6%	8%	93%	2.049
2013	16%	10%	7%	46%	5%	8%	93%	2.209
2014	16%	10%	8%	45%	5%	8%	93%	2.342

Source: OCDE STAN Bilateral Trade Database in Goods (2016a).
Notes: 'Textile' refers to textile, wearing apparel, leather and related products; 'Chemicals' to chemicals, rubber, plastics and fuel products; 'Metals' to basic metals and fabricated metal products except machinery and equipment

Already in 1999, machinery and equipment became the main manufacturing export sector steeply gaining participation until 2009, when it represented almost half of all China's exports, precisely 48% of the latter, while slightly decreasing to 45% in 2014. In terms of value, the exports of machinery and equipment had an astonishing upsurge in around 1 trillion dollars from 1998 to 2014, hiking from U$50 billion to U$1.056 billion dollars.

In contrast, manufacturing of textile, wearing apparel, leather and related products had its participation significantly reduced from 1998 to 2007, dropping from 30% to 17% of total export, to become stable in the period 2007-2014, with a share around 16%-17%. Nonetheless, apart from 2009, the value of textiles, wearing apparel, leather and related products exports augmented every year, from U$55 billion in 1998 to U$383 billion dollars in 2014. The other main manufacturing sectors analyzed, while largely maintaining the same participation in 1998 and in 2014, also experienced absolute export growth in almost all of the years, except from transport equipment, whose exports stagnated in value over 2011-2014[94].

Despite the fact that it became a common place in the academic literature to state that China has been losing or already lost its competitive edge in labor intensive industries, particularly in textiles, to other low wage Asian countries, such as Bangladesh[95], India and Vietnam, it should be stressed that China, in 2014, was still by large the main exporter of textiles in the world (STATISTA, 2016). China's production of textiles accounted for 54% of world's production in 2014 (LU, 2016), whereas the country produced 63% of all pair of shoes in the world (THE ECONOMIST, 2016)

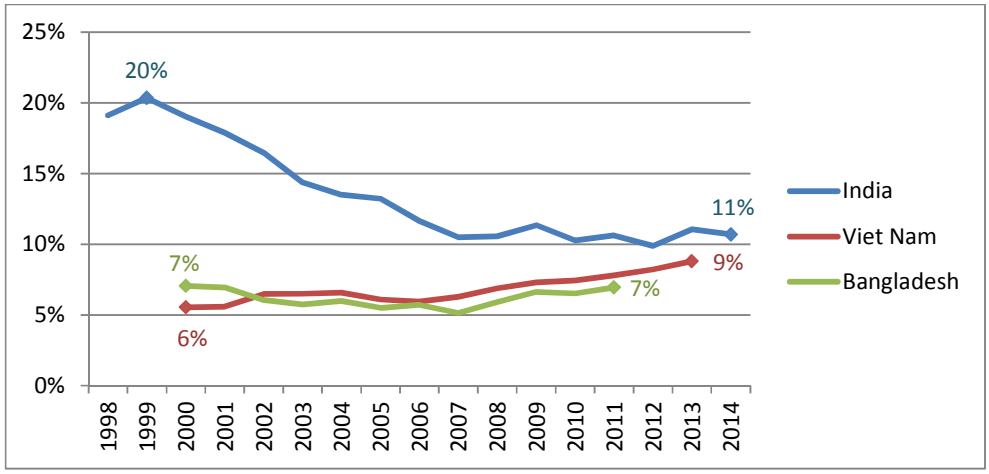
Considering the broad industry of textiles, wearing apparel, leather and related products – which lost participation in China's exports but grew in absolute value –, India's exports, that represented 20% of China's in 1999, were just around 11% of the latter in the 2007-2014 period (graph 5.2). Bangladesh's exports in this industry were only 7% of China's

[94] According to The Manufacturing Institute (2012), in 2010, China was also the main exporter in the world of chemicals. More detailed attention should be given to this industry, although it is out of the scope of the present thesis.

[95] "In spite of the low-wage 'advantage' of China, some areas of Asia, such as Cambodia, Vietnam, and Bangladesh, have hourly compensation levels still lower, leading to a divide and rule tendency for multinational corporations — commonly acting through subcontractors—to locate some sectors of production, such as light industrial textile production, primarily in these still lower wage countries. Thus the *New York Times* indicated in July 2010, that Li & Fung, a Hong Kong-based company "that handles sourcing and apparel manufacturing for companies like Wal-Mart and Liz Claiborne" increased its production in Bangladesh by 20 percent in 2010, while China, its biggest supplier, slid 5 percent. Garment workers in Bangladesh earned around $64 a month, compared 'to minimum wages in China's coastal industrial provinces ranging from $117 to $147 a month.'" (FOSTER, MCCHESNEY & JONNA, 2011).

between 2000 and 2011; while Vietnam's exports were the only that grew as proportion of China's, though they still represent just a small fraction of the latter, increasing from 6% in 2000 to 9% in 2013. Even faced with rising labor compensation costs and gradual appreciation of the yuan relative to the dollar for a decade, China still was the world's manufacturing center for textile, wearing apparel, leather and related products. Although we have no further evidence, we wonder whether the maintenance of such position in the sector might be associated with the enormous contingent of self-employed manufacturing workers that appeared in our analysis in Part I and of whom there are no annual official statistics on wages and earnings – that means, whether the sector relies on the black box of China's domestic industry, whose wages we assume are much lower, though without knowing the extent of its cheapness.

Graph 5.2 – India's, Vietnam's and Bangladesh's exports of textiles, wearing apparel, leather and related products to the world as percentage of China's exports of textiles, wearing apparel, leather and related products to the world



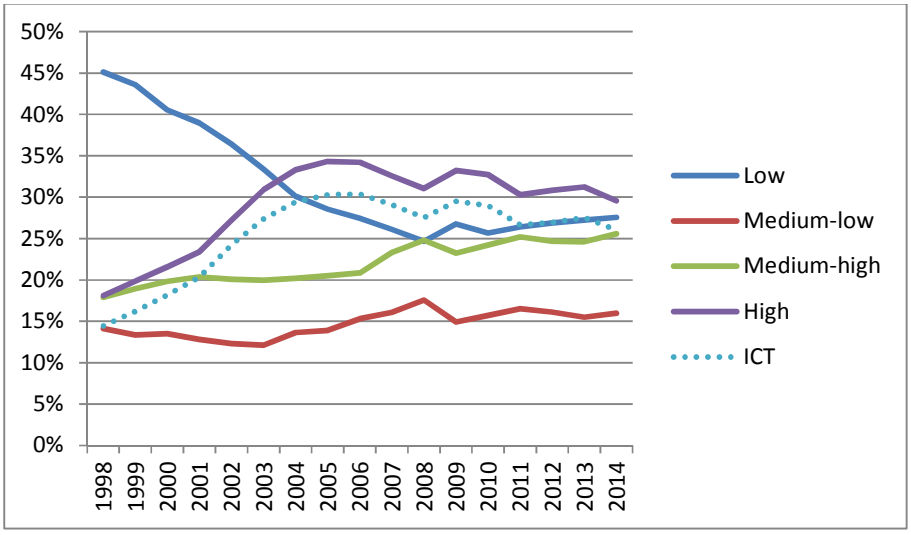
Source: OCDE STAN Bilateral Trade Database in Goods (2016a).

The relative shift of China's exports composition away from textiles, wearing apparel leather and related products towards machinery and equipment was the main trend behind the increased sophistication of China's export structure (table 5.2). In 1998, 45% of China's export value was accrued to low-tech manufacturing, whereas high and medium-high tech manufacturing responded for 18% each and medium-low for 14%. Low-tech manufacturing decreased steeply until 2008, when it represented 25% of the value of exports, slightly

regaining participation afterwards to 28% of the total in 2014. Until 2005, this decline was fully translated in the augmented participation of high-tech manufacturing, whose bulk was composed by ICT goods. From 2004 to 2010, high-tech manufacturing constituted around one third of the value of China's exports, decreasing to 30% in the period 2011-2014. Over the last decade, medium-high manufacturing gained significant share of the total value of Chinese exports, growing from 20% in 2004 to 26% in 2014.

Graph 5.3 – China's manufacturing exports by technological level and ICT manufacturing as percentage of total exports

(low-tech, medium-low tech, medium-high tech, high-tech and ICT exports, in percentage)

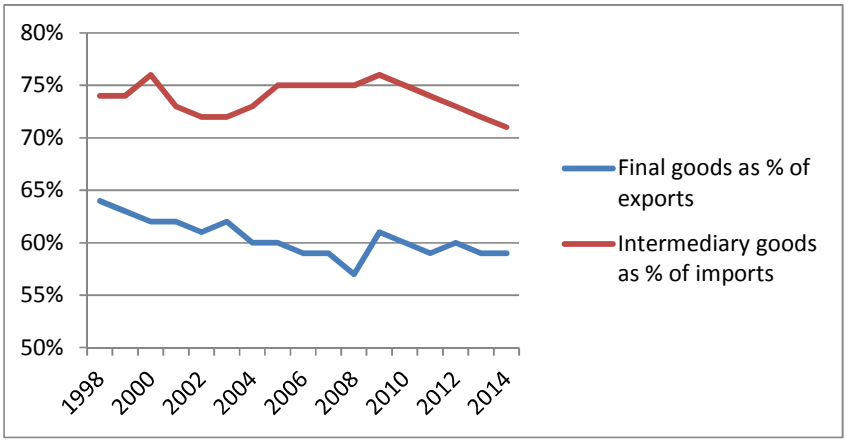


Source: OCDE STAN Bilateral Trade Database in Goods (2016a).

Notwithstanding, as discussed previously, these changes largely reflect China's specialization in labor intensive stages of global value chains in high-tech industries, mainly by assembling imported intermediary goods and subsequently exporting final goods to advanced countries' markets. Between 1998 and 2014, whereas China's exports were mainly composed by final goods, more than 70% of its imports accrued to intermediary goods (graph 5.4). Although the share of final goods in total exports decreased in 5 percentage points in the period, they still dominated total exports, representing 59% in 2014. Tables 5.3 and 5.4 provide a more detailed breakdown of Chinese exports and imports by intermediary and final goods, respectively. Table 5.3 has some source of discrepancy with both graph 5.4 and table 5.4, which were retrieved from OCDE STAN Bilateral Trade Database in Goods by Industry

and End-Use. As the latter only provides data on aggregated intermediary goods, we calculated them separately in primary goods, parts and components and semi-finished goods. The discrepancies arise due to the fact that we discarded unclassified goods from the total of exports and imports and we used as base for Broad Economic Categories (BEC) the 1996 goods' classification of the Harmonized System (HS1996), whereas data from OCDE came from ISIC rev.4.

Graph 5.4 – Participation of final goods in Chinese exports and intermediate goods in Chinese imports



Source: OCDE STAN Bilateral Trade Database in Goods (2016a).

By the breakdown of intermediary goods, we can assess that the reduction in the participation of final goods in total exports, added to the almost disappearance of primary goods' participation in the export structure, were mainly matched by the increase in the exports of parts and components, which augmented from 9,3% of total exports in 1998 to 17,0% in 2014. This trend reflects both the movement towards higher value added stages of production, as well as the deepening of fragmentation in the own production of intermediary goods. In contrast, China's imports of intermediary goods shifted from being dominated by semi-finished goods, which responded to 45% of all imports in 1998 down to 25% in 2014, to have its main component in primary goods that grew from 8% to 27% in the same period. The imports of parts and components, which are strongly related to China's role as ICT assembler, grew from 22% in 1998 to its peak of 30% in 2006 and went down to represent one quarter of China's imports in 2014. China's significant exports and imports of parts and components are

not an exclusive trait of the country's foreign trade, for it configures a central characteristic of intra-Asian trade, as discussed further in chapter 6.

Table 5.3 – Chinese exports to and imports from the world by stage of production

(exports and imports of primary goods, parts and components, semi-finished goods and final goods, in percentage, and total exports and imports in billion dollars)

	Exports					Imports				
	Primary	Intermediary		final	total	Primary	Intermediary		final	Total
Year		I	II				I	II		
1998	3,9%	9,3%	23,3%	63,5%	183	8,4%	21,7%	45,3%	24,6%	138
1999	3,3%	11,1%	22,4%	63,2%	194	8,9%	23,7%	42,7%	24,7%	162
2000	3,7%	12,3%	22,7%	61,3%	249	13,6%	24,0%	40,0%	22,4%	223
2001	3,4%	13,4%	22,3%	60,9%	265	12,3%	24,9%	37,7%	25,1%	242
2002	2,9%	15,1%	21,5%	60,5%	325	10,6%	27,2%	36,2%	26,1%	294
2003	2,6%	15,4%	21,0%	61,0%	437	11,7%	28,2%	33,5%	26,6%	411
2004	1,9%	16,1%	22,2%	59,7%	592	15,0%	28,4%	31,2%	25,5%	560
2005	2,0%	16,4%	22,3%	59,4%	760	16,8%	29,4%	30,1%	23,7%	658
2006	1,5%	16,9%	23,3%	58,4%	966	17,8%	30,3%	28,3%	23,6%	789
2007	1,3%	16,7%	24,0%	58,0%	1.217	19,6%	29,2%	28,0%	23,1%	954
2008	1,4%	16,8%	25,6%	56,2%	1.429	25,4%	25,9%	26,7%	22,0%	1.128
2009	1,1%	17,0%	21,4%	60,5%	1.199	22,9%	27,0%	27,7%	22,4%	1.002
2010	1,0%	17,7%	22,4%	58,9%	1.575	25,4%	26,0%	26,2%	22,4%	1.377
2011	1,0%	17,1%	23,9%	58,0%	1.895	28,9%	23,4%	25,6%	22,0%	1.694
2012	0,9%	17,1%	23,0%	59,0%	2.046	29,2%	24,0%	24,8%	22,0%	1.749
2013	0,8%	18,2%	23,2%	57,7%	2.207	28,6%	25,6%	24,2%	21,6%	1.845
2014	0,8%	17,0%	24,5%	57,7%	2.339	27,4%	24,9%	24,9%	22,7%	1.875

Source: Author's elaboration with data extracted from WITS-Comtrade (2016)
Notes:
(1) Intermediary 'I' represents parts and components, whereas intermediary 'II', semi-finished goods.
(2) Primary goods are composed by BEC codes 111, 21 and 31; parts and components, by BEC codes 42 and 53; and semi-finished goods, by BEC codes 121, 22 and 32.

A closer investigation of China's exports and imports of final goods reveal significant changes over the last 16 years. The most marked trend in China's exports was the significant decrease in household consumption goods, from 47% in 1998 to 29% in 2014, although mixed end-use goods – personal computers and phones – grew significantly during the period. Personal computers' share of total exports rose from 4% in 1998 to the peak of 10% between 2004 and 2006, and subsequently decreased to 7% in 2014. Personal phones, which did not appear in China's exports in 1998, came to represent 5% of total exports in 2014. While capital goods increased their participation in China's exports – from 12% in 1998 to 17% in

2014 –, they expressed a dwindling share of the country's imports, falling 5 percentage points from 2004 to 2014, to represent 13% of total imports.

Table 5.4 – Chinese exports to and imports from the world of final goods by end-use and total exports and imports

(exports of household consumption goods, capital goods, personal computers, personal phones, in percentage of total exports, total exports in billion dollars, imports of household consumption goods, capital goods, personal computers, passenger cars, personal phones, precious goods and packed medicines, in percentage of total imports, and total imports in billion dollars)

	EXPORTS					IMPORTS							
	House-hold Cons.	Capital	Mixed end-use		Total Exp. U$bil.	House-hold Cons.	Capital	Mixed end-use					Total Imp. U$bil.
			PC	Phone				PC	Car	Phone	Precious	Meds	
1998	47%	12%	4%	0%	184	4%	17%	1%	0%	1%	1%	0%	140
1999	46%	12%	4%	1%	195	4%	16%	2%	0%	1%	0%	0%	166
2000	43%	13%	4%	1%	249	3%	15%	2%	0%	1%	0%	0%	225
2001	41%	13%	5%	2%	266	3%	18%	2%	1%	1%	0%	0%	244
2002	39%	13%	6%	2%	326	3%	18%	2%	1%	1%	0%	0%	295
2003	36%	14%	9%	2%	438	3%	18%	3%	1%	1%	0%	0%	413
2004	32%	14%	10%	3%	593	2%	18%	3%	1%	0%	0%	0%	561
2005	30%	16%	10%	3%	762	2%	17%	3%	1%	0%	0%	0%	660
2006	29%	16%	10%	4%	969	2%	17%	3%	1%	0%	0%	0%	791
2007	28%	18%	9%	3%	1.220	2%	17%	2%	1%	0%	0%	0%	956
2008	26%	18%	9%	3%	1.431	2%	15%	2%	1%	0%	0%	0%	1.133
2009	28%	19%	9%	3%	1.202	3%	15%	2%	1%	0%	0%	1%	1.006
2010	27%	19%	9%	3%	1.578	2%	15%	2%	2%	0%	0%	0%	1.396
2011	27%	19%	8%	3%	1.898	3%	14%	2%	2%	0%	0%	1%	1.743
2012	27%	19%	8%	4%	2.049	3%	13%	2%	3%	0%	0%	1%	1.818
2013	28%	18%	8%	4%	2.209	3%	13%	2%	2%	0%	1%	1%	1.950
2014	29%	17%	7%	5%	2.342	4%	13%	2%	3%	0%	2%	1%	1.958

Source: OCDE STAN Bilateral Trade Database in Goods (2016a).
Note: Mixed end-use goods, used both as capital goods and for household consumption, are composed in OCDE's classification by: personal computers ('PC'), passenger cars ('Car'), personal phones ('Phone'), precious goods ('Precious') and packed medicines ('Meds'). The categories of mixed end-use goods that represented 0% of China's exports or imports throughout the whole period were excluded from presentation. Miscellaneous were also excluded from presentation.

If these trends in capital goods – namely, China augmenting its role as supplier while reducing their share on imports –, might point to a movement towards higher value added stages of production, it should always be remembered that generally, for China, decreases of participation in a group of products either in exports or imports can mask significant absolute expansions in value. Therefore, even with the dwindling share on total imports, China's

reliance on imported capital goods has significantly augmented over the period, from U$103 billion in 2004 to U$251 billion in 2014. Nonetheless, as these imports are associated with productive capacity expansion and bare a strong relation to FDI, their fast growth since 1998 – excluding 2009, when a significant contraction occurred –, gave way to a trajectory of sluggish growth in the 2012-2014 triennium.

This triennium marks a significant inflexion in China's performance as the world's manufacturing center, summarized in the already discussed stylized facts: *i*) the stagnation and even decrease of urban formal employment in traditional export zones; *ii*) the modest levels of export growth; *iii*) the stagnation in value of announced greenfield FDIs in the lowest levels since 2003; and *iv*) the trend towards stagnation in the imports of capital goods. Though, these are recent trends, and for the prominence of China as world's manufacturing center to be affected qualitatively stronger and persistent unfolding would be needed.

The remark that in China's case dwindling proportions of goods in its foreign trade must be followed by a closer investigation of absolute values, as the former can mask sometimes astonishing absolute expansions, could not be any truer than in the case of personal computers. Whereas table 5.4 exhibits a significant drop in the latter's participation on total exports from 2006 to 2014, the analysis of the value of China's top ten exports provides a different perspective (table 5.5). Personal computers and their units have been China's main export in all selected years. Their exports have grown throughout the period, being reduced only in 2009, and their amount rose from U$13 billion in 2001 to U$183 billion in 2014.

An impressive trajectory of growth was also found in the exports of telephony goods, particularly of "transmission apparatus for radiotelephony etc, tv cameras and cordless telephones", which mainly reflect exports of mobile phones. Being the third Chinese exports in 2001, with U$5 billion, these products assumed the second position in 2009, maintaining their level of exports at U$50 billion even in face of the global financial crisis, and resuming fast growth afterwards to represent U$128 billion in 2014. China's third export in 2014 was also of telephony goods, under the heading of "electrical apparatus for line telephony, telephone sets and parts", with U$79 billion, increasing from U$8 billion in 2004, when it was China's seventh export to the world, while not even listing in the top 10 exports in 2001.

Table 5.5 – Chinese top 10 exports (selected years, in U$ billion and position P)

HS1996 Code/Product name		2014		2011		2009		2008		2004		2001	
		U$	P	U$	P	U$	P	U$	P	U$	P	U$	P
8471	automatic data process machines, magn reader, etc. computer hardware	183	1	160	1	112	1	123	1	60	1	13	1
8525	trans apparatus for radiotelephony etc, tv cameras cordless telephones	128	2	75	2	50	2	50	3	22	3	5	3
8517	elec apparatus for line telephony, telephone sets, pts	79	3	70	3	47	3	51	2	8	7	-	-
8542	electronic integrated circuits & microassembl, pts	63	4	34	6	24	5	25	5	11	5	-	-
7113	articles of jewelry & parts, of prec metal or clad	49	5	-	-	-	-	-	-	-	-	-	-
9013	liquid crystal devices nesoi, lasers, opt appl, pt	35	6	32	7	20	7	24	6	7	10	-	-
8473	parts etc for typewriters & other office machines computer accessories	31	7	31	8	26	4	32	4	24	2	8	2
9405	lamps & lighting fittings & parts etc nesoi	31	8	-	-	-	-	-	-	-	-	-	-
8541	semiconductor devices, light-emit diodes etc, pts	31	9	35	5	15	10	17	10	-	-	-	-
8708	parts & access for motor vehicles	28	10	-	-	-	-	-	-	-	-	-	-
8901	vessels for the transport of persons or goods	-	-	37	4	24	6	17	9	-	-	-	-
8443	printing machinery, machines ancil to printing, pt	-	-	25	9	27	8	20	7	-	-	-	-
4202	travel goods, handbags, wallets, jewelry cases etc	-	-	25	10	-	-	-	-	-	-	4	9
8528	television receivers (incl monitors & proj receivers)	-	-	-	-	16	9	18	8	-	-	-	-
8529	parts for television, radio and radar apparatus	-	-	-	-	-	-	-	-	12	4	-	-
6204	women's or girls' suits, ensemb etc, not knit etc	-	-	-	-	-	-	-	-	8	6	5	4
8521	video recording or reproducing apparatus	-	-	-	-	-	-	-	-	7	8	-	-
8504	electric transform, static converters & induct, pt	-	-	-	-	-	-	-	-	7	9	4	10
6110	sweaters, pullovers, vests etc, knit or crocheted	-	-	-	-	-	-	-	-	-	-	5	5
9503	toys nesoi, scale models etc, puzzles, parts etc	-	-	-	-	-	-	-	-	-	-	5	6
6403	footwear, outer sole rub, plastic or lea & upper lea	-	-	-	-	-	-	-	-	-	-	4	7
6203	men's or boys' suits, ensembles etc, not knit etc	-	-	-	-	-	-	-	-	-	-	4	8
	Aggregated participation in total	28,0%		27,5%		29,3%		26,3%		28,0%		21,3%	

Source: WITS-UNComtrade.

If in 2001 China had six of its top exports in traditional labor intensive industries, including, suits, ensembles, pullovers, sweaters, vests, toys, puzzles, footwear, wallets, handbags, among others, none of them persisted in China's top exports from 2008 onwards – except for the appearance of "travel goods, handbags, wallets etc" in the 10th position in 2011 accruing to U$25 billion. Actually, already in 2004 just one of these goods – "women's or girls' suits, ensembles etc, not knit etc" – had remained in the top 10 list, on the 6th position, with U$8 billion. Between 2004 and 2011, a series of goods would appear in China's top exports – televisions and their parts, printing machinery and vessels, the latter being the prominent export of China's transportation equipment manufacturing, instead of passenger cars (0%) – though they would increasingly give way to optical devices and parts and components of the ICT industry.

In the latter, "parts for typewriters and other office machines and computer accessories", which appeared in all years, lost significant position in China's exports and never fully recomposed their pre-crisis level. They grew very fast from U$8 billion in 2001, in the 2nd position, to U$32 billion in 2008, although stagnated in U$31 billion from 2011 to 2014, dropping to the 7th position. In contrast, among parts and components of the ICT industry – but not exclusively of it –, semiconductors played an increased role in China's top exports. If in 2001 the industry was absent of the list, in 2014, it had integrated circuits – the most sophisticated segment – in the 4th position and optical-sensitive-discrete devices (O-S-D) in the 9th position; whereas "lamps & lighting fittings & parts" (8th) are strongly linked to the semiconductor industry performance in the figure of light emitting diodes, or LED lamps.

China's exports of integrated circuits (ICs) rose sharply from U$11 billion in 2004 to U$63 billion in 2014; whereas O-S-D devices augmented from U$17 billion in 2008 to U$31 billion in 2014, which represented the same value of "lamps & lighting fittings & parts" exports in this last year. More important than the latter in the category of optical devices were the exports of "liquid crystal devices nesoi, optical appliances, parts", whose exports in 2004 were U$7 billion, rapid hitting the mark of U$35 billion 10 years later, which meant their dislocation from the 10th to the 6th positon. Finally, two other goods made a single appearance in 2014 in the list of China's main exports, "articles of jewelry & parts of precious metal or clad", amounting U$49 billion (5th position) and "parts & accessories for motor vehicles", comprising U$28 billion (10th position).

Table 5.6 – Chinese top 10 imports (selected years, in U$ billion and position P)

HS1996 Code	Product name	2014		2011		2009		2008		2004		2001	
		U$	P	U$	P	U$	P	U$	P	U$	P	U$	P
2709	crude oil from petroleum and bituminous minerals	228	1	197	1	89	2	129	2	34	2	12	2
8542	electronic integrated circuits & microassembl, pts	219	2	171	2	121	1	131	1	62	1	17	1
2601	iron ores & concentrates, including roast pyrites	94	3	112	3	50	3	61	3	13	6	-	-
9999	----------	83	4	49	5	-	-	-	-	-	-	-	-
8703	motor cars & vehicles for transporting persons	60	5	41	6	-	-	-	-	-	-	-	-
9013	liquid crystal devices nesoi, lasers, opt appl, pt	50	6	53	4	38	4	49	4	23	3	-	-
8517	elec apparatus for line telephony, telephone sets, pts	42	7	30	10	17	7	17	8	-	-	5	4
1201	soybeans, whether or not broken	40	8	30	8	19	6	22	7	-	-	-	-
8541	semiconductor devices, light-emit diodes etc, pts	31	9	-	-	16	10	17	9	10	9	4	8
8471	automatic data process machines, magn reader, etc. computer hardware	31	10	30	9	23	5	24	6	14	4	5	5
2710	oil (not crude) from petrol & bitum mineral etc	-	-	33	7	17	8	30	5	9	10	4	7
7403	refined copper & alloys (no mast alloy), unwrought	-	-	-	-	16	9	-	-	-	-	-	-
8473	parts etc for typewriters & other office machines computer accessories	-	-	-	-	-	-	16	10	14	5	7	3
8529	parts for television, radio and radar apparatus	-	-	-	-	-	-	-	-	12	7	4	10
8479	machines etc having individual functions nesoi, pt	-	-	-	-	-	-	-	-	10	8	4	6
8802	aircraft, powered, spacecraft & launch vehicles	-	-	-	-	-	-	-	-	-	-	4	9
Aggregated participation in total		44,9%		42,8%		40,4%		43,7%		35,9%		26,5%	

Source: WITS-UNComtrade.

As we already pointed out, parts and components have a significant weight in both China's exports and imports, reflecting, on the one hand, the geographical dispersion of the different stages and products of single global value chains, on the other hand, the very fragmented nature of the electrical electronic, ICT and semiconductor industries. From the 10

main imports of China in 2014, six were manufacturing goods of which five were also among Chinese ten main exports (table 5.6). The intercrossed trade flows of "electrical apparatus for line telephony telephone sets and parts", "liquid crystal devices nesoi, lasers, optical appliances and parts", ICs and OSD devices are highly symptomatic of the above-mentioned trends. As a result, although these parts and components might be among China's top ten exports, many of them are not in China's top ten net exports, which still have a significant number of products from the textiles, wearing apparel, leather and related products sector among them (see Appendix E for China's top ten net exports and top ten net imports). The only manufacturing imports which were not among the top exports were motor cars and vehicles for transporting persons valued in U$60 billion (5th position), reflecting the growth of China's domestic market. The other final manufacturing good in the list was personal computers, whose imports though significant, totaling U$31 billion in 2014 (10th position) were largely exceeded by exports in U$152 billion.

From the four parts and components mentioned, in 2014 China had a surplus only in "electrical apparatus for line telephony telephone sets and parts" (U$37 billion), while O-S-D devices imports and exports evened out. That in which China holds large deficits are ICs and "liquid crystal devices nesoi, lasers, optical appliances and parts" – whose behavior is probably determined by the value of liquid crystal devices –, both being the most sophisticated and expensive parts and components of mobile phones, notebooks, tablets and so on. Whereas China held a deficit of U$15 billion in "liquid crystal devices nesoi, lasers, optical appliances and parts" in 2014 – a deficit that has significantly oscillated during the period – the country has an enormous chronic and increasing deficit in ICs, the 'intelligence' of all ICT products and whose use has been widespread in all sorts of products, from domestic appliances and industrial machinery to national defense and domestic repressive systems.

From 2001 to 2009, ICs were the top Chinese imports, being surpassed only by crude oil in 2011-2014. For the whole period, their imports grew in more than U$200 billion, augmenting from U$17 billion in 2001 to U$219 billion in 2014, whereas China's deficit in the product in the latter year was U$157 billion. Given the predominance of ICT industry in China's exports, particularly of personal computers and phones, the development of a domestic IC industry in China is arguably the single biggest challenge for the country to increase the value added – or climb the value chain – in ICT manufacturing exports, as it is mainly due to the technology and the large capital requirements for producing integrated circuits that great chunks of value from ICT's global value chains are captured. And given the

Chinese huge industrial reserve army, which comported the expansion of the ICT industry while holding and expanding its position in labor intensive industries, 'climbing the ladder' in semiconductors and ICT manufacturing, which would augment the value added of its exports, does not a priori exclude China from keeping its position in footwear and wearing apparel.

Of course, there is always the option of nationalizing foreign firms, which would immediately impact its value retention capacity, whereas advanced countries would not be able to just source from other countries and ban China's exports, retaliating, as this would imply a severe shortage of a wide range of manufactured goods, from computers and phones to textiles, wearing apparel, leather and related products. And if we would dig deeper, we would probably find numerous manufacture goods that are mostly produced in and exported by China. Not only goods which result from productive processes' internationalization led by TNCs, but also those which rely on domestic and mainly state-led production, such as steel, which China was also the main net exporter in the world in 2013.

5.5 CHINA'S CENTRALITY TO INTERNATIONALLY FRAGMENTED MANUFACTURING PRODUCTIVE PROCESSES

Through the analysis of OECD-WTO database on trade in value-added (TiVA), which is derived from national input-output tables, it is possible to assess the extent in which China's trade is a byproduct of its involvement in internationally fragmented productive processes captained by TNCs and the contribution of foreign inputs to the price of China's total exports. By discounting foreign inputs from the total price of exports, these data inform us how much was generated by export economic activities inside the country in terms of wages, taxes and profits that accrue to the firms operating *in locus*. They do not tell, for instance, if the profits are then repatriated by TNCs to headquarter economies and that at the end of the day that what stayed in the country were meager wages and taxes. These are not measures of value created by workers in a country, not even a good measure of the profits derived from them. For instance, the mere change between a TNC operating directly in China to outsourcing to a local firm might change the value-added in the country:

> It is possible to imagine a TNC converting a direct in-house relation with a subsidiary into an arm's length relation with an independent supplier, doing so without making any changes to the work regimes or to the labour processes, or to the price of inputs, or to the profits realised upon the sale of the output. The actual process of production and value extraction would then be identical in every respect.

> Nothing has changed except titles of ownership. Yet surface appearances would show a profound change: a visible S-N [South-North] flow of repatriated profits between TNC subsidiary and TNC HQ has vanished, without leaving a trace in the data on capital flows, yet this new relationship causes costs, including labour costs and operating profits, to be squeezed in these now 'arm's length' links in the value chain, helping 'lead firms', i.e. imperialist TNCs, to increase their ability to capture more of the total value added. This is suggestive of the physical phenomenon known as sublimation—when the application of heat to a visible solid turns it into an invisible vapour, only for it to rematerialise as a visible solid in a different part of the apparatus. In the outsourcing relationship, the S-N flow of value continues, but in a different form, invisible to the naked eye—that is, there's no sign of it in standard data on global capital and commodity flows. (SMITH, 2010, p.240)

Despite of its limitations, the analysis of value-added can provide us insights in two important dimensions of the internationalization of productive processes led by TNCs in China. The first is, by discounting the inputs from total exports, to provide a proxy on the parcel of the value that was created in China by export production that remained in the country, even if part of surplus value can subsequently be sent abroad by repatriation of profits. The second is to assess the extent of network trade, or the trade associated with internationally fragmented productive processes underlying the production of final goods. This is the paramount transformation of international trade over the last decades, which encompassing the shift "both to more intermediates and increasingly outside the confines of the multinational enterprise" (MILBERG, 2004, p.1), represents "the qualitative change in the structure of world trade that has occurred [since the 1980s] […], specifically the trade associated with the international 'disintegration' of production, that is, the breaking up of the production process into different parts and locating these parts in different countries" (MILBERG, 2004, p.1).

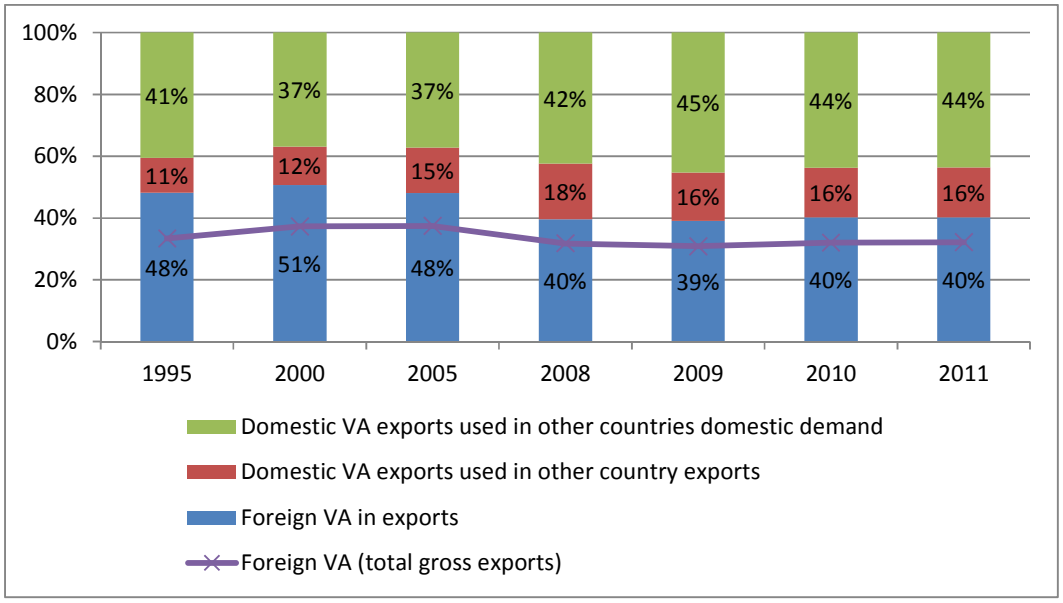
Banga (2013) proposes an analysis of TiVA data on international trade accruing to GVCs as the splitting up of the productive processes across countries contemplating both 'backward' and 'forward' links:

> For a particular country, especially a developing country, linking into GVCs could either be through forward linkages (where the country provides inputs into exports of other countries) or through backward linkages (where the country imports intermediate products to be used in its exports). Using this sequential production process definition of *participation in GVCs,* for a particular country this could be measured as a sum of 'foreign value added in its gross exports' (backward linkage or imports of foreign value-added) and its 'domestic value-added which goes into other countries' gross exports' (forward linkage of export of domestic value-added). (BANGA, 2013, p.14)

Despite the fact that TiVA provides data on gross exports for both goods and services, we restrained our analysis to manufacturing goods. Adopting Banga's (2013) differentiation in backward and forward linkages to GCVs, graph 5.5 exhibits the value-added of China's total manufacturing exports in: *i*) foreign value-added (backward linkages in GVCs); *ii*) domestic value-added of Chinese exports used in other countries exports (forward linkages); and *iii*) domestic value-added used in other countries domestic demand. While the first and the second components of value-added provide a measure for trade accrued to internationally fragmented manufacturing productive processes; the second and the third component together – the domestic value added – are the wages, taxes and profits that were generated and simultaneously stayed in the country, at least in a first moment, due to export manufacturing production.

The participation of foreign value-added in China's manufacturing gross exports was much higher than in total gross exports throughout the period in which data is available, with the former broadly dominating the movement of the latter. In 1995, 48% of the value of China's manufacturing gross exports represented value-added by other countries in the form of inputs; whereas for total gross exports – which considers primary goods and services –, this content represented 33%.

Graph 5.5 – Value-added composition of Chinese total manufacturing gross exports and foreign value-added in total gross exports (in percentage)



Source: OECD-WTO TiVA Database (2015).

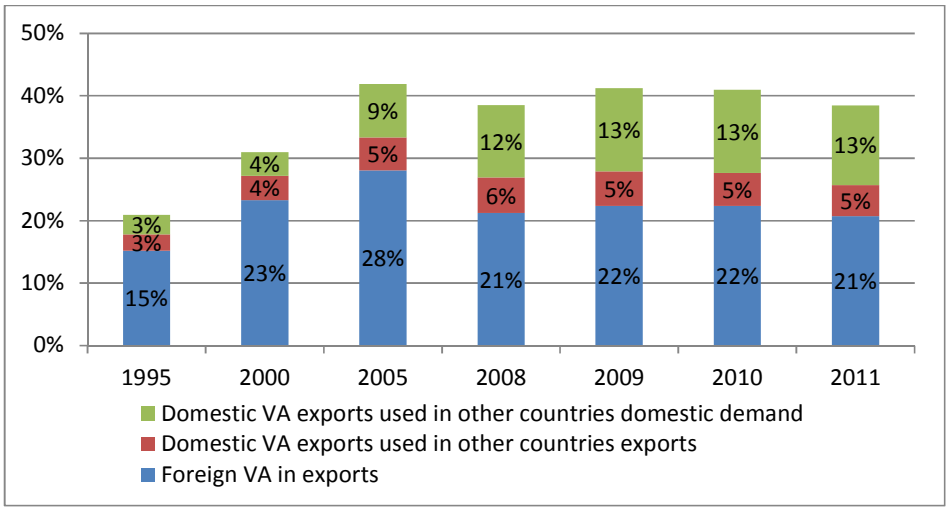
In 2000, the foreign valued-added of China's manufacturing gross exports peaked in 51%, subsequently falling to 48% in 2005 and dropping further to around 40% in the 2008-2011 period. Even if diminished, China's still has high levels of backward linkages in manufacturing GVCs, which are consistent with its role as assembler. The increased proportion of domestic value added in China's manufacturing exports between 2000 and 2011 was mainly met by value added which was used in other countries domestic demand, rising from 37% to 44% of the total. Nonetheless, the share of China's forward linkages in manufacturing GVCs is non-negligible and has also grown in the period, augmenting from 12% to 16%. Therefore, most of the value of China's manufacturing gross exports results from its linkages to GVCs, which peaked in 2000, responding for 63% of manufacturing gross exports, while representing 56% in the triennium 2009-2011.

Graph 5.6 considers the main manufacturing sectors in contribution to China's exports as analyzed in the previous section, namely, machinery and equipment and textile, wearing apparel leather and related products. Following TiVA's sectorial division, we split the broad sector machinery and equipment into electrical and optical equipment and machinery and equipment not elsewhere comprised. The graph exhibits the contribution of the different value added components in percentage points to total manufacturing gross exports. The total contribution in percentage points of each sector to total manufacturing exports are different than the presented in the previous section for the facts that in the latter we considered total gross exports of goods, which included primary goods, and that the total values of manufacturing gross exports provided by the OECD STAN bilateral trade in goods and WITS-UNComtrade databases are different than those found in OECD-WTO TiVA.

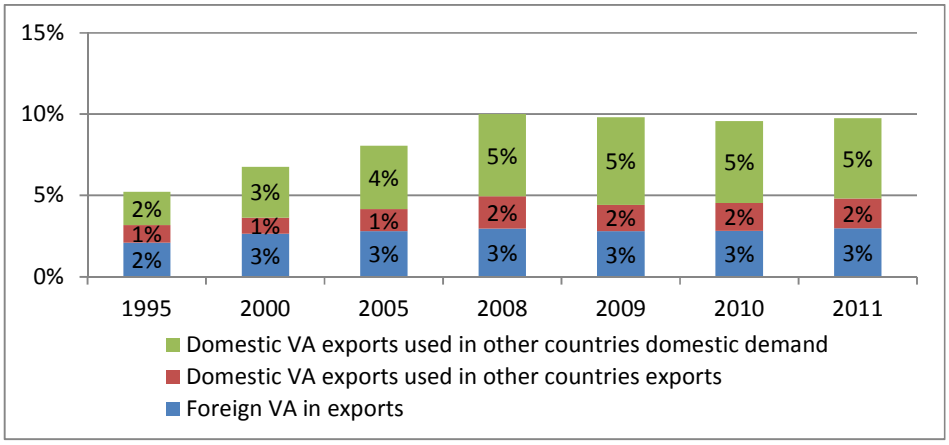
The sectorial value added analyzes reveals that although all the selected sectors have some degree of backward and forward linkages, the high levels of foreign value added in China's manufacturing gross exports accrue mainly to the electrical and optical equipment sector, as expected, not only because it is the main sector in manufacturing gross exports, but also for the overwhelming participation of foreign value added compared to the other sectors. In 1995 and 2000, almost all value added in the electrical and optical equipment sector was composed by foreign value added, which represented 15% and 23% of the value of total manufacturing gross exports. In 2000, the domestic value added of Chinese exports of electrical and optical equipment represented only 35% of the foreign value-added in the sector.

Graph 5.6 – Contribution of the different value-added components of Chinese selected sectors' gross exports to total manufacturing gross exports

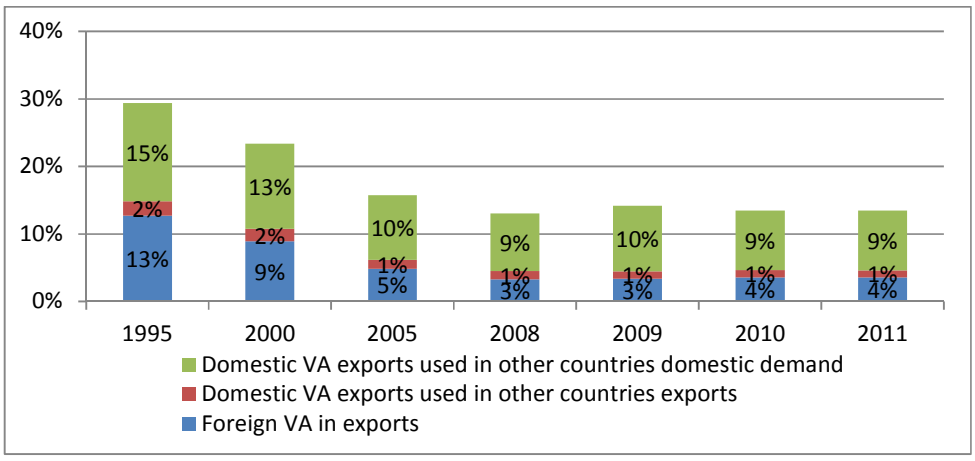
A. Electrical and optical equipment



B. Machinery and equipment not elsewhere comprised



C. Textiles, textile products, leather and footwear



Source: OECD-WTO TiVA Database (2015)

Despite the fact that in 2005 foreign value added in electrical and optical equipment peaked in 28% of the value of total manufacturing gross exports, by that year domestic value added had already started rising in the sector in proportion to foreign value added. In the period 2008-2011, domestic value added in the sector in relation to foreign had augmented to represent 82% to 86% of the latter; whereas domestic value added in electrical and optical equipment in total manufacturing exports rose from 6% to 18% between 1995 and 2011. This reveals that the industry of parts and components of ICT goods, in which the semiconductor sector is core, has been growing substantially in the country over the last decades – a fact that does not necessarily mean they are national industries, but only that they operate in the country. Generally, the development of the industries of parts and components of ICT goods involves large inflows of FDI to China, and assessing the level in which these are national or foreign operations in not possible by either standard international trade data or TiVA data.

The increase in the domestic value added in the electrical and optical equipment sector has only slightly been translated in augmented forward linkages, since China is the main world assembler of ICT goods, the industries of parts and components that are delocalized to the country or developed indigenously are there to supply their main consumer, China's industry of final electronic goods. TiVA analysis corroborates the perspective that the main challenge for China to increase the domestic value added of its exports lies in the development of the industry of parts and components for ICT final goods, which centrally means the semiconductor industry.

In the sectors of machinery and equipment not elsewhere comprised and textiles, textile products, leather and footwear the domestic value added has been higher than the foreign throughout the period. From 1995 to 2011, the "machinery and equipment not elsewhere comprised" sector has grown in contribution to the value of total manufacturing gross exports, particularly through the increase in the domestic value added, which augmented in 4 percentage points, while the foreign value added has grown just one percentage point. In contrast, the textiles, textile products, leather and footwear sector has seen its share in the value of gross manufacturing exports decline, though more pronouncedly due to the reduction of foreign value added. Notwithstanding, foreign value added in the latter sector, as inputs, is not the mean through which TNCs extract value in GVCs of the sector, which is mainly exercised by the mark-up added in the consumer markets.

China's high integration in internationally fragmented manufacturing productive processes can be recognized by the high participation of backward linkages and, though in a

much lesser extent, also of forward linkages in the total value of its manufacturing gross exports, particularly due to the electrical and optical equipment sector. Nevertheless, to have a perspective of China's participation in internationally fragmented manufacturing productive processes relative to other economies; we applied Banga's (2013) "measure of extent of a country's participation in GVCs" through the "share of a country in total value-added created by forward and backward linkages in GVCs (i.e., summing over all countries)" (BANGA, 2013, p.14). Whereas the author has calculated these shares in the reference year of 2009 for the whole of gross exports, which include primary goods and services, we restrained our estimates to total manufacturing gross exports and used more recent data made available by TiVA. Before we discuss our results for manufacturing, it should be highlighted that the centrality of China in the global South's participation in GVCs was one of the main results of Banga (2013):

> Between countries, maximum participation in GVCs, in terms of share in total value-added created in GVCs is of China (9%) and US (9%). Excluding the share of China, BRICS share is only around 5%. All other developing countries together share less than 10'% of global value added created by GVC participation. Further, if share of China is estimated in terms of total participation of developing countries in GVCs, it is as high as 30%. Share of China in backward linkages of OECD countries with developing countries (i.e., FVA by China in OECD countries gross exports as a proportion of FVA by all developing countries) is as high as 33% while share of China in forward linkages of OECD countries with developing countries (i.e., domestic value-added of OECD countries in exports of developing countries) is 34%. FVA from OECD countries in China's gross exports amounts to 78% of its total FVA in gross exports while it contributes around 65% of its value added exports enter gross exports of OECD countries. This would imply that gross exports of China create much more value-added in developed countries as compared to developing countries. Since most of the GVCs emerge from OECD countries, ***China can be called the epicenter of GVCs in the developing world for developed countries.*** (BANGA, 2013, p.15)

Applying this method to manufacturing data, we wouldn't go as far as to claim that such measures reflect participation and gains in GVCs[96], not only from the problems that arise from the value added concept, but also from the fact that global value chains might not necessarily entail fragmented production, as it can be the case with textiles and wearing

[96] Banga (2013) also states the limitations of these estimates being a measure of participation in GVCs: "Global value chains include the whole cycle of the organization, production, and delivery of products from inception to use and recycling. Mostly these chains are initiated by transnational corporations, and they may begin in developing countries (where primary inputs are sourced) but end in developed/developing countries (where the branded final products are sold). In the process of fragmenting production processes they boost network trade. However, they go much beyond network trade; therefore measures of a country's network trade may not be suitable indicator of its participation in GVCs". (BANGA, 2013, p.30)

apparel. Rather, these are proxies for the participation of an economy in internationally fragmented manufacturing productive processes. These are proxies of participation on international trade generated by the splitting of manufacturing productive processes across countries because, on the one hand, they also capture as forward linkages the traditional exports of primary goods; on the other hand, the imports of primary goods – in China's case, for instance, the heavy dependence on imports of iron ores for steel production – would appear as backward linkages[97]. Nevertheless, the latter wouldn't exactly qualify as being inscribed in the process of fragmentation of manufacturing production, since the opposition of manufacturing to primary production is foundational to the concept of manufacturing itself, and international trade's cleavage in primary/manufacturing exchanges is unspecific of neoliberal globalization, otherwise we might as well track down 'backward linkages' of 'GVCs' led by the East India Company to the 16th century. In this sense, we should expect China's backward linkages in internationally fragmented manufacturing productive processes to be overstated, whereas its forward linkages would be more precise.

Table 5.7 presents the top 20 economies in participation in the value of international trade generated by fragmented manufacturing productive processes; table 5.8 exhibits these estimates in terms of backward linkages and table 5.9 in forward linkages (table 5.7, the total participation, is derived as a mean of both shares; estimates for the whole set of available economies can be found in Appendix E).

China's centrality to internationally fragmented manufacturing productive processes can be assessed by the country's largest share on the value of international trade that is accrued to fragmentation (table 5.7). In 2011, China participated in 12% of the worldwide value of manufacturing trade flows generated by productive processes' 'disintegration', followed by the US (8%), Germany (8%), Japan (5%), Korea (5%), France (4%), United Kingdom (3%) and Italy (3%), which reflect the fact the OECD countries hold the bulk of the value of these flows (61%). Whereas countries such as Russia and Saudi Arabia appear on the list due to natural resources exports, low wage peripheral countries that are subject to 'efficiency-seeking' FDI only appear in the list after the 12th position, with small shares, as

[97] Whereas Banga (2013) highlights the impact of primary goods exports in forward linkages, he does not acknowledge as a problem imports of these goods in backward linkages: "However, if a country is exporter of commodities or primary inputs, its forward linkages will be much higher than its backward linkages like in case of Russia, Brazil, South Africa and Indonesia. But these countries will correspondingly show low participation in GVCs." (BANGA, 2013, p.16)

the case of Mexico (13th position), India (14th position) and Malaysia (15th), each of them accruing 2% of participation.

Table 5.7 – Top 20 economies (2011) in participation in international trade generated by fragmented manufacturing productive processes

	1995	2000	2005	2008	2009	2010	2011
OECD	77%	72%	67%	64%	63%	61%	61%
CHN: CHINA (PEOPLE'S REPUBLIC OF)	3%	5%	9%	10%	11%	12%	12%
USA: UNITED STATES	12%	13%	9%	8%	8%	8%	8%
DEU: GERMANY	10%	8%	9%	9%	9%	8%	8%
JPN: JAPAN	7%	7%	6%	5%	5%	6%	5%
KOR: KOREA	3%	4%	4%	4%	5%	5%	5%
FRA: FRANCE	6%	5%	5%	4%	4%	4%	4%
GBR: UNITED KINGDOM	6%	5%	4%	4%	4%	3%	3%
ITA: ITALY	5%	4%	4%	4%	3%	3%	3%
RUS: RUSSIA	2%	2%	3%	3%	2%	3%	3%
TWN: CHINESE TAIPEI	3%	3%	3%	3%	3%	3%	3%
CAN: CANADA	4%	4%	3%	2%	2%	2%	2%
ESP: SPAIN	2%	2%	2%	2%	2%	2%	2%
MEX: MEXICO	2%	3%	2%	2%	2%	2%	2%
IND: INDIA	0%	1%	1%	1%	2%	2%	2%
MYS: MALAYSIA	1%	3%	2%	2%	2%	2%	2%
SAU: SAUDI ARABIA	1%	1%	1%	2%	1%	1%	2%
CHE: SWITZERLAND	2%	2%	2%	2%	2%	2%	2%
THA: THAILAND	1%	1%	1%	1%	2%	2%	2%
SGP: SINGAPORE	2%	2%	1%	1%	1%	1%	1%
AUS: AUSTRALIA	1%	1%	1%	1%	1%	1%	1%

Source: OECD-WTO TiVA (2015)

When we open the economies' participations into backward and forward linkages, a clearer picture of the nature of Southern and Northern countries' role in fragmented manufacturing productive processes emerge. By examining backward linkages, in 2011, China's overwhelming 16,7% share of worldwide value accrued to these linkages in manufacturing gross exports expressed its importance as assembler, even if this measure is overstated. Apart from China, even in backward linkages the predominance of advanced countries remains. The following low wage country in the list, in 2011, was Mexico in the 10th position. Although the country had a higher position on value accrued to backward linkages when compared to its total participation, its share on backward linkages had shrunk from 4,8% in 2000 to 2,9% in 2011, a similar trajectory was also presented by Malaysia. In contrast, India that was in the 15th position in 2011 experienced increases in backward linkages' participation throughout the period, growing from 0,3% in 1995 to 2,3% in 2011.

Table 5.8 – Top 20 economies (2011) in share of international trade generated by backward linkages in manufacturing productive processes

	1995	2000	2005	2008	2009	2010	2011
CHN: CHINA (PEOPLE'S REPUBLIC OF)	5,5%	7,8%	13,9%	13,9%	16,1%	16,9%	16,7%
DEU: GERMANY	8,6%	7,8%	8,8%	9,7%	8,9%	8,0%	8,4%
KOR: KOREA	3,6%	4,3%	4,8%	5,6%	5,9%	6,2%	6,5%
USA: UNITED STATES	8,9%	8,8%	6,2%	6,5%	5,7%	6,0%	6,3%
FRA: FRANCE	5,9%	5,6%	5,1%	4,5%	4,3%	4,0%	4,0%
ITA: ITALY	4,8%	3,8%	4,0%	4,2%	3,7%	3,8%	3,9%
TWN: CHINESE TAIPEI	4,3%	4,0%	3,6%	3,5%	3,3%	3,9%	3,7%
GBR: UNITED KINGDOM	5,4%	4,0%	3,1%	3,0%	3,1%	3,2%	3,3%
JPN: JAPAN	2,8%	2,7%	3,0%	3,6%	2,6%	3,1%	3,1%
MEX: MEXICO	2,7%	4,8%	3,6%	2,9%	3,1%	3,3%	2,9%
CAN: CANADA	5,2%	5,9%	4,0%	2,8%	2,8%	2,8%	2,7%
ESP: SPAIN	2,5%	2,8%	2,9%	2,7%	2,4%	2,3%	2,5%
MYS: MALAYSIA	1,9%	3,9%	3,1%	2,4%	2,6%	2,7%	2,4%
IND: INDIA	0,3%	0,4%	0,9%	1,6%	1,8%	2,2%	2,3%
THA: THAILAND	1,6%	1,6%	1,8%	2,0%	2,1%	2,2%	2,2%
SGP: SINGAPORE	3,3%	2,7%	1,4%	0,9%	1,8%	1,8%	1,8%
CZE: CZECH REPUBLIC	0,8%	0,9%	1,5%	1,6%	1,7%	1,7%	1,7%
POL: POLAND	0,5%	0,7%	1,2%	1,5%	1,5%	1,6%	1,6%
BEL: BELGIUM	4,0%	2,4%	1,9%	2,1%	1,7%	1,4%	1,6%
SWE: SWEDEN	2,7%	2,2%	1,9%	1,8%	1,6%	1,5%	1,5%

Source: OECD-WTO TiVA (2015)

Considering forward linkages, the predominance of advanced countries is blatant. The US had the largest share in 2011, with 9,7%, followed by Germany (7,4%) and Japan (7,1%), while China appeared in the 4th position with 6,8%. Notwithstanding, the latter three advanced countries experienced considerable reductions in their share since 1995, the US dropped from 14,7%, materializing a loss of 5 percentage points in participation in forward linkages. Meanwhile, China rose its participation from 1,3% in 1995, gaining 5,5 percentage points in the value of worldwide forward linkages in manufacturing gross exports. In large, this reflects the further fragmentation of production of parts and components and their delocalization to China, mainly a byproduct of FDIs, as these forward linkages generally entail complex technology and large minimum capital requirements. The top 20 economies in share on forward linkages are either advanced countries or primary goods exporters, the only exceptions being China and India. Nonetheless, the latter had only 1,7% in forward linkages in 2011, with 1,2 percentage point increase since 1995.

Table 5.9 – Top 20 economies (2011) in share of international trade generated by forward linkages in manufacturing productive processes

	1995	2000	2005	2008	2009	2010	2011
USA: UNITED STATES	14,7%	16,6%	11,6%	9,8%	11,1%	10,6%	9,7%
DEU: GERMANY	11,1%	8,1%	9,0%	8,3%	8,2%	7,5%	7,4%
JPN: JAPAN	11,9%	11,0%	9,1%	7,3%	7,7%	8,1%	7,1%
CHN: CHINA (PEOPLE'S REPUBLIC OF)	1,3%	1,9%	4,3%	6,3%	6,4%	6,8%	6,8%
RUS: RUSSIA	2,2%	2,5%	3,9%	4,8%	3,8%	4,2%	4,7%
GBR: UNITED KINGDOM	5,7%	5,3%	4,7%	4,0%	3,9%	3,4%	3,5%
SAU: SAUDI ARABIA	1,3%	1,8%	2,6%	3,1%	2,4%	2,7%	3,4%
FRA: FRANCE	5,8%	4,5%	4,3%	3,8%	3,8%	3,4%	3,3%
KOR: KOREA	2,6%	3,0%	3,5%	2,9%	3,3%	3,4%	3,1%
ITA: ITALY	4,3%	3,5%	3,7%	3,2%	3,2%	2,9%	2,9%
CAN: CANADA	2,1%	2,2%	1,8%	2,1%	1,9%	2,0%	2,2%
AUS: AUSTRALIA	1,3%	1,3%	1,5%	1,7%	1,7%	2,1%	2,2%
TWN: CHINESE TAIPEI	2,1%	2,5%	2,6%	2,0%	2,3%	2,3%	2,0%
ESP: SPAIN	1,8%	1,7%	1,9%	1,8%	1,9%	1,8%	1,8%
IND: INDIA	0,5%	0,7%	1,1%	1,3%	1,4%	1,7%	1,7%
NOR: NORWAY	1,3%	1,6%	1,6%	1,8%	1,6%	1,5%	1,7%
CHE: SWITZERLAND	2,0%	1,5%	1,4%	1,5%	1,7%	1,6%	1,7%
IDN: INDONESIA	0,9%	1,0%	1,0%	1,1%	1,3%	1,5%	1,6%
BRA: BRAZIL	0,8%	0,7%	1,0%	1,3%	1,2%	1,4%	1,6%
NLD: NETHERLANDS	2,7%	1,8%	1,8%	1,7%	1,7%	1,5%	1,4%

Source: OECD-WTO TiVA (2015)

In this sense, China has a *primus inter pares* position in the global South regarding internationally fragmented manufacturing productive processes, since its forward linkages in the value of manufacturing gross exports are not only high in general – though inferior from the US, Germany and Japan –, but the only ones significant among low wage countries excepted suppliers of primary goods. Furthermore, even when taking into account backward linkages, other low wage countries fall long behind China in relevance as manufacturing assembling bases. China's role as assembler of world manufacturing is expressed in its overwhelming share on the value of international trade responding to manufacturing backward linkages. Considering the country's participation in the value of trade accruing to internationally fragmented manufacturing productive processes (both backward and forward linkages), China's top position in 2011 not only testified its condition as 'factory of the world', but also the fast paced and massive character of industrial delocalization from advanced countries to the former. China has quickly increased its participation in the value of trade accruing to internationally fragmented manufacturing productive processes from 3% in 1995 – when the US held the top position with 12% – to 9% in 2005, equaling US' and Germany's participations, to further enhance its share to 12% in 2010, which remained

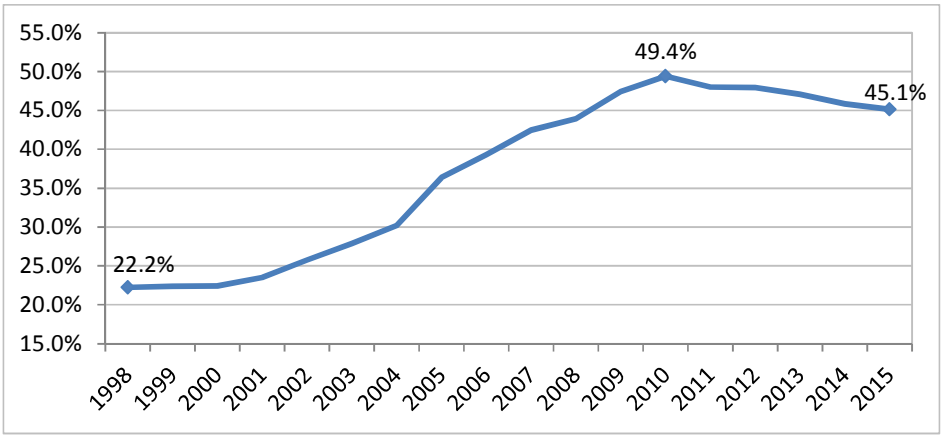
constant in 2011; a trajectory that is largely the counterpart movement of its prime position as recipient of greenfield FDI inflows.

5.6 THE OVERRELIANCE OF ADVANCED COUNTRIES' CONSUMER MARKETS ON CHINA AS FOREIGN SUPPLIER

China's gravitational force in attracting advanced countries' industrial production by drastically reducing unit labor costs and increasing TNCs' profits was manifested in the overly dependence of advanced countries' imports on China. In the present subsection we aim to assess in which extent the supply of cheap manufacturing goods in central consumer markets, made possible by delocalization of manufacturing production to low wage countries, can be said to be a global South phenomenon or more strictly a Chinese one. In this sense, we selected China's main exports in the ICT industry, namely, personal computers and personal phones, and the broad manufacturing sector of textile, wearing apparel, leather and related products to assess the degree of reliance of advanced countries' consumer markets in Chinese exports. Whereas we provide data on the participation of China in US imports in the broad manufacturing sector of textile, wearing apparel, leather and related products; we present a more detailed analysis on the five main suppliers of personal computers and personal phones in US and EU27 imports.

US imports of textile, wearing apparel, leather and related products greatly increased from 1998 to 2015, augmenting from US87 billion to U$165 billion. In 1998, 22% of these imports were supplied by China (graph 5.7). After 2001, with China's accession to the World Trade Organization (WTO), the country's participation started increasing, particularly after the expiration of the Multi-Fiber Arrangement in 2005, until 2010, when it comprised almost half of US imports in the sector. Despite the fact that in the period 2011-2015 China started losing participation in US imports of textile, wearing apparel, leather and related products, the US consumer market is still heavily dependent on China's imports in the sector, which in 2015 represented 45% of US imports. Moreover, the decline in China's participation was not due to a contraction in the value of US imports from the former, which increased from U$66 billion in 2010 to U$75 billion in 2015, but was the result of the faster growth of US imports from the rest of the world.

Graph 5.7 – China's share of US imports of textile, wearing apparel, leather and related products



Source: OCDE STAN Bilateral Trade Database in Goods.

Regarding the main products of the ICT industry, the overreliance of US imports on China was much more pronounced. US imports of personal computers increased almost ten-fold between 1998 and 2014, growing from U$4,4 billion to U$42,6 in 2014. From 1998 to 2001, China's share on US imports of the product was negligible, while its top suppliers in 1998 were Taiwan (33,5%), Mexico (28,8%), Japan (13,9%), Singapore (13,6%) and Ireland (6,0%). By 2001, Malaysia had entered the US market of personal computers, accruing for 14,8% of US imports and dislocating Japan, becoming the third main supplier.

After China's accession to the WTO this picture would quickly and radically change. In 2002, China already had a small share of US imports (6,0%), which suddenly increased in 2003 to 31,7% and rose year to year until its peak of 94,6% of all US imports of personal computers in 2012. In the latter year, Mexico was the second supplier with a meager participation of 1,7% in US imports. Mexico, which once had more than a quarter of US imports, in the late 1990s, saw its share on US imports of personal computers be crushed by the competition of Chinese exports. In the biennium 2013-2014, China's share on US imports slightly declined due to the entrance of Vietnam in the US market, though in a context in which the value of US imports of personal computers started to decline. Nonetheless, in 2014, Vietnam's share of US imports of personal computer was only 4,0%, whereas China's was 91,9%.

Table 5.10 – Total US imports of personal computers (HS847130) in U$ billion and the share of China and the top five suppliers each year

Year	CHN		VTN		MEX		OAS		KOR		JPN		MYS		SGP		IRL		PHL		Total
	%	P	%	P	%	P	%	P	%	P	%	P	%	P	%	P	%	P	%	P	U$ bi
1998	0,1	-	-	-	28,8	2	33,5	1	-	-	13,9	3	-	-	13,6	4	6,0	5	-	-	4,42
1999	0,3	-	-	-	27,5	2	48,3	1	1,6	5	12,0	3	-	-	8,2	4	-	-	-	-	5,38
2000	0,2	-	-	-	24,2	2	54,1	1	4,5	4	11,1	3	-	-	2,2	5	-	-	-	-	7,15
2001	0,3	-	-	-	20,9	2	41,8	1	-	-	8,1	4	14,8	3	-	-	-	-	7,3	5	7,49
2002	6,1	-	-	-	13,0	3	32,8	1	-	-	6,2	5	27,8	2	-	-	-	-	8,9	4	10,56
2003	31,7	1	-	-	4,8	5	16,5	3	-	-	6,0	4	29,1	2	-	-	-	-	-	-	13,34
2004	48,4	1	-	-	-	-	7,8	3	-	-	4,9	4	31,9	2	-	-	1,8	5	-	-	16,21
2005	55,2	1	-	-	-	-	1,9	4	-	-	4,3	3	33,7	2	-	-	1,8	5	-	-	19,69
2006	56,6	1	-	-	1,4	5	-	-	-	-	4,5	3	33,4	2	-	-	1,9	4	-	-	23,07
2007	63,0	1	-	-	1,4	5	-	-	-	-	3,6	3	28,6	2	-	-	1,6	4	-	-	27,44
2008	69,8	1	-	-	1,0	5	-	-	-	-	2,8	3	23,1	2	-	-	2,0	4	-	-	28,08
2009	85,2	1	-	-	1,0	5	-	-	-	-	2,0	3	9,1	2	-	-	1,7	4	-	-	27,41
2010	93,3	1	-	-	2,2	2	-	-	0,5	5	1,4	4	1,8	3	-	-	-	-	-	-	34,96
2011	93,6	1	-	-	2,0	2	1,8	3	1,3	4	0,9	5	-	-	-	-	-	-	-	-	43,19
2012	94,6	1	-	-	1,7	2	1,0	4	1,3	3	0,6	5	-	-	-	-	-	-	-	-	43,15
2013	92,9	1	2,8	2	1,3	3	0,9	5	1,0	4	-	-	-	-	-	-	-	-	-	-	42,64
2014	91,9	1	4,0	2	1,7	3	1,1	4	0,6	5	-	-	-	-	-	-	-	-	-	-	42,59

Source: WITS-UNComtrade.
Notes: 'P' stands for yearly placement in the rank of five top suppliers. 'CHN' stands for China, 'VTN', Vietnam, 'MEX', Mexico, 'OAS', Other Asia or Taiwan, 'KOR', South Korea, 'JPN', Japan, 'MYS', Malaysia, 'SGP', Singapore, 'IRL', Ireland and 'PHL', the Philippines.

US imports of personal phones have grown even more rapid than personal computers, rising from U$3 billion in 1998 to U$55 billion in 2014 (table 5.11). In 1998, US top foreign suppliers of personal phones were Canada (24,3%), South Korea (22,5%), Japan (14,8%), Mexico (10,6%) and China (5,2%). As with the other imports analyzed previously, China's consistently gained participation in the aftermath of its accession to WTO. Between 2001 and 2007, China's share of US imports of personal phones rose from 7,1% to 42,9%. Despite losing participation in 2008, China resumed gaining share in the US market, particularly between 2011 and 2012, when its parcel of US imports of personal phones rose from 52,4% to 73,8%. Although China's participation in US imports of the product was not as high as in personal computers, it kept augmenting even in the biennium 2013-2014, further increasing to 77,7%, in a context in which the total value of US imports of personal phones continued to fast augment. In 2014, South Korea held its position as second US supplier, with 12%, followed by Taiwan (3,1%), Vietnam (2,5%) – whose entrance as main supplier was met by Mexico's exit – and Malaysia (2,0%).

Table 5.11 – Total US imports of personal phones (HS852520) in U$ billion and the share of China and the top five suppliers each year

Year	CHN		KOR		OAS		VTN		MEX		MYS		CAN		JPN		BRA		Total
	%	P	%	P	%	P	%	P	%	P	%	P	%	P	%	P	%	P	U$ bi
1998	5,2	5	22,5	2	-	-	-	-	10,6	4			24,3	1	14,8	3	-	-	3,1
1999	-	-	30,5	1	-	-	-	-	12,6	4	7,2	5	17,6	2	13,9	3	-	-	5,3
2000	-	-	28,9	1	-	-	-	-	17,7	2	8,4	5	14,0	3	9,3	4	-	-	10,2
2001	7,1	4	35,2	1	-	-	-	-	18,1	2	8,9	3	6,9	5	-	-	-	-	12,4
2002	14,2	2	31,4	1	-	-	-	-	11,9	3	7,6	4	-	-	-	-	7,3	5	13,9
2003	18,6	2	35,9	1	-	-	-	-	9,4	3	8,3	4	-	-	-	-	6,0	5	15,7
2004	26,4	2	38,4	1	-	-	-	-	9,8	3	6,6	4	3,6	5	-	-	-	-	21,2
2005	37,4	1	24,0	2	-	-	-	-	8,9	3	6,0	4	4,8	5	-	-	-	-	25,2
2006	43,4	1	19,5	2	6,1	5	-	-	9,1	3	6,1	4	-	-	-	-	-	-	27,6
2007	42,9	1	22,5	2	4,9	4	-	-	11,2	3	4,7	5	-	-	-	-	-	-	29,1
2008	37,9	1	26,4	2	5,5	4	-	-	15,3	3	-	-	4,9	5	-	-	-	-	32,7
2009	40,6	1	23,7	2	6,3	4	-	-	19,5	3	-	-	4,2	5	-	-	-	-	35,4
2010	44,2	1	19,7	2	11,0	4	-	-	17,4	3	-	-	2,6	5	-	-	-	-	39,0
2011	52,4	1	17,7	2	15,1	3	-	-	9,3	4	1,7	5	-	-	-	-	-	-	44,5
2012	73,8	1	10,0	2	5,5	3	-	-	5,0	4	2,5	5	-	-	-	-	-	-	45,2
2013	74,1	1	11,9	2	4,0	4	-	-	4,8	3	2,3	5	-	-	-	-	-	-	51,1
2014	77,7	1	12,0	2	3,1	3	2,5	4	-	-	2,0	5	-	-	-	-	-	-	54,7

Source: WITS-UNComtrade.
Notes: 'P' stands for yearly placement in the rank of five top suppliers. 'CHN' stands for China, 'KOR', South Korea, 'OAS', Other Asia or Taiwan, 'VTN', Vietnam, 'MEX', Mexico, 'MYS', Malaysia, 'CAN', Canada, 'JPN', Japan and 'BRA', Brazil.

Considering EU27 imports of personal phones and computers, China appears also as the main supplier, though with much lesser shares than in US imports. For personal phones, whose imports had risen from U$12,6 billion to U$64,4 billion between 1998 and 2014, a full-fledged transformation in the main suppliers of EU27 imports occurred. Whereas from 1998 to 2000 the main providers of personal phones were European developed countries, namely, Finland, Germany, Great Britain, Sweden and France; from 2001 onwards they were progressively displaced by Asian and low wage European peripheral countries, to which their productive facilities might have well been relocated to: firstly, by China and South Korea, subsequently by Hungary, the Netherlands – for its activity as a commercial hub –, Ireland and recently Vietnam. China's share of EU27 imports of personal phones has increased every year between 2001 and 2007, when it represented 23,7%. Becoming the top supplier of EU27 in 2004, China maintained its position until 2014. As occurred in the US market, China's share of personal phones on EU27 imports increased substantially in the biennium 2013-2014,

hitting its peak in 2014 with 38,9%, followed by Vietnam (14,5%), the Netherlands (11,8%), South Korea (5,9%) and Ireland (4,0%).

Table 5.12 – Total EU27 imports of personal phones (HS852520) in U$ billion and the share of China and the top five suppliers each year

Year	FIN		DEU		GBR		SWE		FRA		AUT		CHN		KOR		Total
	%	P	%	P	%	P	%	P	%	P	%	P	%	P	%	P	U$ bi
1998	18,5	1	16,8	2	16,2	3	14,4	4	10,2	5	-	-	-	-	-	-	12,6
1999	13,7	3	23,1	1	16,2	2	11,4	4	10,0	5	-	-	-	-	-	-	17,5
2000	14,9	2	19,3	1	12,5	3	8,1	5	12,0	4	-	-	-	-	-	-	23,0
2001	18,1	2	18,8	1	12,8	3	-	-	7,2	4	-	-	6,2	5	-	-	22,0
2002	19,1	1	15,7	2	15,3	3	-	-	-	-	-	-	7,1	4	6,1	5	24,6
2003	11,5	2	16,2	1	-	-	-	-	-	-	7,2	5	10,2	3	8,6	4	29,2

Year	CHN		VTN		NDL		KOR		IRL		DEU		HUN		OAS		FIN		GBR		TOTAL
	%	P	%	P	%	P	%	P	%	P	%	P	%	P	%	P	%	P	%	P	U$ bi
2004	14,4	1	-	-	-	-	12,5	3	-	-	13,1	2	11,2	4	-	-	6,8	5	-	-	45,5
2005	15,8	1	-	-	-	-	15,5	2	-	-	11,3	4	8,7	5	-	-	12,0	3	-	-	53,3
2006	16,8	1	-	-	-	-	10,5	3	-	-	11,1	2	-	-	-	-	9,8	4	6,2	5	67,5
2007	23,7	1	-	-	-	-	16,5	2	-	-	9,7	5	10,1	4	-	-	10,5	3	-	-	44,6
2008	23,0	1	-	-	5,9	5	18,5	2	-	-	-	-	12,8	4	-	-	14,2	3	-	-	42,2
2009	34,4	1	-	-	4,6	5	14,4	2	-	-	-	-	12,0	3	-	-	7,8	4	-	-	30,4
2010	31,8	1	-	-	6,2	4	7,7	3	5,0	5	-	-	13,6	2	-	-	-	-	-	-	41,8
2011	34,9	1	6,0	4	7,4	2	-	-	-	-	-	-	7,1	3	5,0	5	-	-	-	-	51,3
2012	33,9	1	12,3	2	11,7	3	9,0	4	-	-	3,5	5	-	-	-	-	-	-	-	-	57,8
2013	34,7	1	14,4	2	11,9	3	8,5	4	-	-	3,2	5	-	-	-	-	-	-	-	-	65,2
2014	38,9	1	14,5	2	11,8	3	5,9	4	4,0	5	-	-	-	-	-	-	-	-	-	-	64,4

Source: WITS-UNComtrade.
Notes: 'P' stands for yearly placement in the rank of five top suppliers. 'FIN' stands for Finland, 'DEU', Germany, 'GBR', Great Britain, 'SWE', Sweden, 'FRA', France, 'AUT', Austria, 'CHN', China, 'KOR', South Korea, 'VTN', Vietnam, 'NDL', the Netherlands, 'IRL', Ireland, 'HUN', Hungary and 'OAS', Other Asia or Taiwan.

In the case of personal computers, EU27 imports rose from U$6 billion in 1998 to U$50,3 billion in 2014. Similarly to the case of personal phones, in the end of the 1990s, the main suppliers of EU27 were developed countries, although not exclusively European and with the largest shares accruing to Asian developed economies. In 1998, the top supplier was Taiwan (22,6%), followed by Japan (21%), Germany (14,3%), Great Britain (13,9%) and the Netherlands (6,8%). While the Netherlands and Germany would remain among EU27 main providers of personal computers, the other developed economies would be replaced by China, Ireland and Vietnam. China's share of EU27 imports of the product rose year to year from 2001 to 2010, when in peaked in two thirds of the total. In contrast, its share declined in the

2011-2013 triennium, stabilizing in 2014. Nevertheless, in a similar pattern to the US, the value of EU27 total imports of personal computers was sluggish between 2011 and 2013, although regaining growth in 2014. In the latter year, China's share of EU27 imports of personal computers was 61%, whereas the following top suppliers were the Netherlands (13,1%), Germany (5,9%), Vietnam (4,5%) and Ireland (2,7%).

Table 5.13 – Total EU27 imports of personal computers (HS847130) in U$ billion and the share of China and the top five suppliers each year

Year	CHN		NDL		DEU		VTN		IRL		CZE		LUX		OAS		JPN		GBR		Total
	%	P	%	P	%	P	%	P	%	P	%	P	%	P	%	P	%	P	%	P	U$ bi
1998	0,5	-	6,8	5	14,3	3	-	-	-	-	-	-	-	-	22,6	1	21,0	2	13,9	4	6,0
1999	0,3	-	5,8	5	15,1	2	-	-	-	-	-	-	-	-	26,9	1	15,1	3	13,6	4	7,0
2000	0,1	-	-	-	15,3	2	-	-	6,8	5	-	-	-	-	33,6	1	13,3	3	11,8	4	10,2
2001	1,6	-	6,3	5	13,1	2	-	-	-	-	-	-	-	-	30,0	1	7,8	4	10,0	3	9,0
2002	6,6	4	-	-	13,8	2	-	-	-	-	-	-	-	-	24,2	1	-	-	10,7	3	9,7
2003	11,7	3	8,8	5	13,9	2	-	-	-	-	-	-	9,0	4	21,8	1	-	-	-	-	13,6
2004	20,1	1	9,2	5	11,9	3	-	-	11,4	4	-	-	-	-	17,9	2	-	-	-	-	20,1
2005	31,4	1	15,3	2	12,6	3	-	-	10,8	4	-	-	8,2	5	-	-	-	-	-	-	23,6
2006	40,6	1	14,3	2	11,6	3	-	-	9,0	4	-	-	7,6	5	-	-	-	-	-	-	29,3
2007	44,7	1	11,7	3	11,7	2	-	-	8,1	4	-	-	7,6	5	-	-	-	-	-	-	35,3
2008	49,3	1	11,4	2	10,0	3	-	-	4,5	5	-	-	7,8	4	-	-	-	-	-	-	39,3
2009	54,0	1	12,4	2	8,8	3	-	-	-	-	-	-	5,1	4	-	-	-	-	-	-	32,5
2010	66,8	1	11,4	2	7,1	3	-	-	1,9	5	2,3	4	-	-	-	-	-	-	-	-	44,5
2011	65,9	1	10,2	2	6,8	3	-	-	3,4	4	2,8	5	-	-	-	-	-	-	-	-	48,5
2012	63,6	1	12,4	2	5,8	3	2,2	5	3,9	4	-	-	-	-	-	-	-	-	-	-	48,0
2013	60,9	1	12,6	2	4,8	4	5,3	3	3,1	5	-	-	-	-	-	-	-	-	-	-	48,7
2014	61,0	1	13,1	2	5,9	3	4,5	4	2,7	5	-	-	-	-	-	-	-	-	-	-	50,3

Source: WITS-UNComtrade.
Notes:
(1) 'P' stands for yearly placement in the rank of five top suppliers. 'CHN' stands for China, 'NDL', the Netherlands, 'DEU', Germany, 'VTN', Vietnam, 'IRL', Ireland, 'CZE', Czech Republic, 'LUX', Luxembourg, 'OAS', Other Asia or Taiwan, 'JPN', Japan and 'GBR', Great Britain.
(2) Poland was excluded from the presentation due to a single appearance among the top five suppliers in 2009, in the 5th position and 3,8% of participation on the total.
(3) The Philippines were excluded from the presentation due to a single appearance among the top five suppliers in 2002, in the 5th position and 6,3% of participation on the total.

Analyzes of China's top exports to the main consumer markets of advanced countries between 1998 and 2014 revealed that China's exports have dislocated then important suppliers such as South Korea, Taiwan and Mexico in the case of the US. The country's role as factory of the world has been translated in the overreliance of developed countries' consumer markets on China as single most important source. The dependence on China's exports was extremely more accentuated in the case of personal computers and the US

market. Notwithstanding, even if China's shares in advanced countries imports' of personal phones were lower than in personal computers, they kept rising and particularly faster in the more recent years, for a product which the value of total imports is higher than personal computers in both markets and which has been fast growing in absolute terms in the first half of the 2010s, in contrast with computer's imports. Whereas China has a prime position in the EU27 market, the latter has a larger range of reliance in other low wage countries than the US, to which China represented 45% of its textile, wearing apparel, leather and related products imports, 92% of personal computers and 78% of personal phones imports. In this context, for the US, the supply of cheap manufacturing goods is much more a Chinese phenomenon rather than a global South one.

Chapter 6. THE EFFECTS OF THE GLOBALIZATION OF CHINA'S INDUSTRIAL RESERVE ARMY ON WAGES AND WORKING CONDITIONS IN ADVANCED COUNTRIES

In the present chapter we aim to assess how China's integration in the global capitalist economy in the context of neoliberal globalization has been linked to the deterioration of labor's position vis-à-vis capital in advanced economies, particularly in the US, expressed in unskilled workers' stagnant to decreasing real wages and the worsening of working conditions. Delocalization of industrial production to China was manifested in strong deflationary pressures in international manufacturing prices for those goods in which the country became a prominent base of production (KAPLINSKY, 2005). These manufacturing goods were also subjected to the deterioration of the terms of trade that peripheral countries have secularly experienced, subverting the prescriptions based on the Prebisch-Singer hypothesis that industrialization in the periphery would remedy the deterioration of the terms of trade that afflicted these countries.

In terms of secular trend, *grosso modo*, from the last decades of the 19th century to the 1970s, the cheapening of commodities composing the basket of goods of workers in central countries achieved through the role played by the periphery[98] in the international division of labor – as well as though productivity increases in advanced countries – was accompanied by real wage growth in the center. Coupled with low and stagnant peripheral real wages, also associated with the existence of large industrial reserve armies, many Marxists and heterodox economists conferred theoretical status to these stylized facts, assuming them as invariable and defining traits of the center-periphery junction, of the global capitalist economy as an imperialist system.

Nonetheless, the state of the balance of power between classes cannot be taken as perennial and – although more durable – not even institutions, which was implicit in the assumption/belief that laborers in the center could indefinitely keep ripping off material gains from productivity growth. In the same sense, the existence of a vast industrial reserve army cannot be presumed to enable capitalists to indefinitely reduce workers' existence to the bare minimum, providing absolute hindrances to the success of workers' clashes over wages and the development of institutions which sustain these conquests, as class struggle has relative

[98] Though this was not the only role of the periphery in the traditional international division of labor.

autonomy from capital accumulation and the capitalist state has a major role in regulating capital-labor relations.

In analyzing the formation of China's vast industrial reserve army, we argued against the latter assumption; while the globalization of China's industrial reserve army, by breaking the historical link between consumers markets and industrial production in advanced countries, has tilted the balance of power towards capital in central economies, providing the material conditions for the enhanced offensive of capital over labor synthetized in wage repression and the pursuit of the neoliberal agenda. The globalization of China's industrial reserve army can be said to be so by two complementary perspectives. On the one hand, China's industrial reserve army became global in as much as, with its access being opened, capitals from advanced countries massively dislocated in its direction to take hold of the opportunity to drastically increase profitability; on the other hand, it was globalized as its effects were felt by the working classes in advanced countries, though not exclusively or necessarily in a more intensive manner.

The globalization of China's industrial reserve army through the alliance of the Chinese party-state and advanced countries' capitals was felt by *i*) direct competition among workers, unmaking large parcel of the center's industrial proletariat, and through divide and rule strategies of transnational corporations, which kept in check the pretensions of those workers who remained employed in the offshorable/outsourceable sectors – particularly affecting the traditionally more unionized and organized sectors of the working class of advanced countries, i.e. manufacturing workers –; and by *ii*) remolding advanced countries' labor forces, through drastic changes in the employment structure towards services, in the context of institutional changes that regulated capital-labor relations, leading to the replenishment of their national industrial reserve armies, not only through unemployment but also by the widespread use of partial and temporary labor.

In this context, the present chapter is divided in four sections. Before analyzing the effects of the globalization of China's industrial reserve army on wages in advanced countries, we discuss how the interrelation of wages in the center and in the periphery was theorized by the structuralist and Marxist 'unequal exchange' literature until the 1970s. In this sense, section one does a brief literature review on the structuralist and Marxist theoretical postulations on the deterioration of the terms of trade and unequal exchange, respectively, and their assumed inherent relation with bargaining power and wage dynamics in both the periphery and the center. We consider the theoretical formulations of Prebisch, Lewis,

Emmanuel and Marini. A common denominator among the authors was the posit of a trend towards amplified wage divergence between center and periphery as a defining feature of their existence as such; in as much as these formulations were constructed as general theories to account for the divide center-periphery, they fall short to explain and to accommodate inside their frameworks the contemporary 'race to the bottom', losing their presumption of generality.

Sections two to four are dedicated to analyze the effects of the globalization of China's industrial reserve army proper. Section two discusses the role of China in cheapening manufacturing wage goods, resulting in the deterioration of the terms of trade for manufacturing goods which production was transferred to China. Section three situates China in the broader context of the formation of a global industrial reserve army. Finally, section four focuses on the increased direct competition between workers in the US and Chinese laborers posed in terms of divide and rule strategies by TNCs and as the result of competition among transnationalized and domestic capitals of advanced economies, which resulted in the weighting down of the US active industrial army and the replenishment of its national industrial reserve army.

6.1 THE DETERIORATION OF THE TERMS OF TRADE AND ITS ASSUMED RELATION WITH BARGAINING POWER AND WAGE DYNAMICS IN THE STRUCTURALIST AND MARXIST LITERATURE OF UNEQUAL EXCHANGE

The deterioration of the terms of trade (DTT) in peripheral countries has been associated in the Marxist literature with the debates on unequal exchange. In both strands of the discussion, wage differentials between peripheral and central countries had a crucial role either in explaining and/or deriving from the unfavorable evolution of relative prices for peripheral countries. In as much as the DTT or the unequal exchange – which is posed as value transfers derived from international trade – cheapened the goods consumed by workers in advanced countries, many authors analyzing the historical contours assumed by the international division of labor until the end of the Breton Woods era implied a necessary relation between the cheapening of consumer goods achieved through international trade and real wage growth in the center. Similarly to and intertwined with the latter debate, a necessary link in the center was also presumed between increased productivity and real wage growth.

In contrast, real wages in the periphery were doomed to be low and stagnant, for the opposite reasons why they rose in the center (lack of productivity increase and terms of trade that evolve against the periphery or transfers of value due to unequal exchange) coupled with the existence of huge industrial reserve armies. The combined results of these different patterns of wage setting acting upon each other would be either the perpetuation of wage differentials or a trend of increased wage divergence between center and periphery. We are going to briefly highlight how these elements are postulated in the structuralist perspective of the DTT, represented by Raúl Prebisch and Arthur W. Lewis, and the Marxist tradition, considering the works of Arghiri Emmanuel and Ruy Mauro Marini.

6.1.1 The structuralist tradition and the deterioration of the terms of trade

In Prebisch (1949), the DTT is associated not only to the role of primary goods as inputs in manufacturing production – and therefore susceptible to the latter's expansion and contraction –, but fundamentally on the differentiated bargaining power labor has in the center and in the periphery in achieving wage gains and defending wage levels. Prebisch (1949) associates the stronger relative power position of labor in the center vis-à-vis labor in the periphery to the economic sectors in which they are employed, which bears resemblance with the orthodox Marxist postulation of industrial workers as the vanguard of the proletariat.

In the manufacturing sector of central countries, during the upswing of the industrial cycle "when demand exceeds supply", "a part of the benefits [of increased prices] were converted in higher wages due to the increased competition among businessman and for the pressure put over all of them by workers' organizations"[99] (PREBISCH, 1949, p.58-59, our translation). Strong trade unions were capable not only of achieving wage growth in the upswing of the industrial cycle, but also of maintaining wage levels in the downturn. In contrast, Prebisch (1949) describes the bargaining power of peripheral proletariat as follows: "the characteristic disorganization of proletarian masses in primary production, especially in the agriculture of peripheral countries, hinders them of achieving wage increases comparable to those in industrial countries or to conserve them with same effectiveness"[100] (PREBISCH,

[99] "Durante a crescente, uma parte dos benefícios se foi transformando em aumento de salários, pela concorrência dos empresários uns com outros e pela pressão sôbre todos êles das organizações operárias." (PREBISCH, 1949, p.59)

[100] "A desorganização característica das massas operárias na produção primária, especialmente na agricultura dos países da periferia, impede-lhes de conseguir aumentos de salários comparáveis aos alcançados nos países

1949, p.59). As a result, pressures of the downswing of the industrial cycle would be intensively absorbed by wages in the periphery. Though Prebisch (1949) focus was on the strength and effects of labor organization on wage bargaining differentiated by economic sectors, "monopoly pricing at the center was also mentioned as a secondary element" (BIRKAN, 2015, p.157).

Whereas Lewis accepts that real wages in the center are determined by the marginal productivity of labor, in his model of dual economy – already discussed in chapter II – the stagnant real income (artificially produced by the state or derived from low productivity) of the labor bloated non-capitalist sector allows for capital accumulation with stagnant real wages: "therefore, unit labor costs fall when productivity improves, leading to lower prices or higher profits" (HEINTZ, 2003, p.9). In a closed economy, this would translate into higher profits, whereas in an open economy the result is the DTT, as "productivity improvements in the export sector of a labor surplus economy do not raise wages and incomes […] the benefits accrue to industrial purchasers and, potentially, the consumers in industrialized countries" (HEINTZ, 2003, p.9).

6.1.2 Arghiri Emmanuel and unequal exchange

In the Marxist literature, unequal exchange was posed by Grossman (1992) through the role of capital exports in the formation of an international average rate of profit, entailing transfers of surplus value from the periphery to the center. The lower organic composition of capital in the periphery would be expressed in higher rates of profit, triggering capital exports from the center to the periphery, forming an international average rate of profits by which "the commodities of the advanced capitalist country with the higher organic composition will therefore be sold at prices of production higher than value; those of the backward country at prices of production lower than value" (GROSSMAN, 1992, p.170).

Nevertheless, the unequal exchange which Emmanuel claims to be particular to international trade is not the one postulated by Grossman, as the transformation of values in prices of production through the equalization of the rate of profits would occur in all commodity exchanges in capitalism, being a broad type of unequal exchange (BIRKAN, 2015). The unequal exchange which Emmanuel specifies is derived from different wage rates

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industriais, ou de conservá-los com a mesma efetividade. A compressão das remunerações - sejam benefícios, sejam salários - é, pois, menos difícil na periferia." (PREBISCH, 1949, p.59)

among center and periphery, which would constitute unequal exchange proper, over the one occasioned by different organic compositions of capital (BIRKAN, 2015).

Whereas capital mobility would assure the formation of an international average rate of profit, different wage rates between the center and the periphery due to labor immobility – which for Emmanuel are directly translated in differences in the rate of exploitation[101] –, would be a specific source of value transfer from the periphery to the center, putting workers in the center in a position of exploiters of their peripheral counterparts:

> According to Emmanuel, unequal exchange in the strict sense is the proportion between equilibrium prices that is established through the equalization of profits between regions in which the rate of surplus value is institutionally different. Since the differences in rates of surplus value are the direct result of wage differentials, inequality of wages as such, all other things being equal, is alone the cause of the inequality of exchange. Emmanuel characterizes this phenomenon as the exploitation of the periphery by the center; more precisely as the working class of the center, who are the basic consumers of peripheral goods, exploiting the fellow workers of the periphery (BIRKAN, 2015, p.17)

Wage setting in Emmanuel (1972) has two differentiated dynamics in the logical time. The original wage differential between center and periphery, being the base over which free trade will be established and generate unequal exchange, does not derive from the higher productivity of advanced countries, but from institutional parameters. Wages are the independent variable. Higher wages are accrued to some institutional factor and, being previously determined, have led to increased productivity in advanced countries. Low wages and high productivity are only consistent in the presence of monopoly power and in face of hindrances to the equalization of the rate of profits, which would prevent the leakage of value through international trade due to low wages. This would explain the case of Great Britain in

[101] In Emmanuel (1972), peripheral lower wages entail higher rates of exploitation relative to the center. Nevertheless, lower real wages in the periphery might imply much higher necessary labor time than in the center due to the lower organic composition of capitals in the periphery; whereas higher real wages in the center might be consistent with higher rates of exploitation accruing to the higher organic composition of capital: "Unlike Arghiri Emmanuel (1972), who takes countries as the unit of analysis and explains underdevelopment primarily through the mechanisms of exchange (Carchedi 1991: 224), Marx grounded his theory of 'unequal exchange' in his theory of surplus value and in his differentiated theory of wages. It is the greater relative exploitation of workers in more developed countries that leads to a transfer of value from capitals in less developed countries, which, in turn, impacts negatively on the condition of workers and on forms of labour exploitation, and also on the overall possibilities of expanded reproduction in these countries. The transfer of surplus value between national capitals with different levels of productivity is based upon and shapes an overall, global antagonism between capital and wage labour. Underdevelopment is a national manifestation of this antagonism." (PRADELLA, 2015, p.153)

the 18th century and beginning of the 19th and Japan prior to World War II[102], in which "effective economic development ran ahead of the level of wages for several decades", whereas wage increases took place "only *after* an institutional factor has intervened" (EMMANUEL, 1972, p.128).

Nonetheless, with the establishment of free trade in a context of labor immobility and capital mobility – guaranteeing the equalization of the rate of profits –, the leakage of value from the periphery to the center, deriving from wage differentials, would bind productivity and wages behavior together both in the center and the periphery, as "wealth begets wealth" and "poverty begets poverty" (EMMANUEL, 1972, p.131). Unequal exchange would materialize in superprofits for advanced countries that would bring institutional changes, wage increases and productivity increases.

Now productivity and wage increases are linked together in the center by continuous institutional changes derived from superprofits; while in the periphery wage "continues to be grounded at the level of elementary physiological subsistence", due to the leakage of value which "deprives itself [the poor country] of the means of accumulation and growth" and "the narrowness and stagnancy of its market discourage capital, which flees from it", leading to high unemployment "open or concealed" (EMMANUEL, 1972, p.131). In its turn, unemployment "exerts an additional downward pressure on wages and thwarts the trade-union struggle, which is already hindered by the low level of education" (EMMANUEL, 1972, p.131).

The result is the amplified reproduction of the original wage differential or a trend towards wage divergence between center and periphery due to unequal exchange, as "in proportion as wages increase in the other countries and the terms of exchange worsen, the value of labor power in the poor country decreases still further" (EMMANUEL, 1972, p.131).

6.1.3 Dependency theory and superexploitation of labor as a peripheral phenomenon

In Ruy Mauro Marini (1991) the differences in the level of development of the productive forces when integrating in the global capitalist economy have led to unequal exchange between the dependent nations and the 'classic industrial economies' – which occur both inside and outside the law of value, due to different organic compositions of capital and

[102] In the case of Great Britain, monopoly of land-ownership resulted in a superrent; whereas in Japan this occurred directly through monopoly superprofits (EMMANUEL, 1972)

monopoly power of industrial production of the center, respectively –, resulting in a transfer of value from the former to the latter. For capitalists in the dependent nation, this implies a fall in the rate of surplus and in the rate of profits.

As a mechanism of compensating these falls, the dependent nations recur to the superexploitation[103] of labor – as through lengthening the working day and increasing the intensity of labor –, in sharp contrast with the 'classic industrial economies' where increases in the productive capacity of labor (or productivity) predominate as a source of elevating the rate of surplus value and the mass of profits – though imposing a tendency for the rate of profits to fall. Dependency is perpetuated through the fact that superexploitation poses obstacles to the development of an expressive domestic market based on laborers' consumption.

In Marini (1991), it is the difference in the reliance of the exploitation of labor-power or the productive capacity of labor as the axis of capital accumulation that characterizes dependency and explains the abysmal real wage gap between the center and the periphery. Historically, the dependent nations supported the change in the center's axis of capital accumulation from the exploitation of labor-power to the productive capacity of labor. As providers of food and raw materials to the center in exchange for consumer manufactures and debt, dependent nations enabled not only the classic industrial economies to specialize in industrial activities, but also to devaluate wage goods, and therefore the value of labor-power in the center – a process that was amplified by the deterioration of the terms of trade against the periphery. This role of dependent nations in the international division of labor "enabled increments in productivity [in the center] to be translated into increasingly higher rates of surplus value"[104] (MARINI, 1991, p.8). For relative surplus to arise from gains in

[103] In Marini (1991), superexploitation is understood as a tendency of the price of labor-power to be below its value, and assume three forms: *i*) the increased intensity of labor; ii) the extension of the working day (the only source of absolute surplus); and iii) the conversion of part of the worker's necessary consumption fund into fund for capital accumulation. All these forms of superexploitation have as common denominator denying "the laborer the conditions necessary for replenishing the wear out of his labor power: in the two first cases, because it obliges him to an expenditure of labor higher than what normally should be provided, provoking his premature exhaustion, in the last one, because it is taken from him even the possibility of consuming the strictly indispensable to conserve his labor power in normal state" (MARINI, 1991, p.13, our translation).

"[…] se le niega al trabajador las condiciones necesarias para reponer el desgaste de su fuerza de trabajo: en los dos primeros casos, porque se le obliga a un dispendio de fuerza de trabajo superior al que debería proporcionar normalmente, provocándose así su agotamiento prematuro, en el último, porque se le retira incluso la posibilidad de consumir lo estrictamente indispensable para conservar su fuerza de trabajo en estado normal." (MARINI, 1991, p.13)

[104] "[…] permitiendo así que el incremento de la productividad se traduzca allí en cuotas de plusvalía cada vez más elevadas" (MARINI, 1991, p.8)

productivity, the later must occur in the production of the means of subsistence. In as much as the dependent nations are fundamental to devaluate food, they directly contribute to this process, and indirectly once they make room for increasing the participation of industrial goods in the composition of the means of subsistence of workers in the center (MARINI, 1991).

Notwithstanding, it is not the transfer of value that generates superexploitation in dependent nations, it only 'aggravates' what the mere integration to the world market generates. Moreover, that what ultimately enables superexploitation to take place is the existence of a vast reserve army in dependent nations: "the natural tendency of the system [the Latin American exporter economy] will be to exploit to the maximum the labor-power of the worker, without caring for creating the conditions for him to replenish it, *always and when it is possible to replace it by the incorporation of new arms to the productive process*" (MARINI, 1991, p.17, our translation, emphasis added)[105] [106].

In contrast, in the classical capitalist economies, industrialization creates its own demand according to Marini (1991). Capital accumulation and the formation of the domestic market are the results of the one and same process of proletarianization, as it simultaneously creates the wage-laborer and the consumer, for the means of subsistence are incorporated in the variable capital. Although the opposition of workers' double role still remains in the center, "in a certain extent it is counteracted by the form in which the cycle of capital assumes" (MARINI, 1991, p.17, our translation)[107]. Whereas in sphere of production the interest of capitalists is to reduce the value of labor-power to the minimum possible, in the sphere of circulation "this apparent contradiction between the individual consumption of laborers and the reproduction of capital disappears"[108] (MARINI, 1991, p.17) – for being a

[105] "[…] la tendencia natural del sistema será la de explotar al máximo la fuerza de trabajo del obrero, sin preocuparse de crear las condiciones para que éste la reponga, siempre y cuando se le pueda reemplazar mediante la incorporación de nuevos brazos al proceso productivo" (MARINI, 1991, p.17)

[106] The role of the reserve army is reinforced in *En torno a la diálectica de la dependencia*: "The disproportional gravitation that extraordinary surplus value assumes in the dependent system results from this [the conditions created by the superexploitation of labor that hinder the transition to the dominance of relative surplus] and corresponds to the expansion of the industrial reserve army and the relative strangulation of the capacity to realize production" (MARINI, 1991, p.41, our translation). "La gravitación desproporcionada que asume en el sistema dependiente la plusvalía extraordinaria es un resultado de esto y corresponde a la expansión del ejército industrial de reserva y al estrangulamiento relativo de la capacidad de realización de la producción" (MARINI, 1991, p.41)

[107] "[…] se ve en cierta medida contrarrestada por la forma que asume el ciclo del capital." (MARINI, 1991, p.17)

[108] "[…] esta contradicción aparente entre el consumo individual de los trabajadores y la reproducción del capital desaparece […]" (MARINI, 1991, p.17)

source of demand, higher real wages are fundamental to mass production and accumulation of capital. Although not much highlighted in *Dialéctica de la dependencia*, at the explanatory core of the above proposition lies the particular dynamics of class struggle over wages in the center:

> Through the mediation that the struggle between workers and employers establishes over the fixation of wage levels, both types of worker's consumption [as labor power consumed in the production process and as the individual consumption of laborers] tend to complement each other, in the course of capital's cycle, overcoming the initial situation of opposition in which they were found. Moreover, this is one of the reasons why the dynamics of the system tends to occur through relative surplus, which implies, ultimately, the cheapening of the commodities that enter in the composition of the individual consumption of the laborer" (MARINI, 1991, p.17) [109]

Therefore, through class struggle over wages, laborers maintain their contradictory role of sellers of labor power and consumers. Real wage increases in the center due to class struggle are facilitated by the role of the periphery in the international division of labor, as "the circumstances that enable real wages to increase there [center], from the second half of the last century, […] are not alien the devalorization of food and the possibility to internally redistribute part of the surplus subtracted from the dependent nation"[110] (MARINI, 1991, p.20).

6.1.4 From wage divergence to the race to the bottom

Although markedly different, all these theories put forward a trend of increased wage divergence between center and periphery – which are inextricably intertwined with the DTT or unequal exchange –, based on a sort of absolute vain political effort or inaction of working classes in the periphery due to vast industrial reserve armies and a sustained and indefinite success of workers struggle in the center – exception made to Prebisch, for whom the nature

[109] "A través de la mediación que establece la lucha entre obreros y patrones en torno a la fijación del nivel de los salarios, los dos tipos de consumo del obrero tienden así a complementarse, en el curso del ciclo del capital, superando la situación inicial de oposición en que se encontraban. Esta es, por lo demás, una de las razones por las cuales la dinámica del sistema tiende a encauzarse a través de la plusvalía relativa, que implica, en última instancia, el abaratamiento de las mercancías que entran en la composición del consumo individual del trabajador" (MARINI, 1991,p.17)

[110] "Las circunstancias que permiten hacer subir allí los salarios reales, a partir de la segunda mitad del siglo pasado, a las cuales no es ajena la desvalorización de los alimentos y la posibilidad de redistribuir internamente parte del excedente sustraído a las naciones dependientes […]" (MARINI, 1991, p.20)

of primary or manufacturing activities facilitated or rendered difficult the organization of laborers.

Defining the whole working classes of the global North as labor aristocrats[111], or even as workers who exploit workers in the periphery, and conceptualizing superexploitation as an emblematic feature specific to dependent nations, all these theoretical propositions will have to get to the grips with reality, as the neoliberal era presents us again with the quintessence of capitalism, given by the inner logic of competition among capitalists and the pursuit of increased profits, that if capitalists can, they will reduce wages everywhere to the bare minimum necessary to workers existence and increase their work load. However, the wages and working conditions capitalists would like and can actually impose to workers are two very different things.

The devaluation or cheapening of wage goods in the center either through international trade or through increases in productivity are not aimed to increase real wages, but to increase profits at a given real wage level. Nonetheless, both these conditions, in decreasing the value of labor-power – anchored in a particular basket of goods – engender the possibility, up to a

[111] In this line of reasoning are the propositions which define superexploitation as being already a relative central-peripheral phenomenon, such as Amin (2010) and Smith (2010). For Amin (2010), in as much as the globalization of capitalism was a byproduct of imperialist expansion associated with the emergence of monopoly capital, it engendered the formation of a polarized system, in which wage differentials between center and periphery are foundational. Global capitalism entails the existence of a single value of labor-power determined as a global average, reflecting capital mobility in the world scale and the transformation of the production process in a world process (AMIN, 2010). Considering a world where labor is immobile and "obtains different rewards at the center and at the periphery" (AMIN, 2010, p.87), the development of global capitalism as a polarized system is manifested in different rates of exploitation, being translated as "the hierarchical structuring – itself globalized – of the prices of labor-power around its value", expressing the "*passage from the law of value to the law of globalized value*", which accounts for the unevenness of the globalized development of capitalism (AMIN, 2010, p.11). The crucial point in this hierarchization is that real wage differentials are much higher than productivities differentials between nations, generating unequal exchange (AMIN, 2010). The periphery is characterized for wage rates that are below the value of labor-power – hence, defined by superexploitation –, which, along with "the management practices governing access to natural resources" (AMIN, 2010, p.11), conform imperialist rent that "is at the origin of the polarization deepened and reproduced by the globalized unfolding of capitalism" (AMIN, 2010, p.13). In the same line of providing an internationally relative concept of superexploitation, John Smith (2010) defines superexploitation as "the systematic international divergence in the rate of exploitation between nations [given by wage differentials], in particular between the imperialist nations (a.k.a. the 'advanced' or industrialised' countries) and the allegedly 'emerging' nations of the global South". Insofar as there might be many theoretical problems in defining superexploitation as a relative phenomenon, for it misses the link with the absolute level of real wages actually experienced nationally and their evolution, when applied to the stylized facts we have been discussing (real wage increases in China and real wage stagnation or decline in the center), the following conclusion is reached: neoliberal globalization is reducing superexploitation around the world! As a political instrument for workers to denounce the effects of neoliberal globalization, which the widespread use of the term 'race to the bottom' does, the definition of superexploitation as a relative phenomenon can lead to the opposite conclusion. Actually, only real wage decline in the center along with wage stagnation in the periphery would be enough for the result of neoliberalism reducing superexploitation, when in fact the proletariat as international class would be worse off.

certain point, for real wages to grow along with profits and even with the rate of exploitation, in the latter case real wages can increase consistently with a declining labor share on GDP. It should be remarked that although these phenomena are not necessarily antagonist, as long as real wages do not grow faster than productivity, for capitalists it is even better if they do not grow at all[112].

Capital has a compulsion to pursue increased productivity, the intensification and lengthening of the working day and even the straightforward reduction of wages[113] because they all result in the reduction of unit labor costs providing weapons to survive competition. Even though price-cutting might not be the only source of competition, all these methods provide increased profits by reducing cost positions. If unhindered by labor resistance and institutions, capital will seek to implement all these methods.

China's integration in the global economy in the context of neoliberal globalization is a central piece in capital's strategy of destroying labor conquests in the center and bringing superexploitation back home. Superexploitation as wages below the value of labor-power is fast disseminating in core capitalist countries. In this context, instead of the theorized growing wage divergence between center and periphery as a fundamental and defining trait of their necessary junction, as proposed by the discussed theories, neoliberalism has been successful in promoting a "race to the bottom":

> In today's phase of imperialism—which Patnaik identifies with the development of international finance capital — "wages in the advanced countries cannot rise, and if anything tend to fall in order to make their products more competitive" in relation to the wage "levels that prevail in the third world." In the latter, wage levels are no higher, "than those needed to satisfy some historically-determined subsistence requirements," due to the existence of large labor reserves. This logic of world exploitation is made more vicious by the fact that "even as wages in the advanced countries fall, at the prevailing levels of labor productivity, labor productivity in third world countries moves up, at the prevailing level of wages, towards the level reached in the advanced countries. This is because the wage differences that still continue to exist induce a diffusion of activities from the former to the latter. *This double movement means that the share of wages in total world output decreases*,"

[112] Whether the cheapening of wage goods consumed in the center is a conscious class strategy – such as the corn laws or liberalization of FDI and international trade – or the outcome of competition in industries producing wage goods, they are not aimed to increase the bundle of goods which workers consume – though this might be true for the individual capitalist selling wage goods, it is not for him when wages are costs and for the capitalist class as a whole.

[113] The three have the effect of bringing wages below the level of labor-power, and in this strict sense, superexploitation, though the persistence in time and generalization of the parameters that generate superexploitation, in the mentioned definition, will bring the value of national labor-power down.

> while the rate of exploitation worldwide rises. (FOSTER, MCCHESNEY & JONNA, 2011)

Whilst the above proposition of Patnaik described by Foster, McChesney and Jonna (2011) takes into account the effects of the "race to the bottom" for the center, it shares one of the central traits present in the theories discussed before, namely, that the existence of a vast reserve army removes completely from workers their political agency in wage setting; the difference, though, is that whereas in the latter this absolute inhibition to workers' collective action or effectiveness was restrained to the periphery, now it is postulated as a worldwide hindrance. If surely the existence of a vast reserve army contributes to and results from capital's offensive over labor, deteriorating working conditions and pressuring down wages – one of the central points we have been making throughout this thesis – laborers can still fight back and achieve gains. Even in the presence of an enormous industrial reserve army, workers in China have been opposing capital in the clash over wages with significant material results. In the context of the globalization of the industrial reserve army, Chesnais (2007) stresses that workers and the youth can politically limit the economic effects of this process:

> We are in a situation in which the competition created between wage-laborers by capital for an insufficient number of jobs is extended. Competition is insinuated through a thousand and some channels, of which those of immigration and the situations of profound dependence of immigrant laborers regarding capital, but also that of the conditions met by the precarious and the unemployed. It nourishes permanent racism and authorizes an endless array of employers' strategies. The only limit to these strategies is a political limit, an estimative of what wage-earners, the exploited, the youth can stand without revolt. For in the economic plan the process of entering into competition has the characters of a bulldozer, of a steamroller. It does not affect only wage-earners in the sectors directly submitted to competition with wage-earners of low wage countries. No activity escapes its effects. (CHESNAIS, 2007)[114]

The historical rise on real wages in the center experienced along with the cheapening of wage goods for almost a century was a byproduct of workers struggle against capital over wages, ripping off material concessions which were further institutionalized. Nonetheless, the

[114] « On est dans une situation où la concurrence créée entre les salarié·e·s par le capital autour d'un nombre insuffisant d'emplois s'étend. La concurrence s'insinue par mille et uns canaux, dont ceux de l'immigration et les situations de dépendance profonde des travailleurs immigrés à l'égard du capital, mais aussi celui des conditions que connaissent les précaires et des chômeurs. Elle nourrit le racisme en permanence et elle autorise une gamme infinie de stratégies patronales. La seule limite à ces stratégies est une limite politique, une estimation de ce que les salarié·e·s, les exploité·e·s, la jeunesse peuvent supporter sans révolte. Car sur le plan économique le processus de mise en concurrence a les caractères d'un bulldozer, d'un rouleau compresseur. Il ne touche pas seulement les salarié·e·s des secteurs directement soumis à la concurrence avec les salarié·e·s des pays à très bas salaires. Aucune activité n'échappe à ses effets." (CHESNAIS, 2007)

weakening of organized labor in the center, to which the globalization of China's industrial reserve army was fundamental, has been expressed in the fact that neither the cheapening of wage goods by China's transformation in the factory of the world, nor gains of productivity in the center have been materializing in real wage growth.

6.2 THE ROLE OF CHINA'S EXPORTS IN CHEAPENING MANUFACTURING WAGE GOODS

Due to its cheapness, the label 'made in China' invaded the domestic markets of developed nations, while increasing profits of transnational corporation of advanced countries with investments in China and making the later a holder of large trade surpluses. In those manufacturing goods in which production was offshored and outsourced to China by TNCs, strong deflationary pressures were felt in advanced countries' consumer markets through the trade channel. In as much as these price reductions affected a broad range of workers' necessities, from wearing apparel and shoes to modern ones as personal phones and computers, *other things being equal*, Chinese low cost manufacturing goods have the effect of increasing real wages and consumption levels – which in the US can be significantly divergent due to household indebtedness.

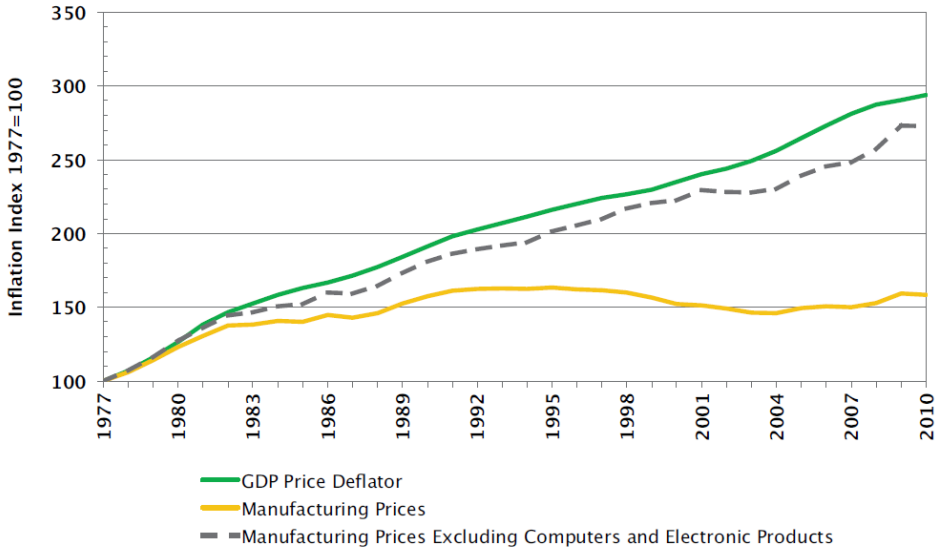
In the case of garments, Heintz (2003) correlates the increased penetration of imports from low-wage countries in the US from the 1970s onwards with the steep decline in consumer price levels of clothing relative to other goods, excluded food and energy, evidencing that "low-cost imports contributed to the reduction of retail clothing prices in the U.S" (HEINTZ, 2003, p.5):

> In 1995, U.S. consumers purchased an average of 28.7 new outerwear garments annually; in 1967, the number was just 14.1. Over the same time period, clothing's share of average consumer expenditures dropped from approximately 10 percent to 5.5 percent (Abernathy et al. 1999: 4-5). Growth in household incomes could account for this shift. However, according to the U.S. Census Bureau, median real household incomes in the U.S. rose by just 14 percent and mean real household incomes rose by 34 percent over the same time period (U.S. Census Bureau 2000: B-3). These changes in income are insufficient to simultaneously account for a doubling of per capita garment purchases and a halving of expenditure share. Therefore, falling relative prices must explain a large portion of the consumption boom. (HEINTZ, 2003, p.6)

For the period 1995 to 2010, The Manufacturing Institute (2012), based on data from the US Bureau of Economic Analyzes, highlights that deflation on manufacturing prices in the

US mainly accrued to computer and electronic prices, which exhibited a 92,3% price decrease in the period or an annual drop of 16% (figure 6.1). Although China's overwhelming penetration in the US market on these goods contributed to this result, technological advancements played probably the larger role in their cheapening[115]. According to The Manufacturing Institute (2012), "between 1995 and 2010, manufacturing prices decreased by 3 percent as the overall price level increased by 36 percent. Inflation in manufacturing excluding computers and electronic products, however, increased 35 percent over the past 15 years" (THE MANUFACTURING INSTITUTE, 2012, p.4).

Figure 6.1 – US inflation index for manufacturing goods and GDP price deflator



Source: US Bureau of Economic Analyzes *apud* The Manufacturing Institute (2012, p.4)

Broda and Romalis (2008) analyzed the effects of China's import penetration on US[116] retail prices of non-durable goods on households' cost-of-living differentiated in poorer and richer households. The authors use extremely detailed and disaggregate data coming from 10-

[115] "Strong productivity gains, rapid advances in innovation and international competition have led to deflation in manufactured goods, caused primarily by the dramatic quality improvement in computers and a corresponding reduction in prices of electronics" (THE MANUFACTURING INSTITUTE, 2012, p.4)

[116] "In 2005, there were around 16,800 different HTS categories coming from 228 different countries. In that same year, China exported in around 75 percent of all possible HTS categories. In particular, in each category for each 10-digit product coming from China in 2005 we have on average 77 different shipments." (BRODA & ROMALIS, 2008, p.2)

digit HS classification of US imports[117] and ACNielsen database of household consumption, which provided "Universal Product Code (UPC or barcodes) scanners to a demographically representative sample of households" which "then scan in every purchase they make" (BRODA & ROMALIS, 2008, p.4). In their estimates, the authors account for *i*) diverse shares of non-durable goods on total consumption of richer and poorer households, which are 12% larger on the latter; *ii*) differentiation of quality in the same category of goods, with poorer households consuming lower quality varieties of the same product[118]; and *iii*) for the entrance of new products in the basket of goods consumed by households and the different access to goods according to income (BRODA & ROMALIS, 2008). Their results show a strong deflationary effect in the US market for non-durable goods in which China has increased its exports, affecting particularly poorer households, between 1999 and 2003:

> A 1 percentage point increase in the export share of China in a module [modules are nondurable goods categories from ACNielsen's Homescan, such as "cosmetics", "toys and sporting goods", "house ware appliances", "cookware", and "wrapping materials and bags"] is associated with a decline in the prices paid by the poor of between 0.76 and 1.01 percentage points. For the rich, the impact of China's expansion is still negative but more muted. A 1 percentage point increase in the share of China in a module is associated with a decline in the prices paid by the rich of between 0.63 and 0.87 percentage points. For both sets of goods (i.e., panels), the rise in Chinese trade has an impact on the prices of existing goods and on the availability of new products. (BRODA & ROMALIS, 2008, p.22)

Broda and Romalis (2008) also made the same estimates for US imports from developing countries and concluded that "the strong negative impact of export increases is coming primarily from the rise in Chinese exports to the world, and not the rest of the developing countries" (BRODA & ROMALIS, 2008, p.21).

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[117] Working with 10-digit US HS classification allowed the authors to assess quality for each import product category from China: "In particular, we are interested in computing the share of Chinese exports in each decile across all HTS categories. For instance, in HTS 0307490010, Squid Frozen fillets, the typical unit value is $3.2 per kg, while the lowest decile involves shipments with unit values below $1 per kg and the highest decile includes shipments with unit value above $6.3 per kg." (BRODA & ROMALIS, 2008, p.8)

[118] "We can understand the differences in the quality of goods consumed by different income groups by examining the unit-values of the products consumed in each module by each income group. A useful feature of the ACNielsen Food data is that in addition to the price and quantity of each UPC consumed by different income groups, it provides detailed information on the size of each UPC. This allows us to compute unit values for each module – size pair. For instance, within the module "Milk", there are UPCs sold under many different sizes (e.g., 16 oz, 32 oz and 64 oz). The lowest income groups consume UPCs within Milk – 16oz that are 25 percent cheaper than those consumed by the households in the highest decile of the income distribution. In particular, richer household consume a much higher fraction of organic milk." (BRODA & ROMALIS, 2008, p.9)

According to the authors, China's deflationary price effect in non-durables has been stronger for poorer households not only because they have a higher share of the latter in their consumption basket, but also because China's exports are concentrated in varieties of low quality of non-durable goods. Even recognizing the increased sophistication of China's exports to the US between 1999 and 2005, by the latter year the authors assessed that "most of Chinese products are still concentrated in low unit value and low capital intensity bins" (BRODA & ROMALIS, 2008, p.8). Moreover, Broda and Romalis (2008) associate the deflationary pressures of China's exports on US non-durable goods with the augmented access to new goods, as "the number of non-durable goods purchased by the typical poor household in the US has increased by 10 percent between 1998 and 2005" (BRODA & ROMALIS, 2008, p.2).

By calculating different deflationary pressures benefiting poorer households, the point of the authors is to mitigate the rising inequality in the US – "between 1994 and 2005 we document that much of the rise of income inequality has been offset by a relative decline in the price index of the poor" (BRODA & ROMALIS, 2008) – and that the China price effect would be responsible for offsetting 30% of official data on US inequality. In this sense, John Smith highlights the unfolding of their work, "the provocative title of the Financial Times article that broadcasted their findings: *China and Wal-Mart: the champions of equality*." (SMITH, 2010, p.91).[119]

As for now our concern is just to assess the existence of deflationary pressures over manufacturing goods exported by China, we restrain ourselves to two remarks on these results and their political instrumentation to defend Wal-Mart as 'worker-friendly'. First, there is the fact that US levels of household income and consumption have been sustained by the increase in hours worked, particularly by women's paid work hours (HEINTZ, 2003), as stressed by Heintz (2003): "average annual hours of paid work per employee were stable from the end of World War II through the 1960s in the U.S., but they began to climb thereafter (Schor1992). The trend towards longer hours continues today (Mishel, Bernstein, and Schmitt 2001)" (HEINTZ, 2003, p.4). Second, not only poor households had to provide more working hours to sustain their income levels, but also Broda and Romalis (2008) discarded the effect of their

[119] In the latter article, Broda go as far as to say that between 1994 and 2005 accounting for inflation differentials "means that real inequality in the US, if measured correctly, has been roughly unchanged." (BRODA , 2008).

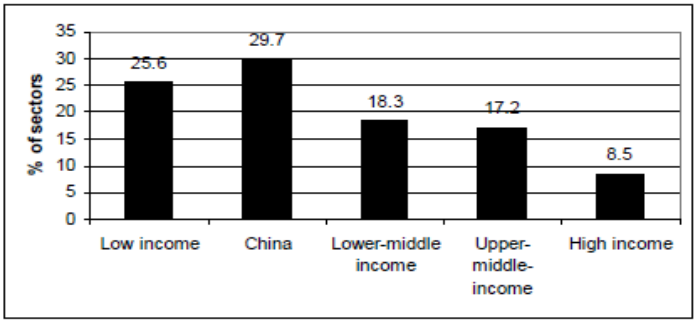
sample becoming ‘poorer’, as there was an increase in the proportion of ‘typical poor-households’ which the authors do not attempt to account for:

> One aspect of the data that we need to control is that the share of households in each income group has changed between 1999 and 2005. For instance, households with income below $15,000 were 4.8 percent of the sample in 1999 and 6.5 percent of the sample in 2005. To prevent this change in the number of households from affecting the number of goods being purchased by each income group we calculate the bias keeping the share of households fixed at their 1999 value when using the 2005 sample. (BRODA & ROMALIS, 2008, p.18)

Deflation of manufacturing prices arising from China’s exports allied with concentration of global buying has also been identified by Kaplinsky (2005). Analyzing EU HS trade data at 8-digit level, the author focus on products whose imports from the global South were significant, and subsequently separates the EU suppliers of these products in different groups of countries based on income and China. Kaplinsky (2005) calculates the percentage of sectors in which imports’ unit-prices fell for each group of countries from 1988 to 2001 (figure 6.2). Whereas imports originated from China unit-prices dropped in 30% of the analyzed sectors and from low-wage countries in 26%; imports originated from high-income economies unit-prices dwindled in just 8,5% of selected sectors, “as a general rule, the higher the per-capita income group of the exporter, the less likely unit-prices were to fall” (KAPLINSKY, 2005, p.17).

Therefore, Kaplinsky (2005) establishes that “within a large number of product groups, the prices of products exported into the EU by China and low income economies was more likely to decline than the prices of the same products-groupings sourced from other high income economies” (KAPLINSKY, 2005, p.17). Moreover, the author concludes that “the greater China’s participation in global product markets, the more likely prices will fall” and that “there are some categories of manufactures for which relative prices have fallen, and these are predominantly manufactures in which China has become a major exporter”. And all these conclusions were drawn from a period of analyzes which ended in 2001, when the huge surge on China’s exports was still to fully materialize.

Figure 6.2 – Percentage of sectors with negative price trends, 1988/9-2000/2001 by country grouping



Based on an analysis of 151 eight-digit products, selected on the basis of their contribution to LDC exports to the EU.

Source: Kaplinsky (2005b)

Source: Kaplinsky (2005, p.39)

As a result, China's transformation in a manufacturing export power has been associated with the deterioration of the terms of trade between center and periphery inside manufacturing trade. In the traditional Prebisch-Singer hypothesis, the DTT between center and periphery against the latter was posed in terms of particular characteristics of primary goods vis-à-vis manufactures, as the secular DTT against the periphery was "reflected in the commodities/manufactures terms of trade, which was seen as a surrogate for developing/developed country terms of trade" (KAPLINSKY, 2005, p.6). Nonetheless, as the periphery started to export manufacturing goods, particularly China, the DTT against the periphery has been extended to and reproduced inside manufacturing trade itself (KAPLINSKY, 2005).

In the neoliberal era, while industrialization in the periphery has not remedied the deterioration of the terms of trade; the cheapening of wage goods in the center was not manifested in real wage growth in advanced countries:

> For multinational corporations there is a clear logic to all of this. As General Electric CEO Jeffrey Immelt stated, the "most successful China strategy"— with China here clearly standing for global labor arbitrage in general — "is to capitalize on its market growth while exporting its deflationary power." This "deflationary power" has to do of course with lower labor costs (and lower costs of reproduction of labor in the North through the lowering of the costs of wage-consumption goods). It thus

> represents a global strategy for raising the rate of surplus value (widening profit margins). (FOSTER, MCCHESNEY & JONNA, 2011)

The point made by Foster, McChesney and Jonna (2011) is of the utmost importance, since the cheapening of wage goods achieved by industrial delocalization led by TNCs has been promoted as having the aim to increase workers' real wages and consumption power. On the contrary, in making labor power cheaper in the center, by lowering its costs of reproduction, it increased the profitability of capitals operating in central economies.

The fact that the cheapening of wage goods was not manifested in real wage growth is linked to the contributing effects of the globalization of China's industrial reserve army in the weakening of workers' bargaining power in advanced countries and in the replenishment of national industrial reserve armies, among other processes unfolding in the same direction, which are discussed by Chesnais (2007, 2015), Foster, McChesney and Jonna (2011), Magdoff and Foster (2014), and Foster and Jonna (2016). In terms of real wage behavior, their combined result was that, on the one hand, US increases in productivity were not shared with workers; on the other hand, the inflation of essential services has encroached the gains obtained by the cheapening of wage goods through the central-peripheral international division of labor having China as a central piece, implying a change in the composition of workers' basket of goods in the US.

The change in the balance of power between capital and labor brought about by neoliberal globalization has meant that Chinese exports' effect in cheapening manufacturing goods in the center has not made room for the increased participation of goods and services produced by central countries in workers' bundle of goods, but to augment their prices, particularly of health and education, which progressively lose their status as 'rights' to be provided by the state to become growing fields of capital accumulation.

6.3 CHINA AND THE GLOBAL RESERVE ARMY

The effects of the globalization of China's industrial reserve army on wages and working conditions in advanced countries cannot be understood outside the larger context of the sustained offensive of capital over labor in the neoliberal era[120], being one of its central

[120] Regarding this broader process and particularly in the US as a 'one-sided class war from above', Magdoff and Foster (2014) characterize labor defensive situation since the late 1970s – whose important landmarks

pieces and facilitating capital's pursuit of the set of policies against labor contained in the neoliberal agenda, as the flexibilization of labor markets and the dismantling of the welfare state. Moreover, in this historical offensive, the constitution of a vast global industrial reserve army has been of the utmost importance, transcending China's integration in the global capitalist economy and affecting labor's position vis-à-vis capital across the world:

> This continuous search for low-cost position and higher profit margins led, beginning with the expansion of foreign direct investment in the 1960s, to the "offshoring" of a considerable portion of production. This, however, required the successful tapping of huge potential pools of labor in the third world to create a vast low-wage workforce. The expansion of the global labor force available to capital in recent decades has occurred mainly as a result of two factors: (1) the depeasantization of a large portion of the global periphery by means of agribusiness—removing peasants from the land, with the resulting expansion of the population of urban slums; and (2) the integration of the workforce of the former "actually existing socialist" countries into the world capitalist economy.
> Not only has the growth of the global capitalist labor force (including the available reserve army) radically altered the position of third world labor, it also has had an effect on labor in the rich economies, where wage levels are stagnant or declining for this and other reasons. Everywhere multinational corporations have been able to apply a divide and rule policy, altering the relative positions of capital and labor worldwide. (FOSTER, MCCHESNEY & JONNA, 2011)

Chesnais (2007, 2015) depiction of capital's historical offensive over labor throughout the last decades[121] is centrally predicated in the globalization of the industrial reserve army:

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were the nomination of Paul Volcker to the Fed in 1979 and Reagan's successful defeat of the air traffic controller strike in 1981 – and its relation to the increase in the industrial reserve army:

"There have of course been periods of time when strong union movements or pro-labor political parties (especially in Europe) have allowed for improved working conditions and higher wages. Although capital gave nothing away without a struggle by workers, the Cold War added a new dimension. Governments in the wealthy countries at the center of the capitalist world economy that needed to ensure the support of their workers as part of a Cold War compact were a bit more likely to take labor's wishes into account. This was later reversed. While there have been ups and downs since the late 1970s the conditions of labor have generally deteriorated over the period as a whole.

Workers in the United States are currently under extreme pressure—unlike any other period since the Great Depression of the 1930s. Conditions in today's phase of monopoly-finance capital, dominated by neoliberal policy, are the culmination of a long process of lopsided class war—with capital continually gaining strength in its battle to limit and control labor. During this period, and especially since the beginning of the Great Recession, capital has squeezed labor ever harder—doing more with less, as they say—in order to increase profits." (MAGDOFF & FOSTER, 2014, p.3)

[121] Regarding occidental Europe, Chesnais (2007) discusses the general inflexion on the rapport of forces since the 1970s: "In different degrees though sufficiently homogeneous, the working classes of occidental European countries achieved, through successive phases of advances and retreats, between the beginning of the 20th century and the years 67-68/74-75, to strongly reduce this competition [between workers] inside the borders of each State. Nevertheless, without achieving to 'organize themselves as class, hence, party' in the *Manifest* sense, they only carried through very limited and temporary harms to the private property of the means of

> In the actuality, wage earners find themselves in a situation in which capital has, in a degree that it has not experienced since the 1930s, the means to oblige them to compete against each other over a limited "offer of employment". Better, it can put them into competition from country to country. For it is clear now that one of the most decisive aspects of the globalization of capital derived from liberalization, deregulation and privatizations, is to allow the implementation in a very vast scale of capitalist strategies of **putting in direct competition from country to country** wage earners, proletarians in the sense of people who is obliged to sell their labor-power ("find a job") to live. (CHESNAIS, 2007)[122]
>
> Putting workers into direct competition at the level of employment and wages between countries of a same continent as well as from one continent to another in the context of today's globalized economy concedes to each bourgeoisie, whatever its place in the changing hierarchical structure of global capital, a force position, historically unrivaled, in relation to their "own" workers, immigrant workers included. This competition is underpinned by capital as rapport of global exploitation and domination, and it is to capital so understood that workers ultimately clash against wherever they are. (CHESNAIS, 2015)[123]

On the one hand, the globalization of the industrial reserve army goes beyond the Chinese one; on the other hand, its effects are not restricted to advanced economies. Notwithstanding, we argue that the effects of the globalization of China's industrial reserve army is what gave critical mass to break the link between industrial production, and therefore industrial employment, and consumer markets in advanced countries. In as much as manufacturing was the sector in which workers' struggles, organization and constitution of

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production. In this way, they allowed their bourgeoisies to "save their skins" and to reconstruct first slowly then, after the "conservative revolution", in an increasingly faster rhythm, relations favorable to capital." (CHESNAIS, 2007)

"A des degrés divers mais assez homogènes tout de même, les prolétariats des pays d'Europe occidentale sont parvenus, par phases successives d'avancée et de recul, entre le début du 20° siècle et les années 67-68 / 74-75, à réduire très fortement cette concurrence à l'intérieur des frontières de chaque Etat. Mais n'étant pas parvenus à *«s'organiser en classe donc en parti»* au sens du *Manifeste*, ils n'ont porté que des atteintes très, très limitées et temporaires à la propriété privée des moyens de production. Ce faisant ils ont permis aux bourgeoisies de «sauver la mise» et de reconstituer d'abord lentement, puis à partir de la «révolution conservatrice» à un rythme de plus en plus rapide, des rapports favorables au capital" (CHESNAIS, 2007).

[122] . "Aujourd'hui les salarié·e·s se trouvent confrontés à une situation où le capital possède, à un degré qu'il n'a pas connu depuis les années 1930, les moyens de les obliger à se faire concurrence les uns aux autres autour d'une «offre d'emploi» limitée. Mieux, il peut les mettre en concurrence de pays à pays.
Car il est clair maintenant que l'un des aspects les plus décisifs de la mondialisation du capital issue de la libéralisation, de la déréglementation et des privatisations, est de permettre la mise en œuvre sur une très vaste échelle de stratégies capitalistes de **mise en concurrence directe de pays à pays** de salarié·e·s, de prolétaires au sens de gens qui sont obligés de vendre leur force de travail («trouver un emploi») pour vivre" (CHESNAIS, 2007)

[123] "La mise en concurrence directe des travailleurs sur le plan de l'emploi et des salaires entre pays d'un même continent ainsi que d'un continent à l'autre dans le cadre de l'économie mondialisée d'aujourd'hui donne à chaque bourgeoisie, quelle que soit sa place dans la structure hiérarchique changeante du capital mondial, une position de force, inédit historiquement, à l'égard de ses « propres » travailleurs, travailleurs immigrés compris. Elle est adossée au capital comme rapport d'exploitation et de domination mondial et c'est au capital compris ainsi que les travailleurs se heurtent en dernière instance partout où ils sont." (CHESNAIS, 2015)

trade unions historically played a pivotal role in advanced countries – to which the fact that the large agglomeration of workers under the same factory roof was not a mere detail –, manufacturing workers constituted the core of advanced countries' active army of labor. Their higher concentration, organization and effective power to withheld productive processes were generally reflected in higher than average wages in central countries, giving room to the widespread notion of manufacturing jobs as 'good jobs'. The process of unmaking of a significant parcel of this section of Northern proletariat has potentially pervasive effects throughout advanced countries' national labor markets, as we are going to discuss in the next section.

In this context, the globalization of China's industrial reserve army could be seen as providing the material basis for approaching the scenario envisaged by Engels[124] in which, "with the breakdown of that [industrial] monopoly, the English working-class will lose that privileged position; it will find itself generally — the privileged and leading minority not excepted — on a level with its fellow-workers abroad" (ENGELS, 1969, p.38). The leveling down of the working conditions and wages of the English proletariat including its better paid strata – the 'factory hands' and the 'great Trade Unions', both being associated with skilled workers and to Engels conforming a labor aristocracy – would result not from their dependence on superprofits as a source of bribery as proposed by Lenin, but from the fact that the English industrial monopoly meant for its working class the exclusivity to industrial employment. Although the expansion of industry in central countries has not materialized in such results, the globalization of China's industrial reserve army has provided the critical mass to throw down the still protected access to industrial employment workers in advanced countries had and which had put them in a structurally better material position to exert its demands, organize and oppose capital.

Though Lenin (1964) affirmed that in Engels the monopoly position of England explained the existence of the labor aristocracy due to superprofits, this is not clear in Engels[125]. The permanent improvements in the living standards of such stratum of the

[124] 1892 preface to the second German edition of the *Condition of the Working Class in England*.

[125] When Engels discusses the breaking of England's industrial monopoly, the consequences are mainly posed as realization problems that ultimately compromise expanded reproduction: competition in the world market would mean lack of markets for the expansion of industrial production in England, hindering growth. Lead to a persistent stagnant state due to competition among capitals from other countries in a context of already scarce markets, her workers would be dragged down to the conditions of living of workers abroad. The problem here appears in light not of the undermining of above average profits, but of assuring the conditions for realizing normal profits in expanded reproduction.

working-class, in contrast to the temporary gains of the bulk of workers[126] who as a rule lived in miserable conditions, resulted from their bargaining strength and conflict (MORRIS, 1988). Moreover, the permanent feature of these gains – conferring the 'protected' character of this stratum – can also be associated to a process of legal codification and the recognition of Trade Unions as legitimate institutions by the bourgeoisie, leading to an approximation of the Trade Unions to the State and the more or less confinement of their conflicts inside the rule of the law. As manufacturing employment massively dislocated to China, the material basis which underpinned the core of the active army of central countries was significantly eroded; this section of the proletariat in a large parcel was unmade, its most organized and better paid workers discharged and in this process also the power of traditional trade unions.

6.4 MANUFACTURING EMPLOYMENT GOES TO CHINA: DIRECT COMPETITION WITH CHINESE WORKERS AND WEIGHTING DOWN THE US' ACTIVE INDUSTRIAL ARMY OF LABOR

The globalization of China's industrial reserve army achieved by TNCs' delocalization of manufacturing productive process primarily to the country has been felt by workers in advanced countries through direct competition with their Chinese counterparts. Whereas delocalization and threats to offshore and outsource expose that competition for manufacturing jobs occurs directly between workers in advanced countries and in China; competition in the consumer markets of advanced countries between large transnationalized and smaller domestic capitals is also manifested as competition between Northern workers and those in China. For smaller capitals in advanced countries, internationalization of manufacturing productive process is either out of reach or cannot be done as efficiently as big retail such as Walmart, who benefits not only from concentration of global buying but also from highly developed logistics and transportation systems.

As unit labor costs of smaller capitals stay broadly attached to local and national labor markets, TNCs strategies of offshoring and outsourcing to China are not only a lever against workers in headquarter economies, but also for increased centralization of capital through the bankruptcy of the surviving smaller domestic capitals. As the fate of workers, in capitalism, is attached to the productive consumption of their labor-power by capitalists, the competition of

[126] "The truth is this: during the period of England's industrial monopoly the English working class have, to a certain extent, shared in the benefits of the monopoly. These benefits were very unequally parcelled out amongst them; the privileged minority pocketed most, but even the great mass had, at least, a temporary share now and then." (ENGELS, 1969, p.37-38)

domestic and transnationalized capitals in advanced economies is translated as a competition between workers in headquarter economies and those in China. In this asymmetrical competition among transnationalized and domestic capitals in advanced economies, workers are exhorted to 'cooperate' with smaller domestic capitals, accepting wage repression, intensifying labor and increasing working hours to save their jobs in saving the skin of their employers from being driven out of the market. Although international trade is the channel through which the latter type of competition is manifested, this process of centralization of capitals in central economies levered through the internationalization of manufacturing production frequently appears in mainstream academics and media as competition of domestic producers and 'China's exports'.

In this sense, the direct competition between workers in advanced countries and Chinese laborers by the globalization of China's industrial reserve army is built in two logical differentiated moments. The first is the direct competition for employment promoted by TNCs strategies of investment aiming to reduce unit labor costs, in which the direct loss of jobs from transferring plants abroad and outsourcing, coupled with threats of implementing one or the other, directly impact wages and employment in the manufacturing sector of advanced economies, particularly in the plants operated by TNCs, though not only.

The second moment is a consequence of the former, its counterpart movement, through the increased penetration of China's exports, affecting wages and employment in the manufacturing sector particularly through big retail outsourcing schemes that compete with capitals for which transnationalization is not a viable option. In this context, we first consider how TNCs effects on wages and bargaining power in headquarter economies have been seen as an indissociable outcome and reason underpinning firms' decisions to transnationalize, through divide and rules strategies, as proposed by Peoples and Sugden (2000). Subsequently, we present empirical evidences from the academic literature assessing the impacts of the globalization of China's industrial reserve army in the US manufacturing sector through direct competition between workers in China and the US.

6.4.1 Transnationalization of firms and its impacts on labor's bargaining power on headquarter economies: the divide and rule strategy

From a microeconomic perspective, Peoples and Sugden (2000) postulate the role of divide and rule strategies in a firm's decision to become a TNC. In such approach, the search

for lowering unit labor costs by offshoring and outsourcing abroad is already predicated and inseparable from its effects on wages in headquarter economies, insofar as intra-firm wage setting is concerned. As a double-edged process affecting workers bargaining power both home and abroad, the move towards transnationalization of a firm's production is purposely devised to promote direct competition between workers in different countries (PEOPLES & SUGDEN, 2000). Emphasizing the increased difficulties to workers' collective action when the workforce is divided in different countries – such as "organizational problems as devising institutional arrangements for international trade unions and also more deep-rooted cultural factors such as different languages, xenophobia, and different religions" (PEOPLES & SUGDEN, 2000, p.175) –, employers can manipulate one group of workers against the other in a competition for who gets the jobs, achieving wage reductions. When outsourcing is concerned, the hindrances posed by divide and rule tactics for collective action are further enhanced, for the pulverization of production in small and dispersed subcontractors pose obstacles to laborers' recognition they are working for the same firm: "the subcontracting option may be particularly appealing to a firm because it can provide an extreme division of a militant workforce" (PEOPLES & SUGDEN, 2000, p.177).

Durand (2007) stresses the far reaching effects of these strategies: "conform the mechanism of 'divide and rule', the weakening of workers' unity is susceptible of making wages and surveillance costs dwindle while increasing labor intensity"[127] (DURAND, 2007, p.11, our translation). On the one hand, if divide and rules tactics imply job losses for headquarter economies, other things being equal, increasing the industrial reserve army; on the other hand, their implementation are more likely when labor bargaining power is already weakened by the industrial reserve army:

> A strategy of division from the side of the employer allows reducing the bargaining power of workers and, hence, of achieving economic gains by diminishing the level of average wages, but also diminishing surveillance costs. This strategy gains full force when it can lean over the existence of a "reserve army". The reduced capacity of wage earners to oppose lay-offs implies the growth in the individual risk of being fired and therefore a stronger inducement to work for each one, which translates for the employer in a gain from the increased individual labor provided per period of purchased worktime (DURAND, 2007, p.5, our translation)[128]

[127] "Conformément au mécanisme « diviser pour mieux régner », l'affaiblissement de l'unité des travailleurs est susceptible de faire baisser les salaires et les coûts de surveillance tout en accroissant l'intensité du travail." (DURAND, 2007, p.11)

[128] "Une stratégie de division de la part de l'employeur permet de réduire le pouvoir de négociation des travailleurs et donc de réaliser des gains économiques en diminuant le niveau moyen des salaires mais aussi en

As Peoples and Sugden's (2000) divide and rule perspective of transnationalization is predicated in the increased profitability derived from dual-sourcing, as a mechanism of lowering labor costs by hampering workers bargaining position inside a firm, it is distinguished from production delocalization which is aimed to simply and directly achieve unit labor costs reductions from moving abroad. As the authors highlight, "on some occasions A [the firm] will produce in just one country because workers in that country always accept the lowest wage. But this will not always be so, in which case transnationals arise." (PEOPLES & SUGDEN, 2000, p.178).[129] Whereas moving production to low-wage countries and eliminating entire production lines generate "job displacement associated with the expansion of US transnationals", which is not to be mistaken for divide and rule strategies, "the organizational structure of the transnational may none the less be considered to allow employers to exercise options that threaten the job security of workers" (PEOPLES & SUGDEN, 2000, p.184).

We argue that the globalization of China's industrial reserve army does not fit so much Peoples and Sugden (2000) stricter definition of microeconomic decisions based on divide and rule strategies, as its globalization seems to be more connected with direct increases of profitability through the reduction of unit labor costs achieved by the straight forward delocalization to China than to the dual-sourcing play effect. Nonetheless, their broader perspective that transnationalization threats job security in headquarter economies definitely has an important role in the effects of the globalization of China's industrial reserve army on advanced economies; and in as much as TNCs still have operations in the latter, divide and

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diminuant les coûts de surveillance. Cette stratégie prend toute sa force lorsqu'elle peut s'appuyer sur l'existence d'une « armée de réserve ». La capacité réduite des salariés de s'opposer à des licenciements implique un accroissement du risque individuel de licenciement et donc une plus forte incitation au travail pour chacun, ce qui se traduit pour l'employeur par un gain du fait de l'accroissement du travail individuel fournit par période de temps de travail acheté." (DURAND, 2007, p.5)

[129] Even if Peoples and Sugden (2000) assume a broader perspective of the firm when dealing with subcontracting, stating that "provided production was being coordinated from one centre of strategic decision-making, there would still be only one firm" (PEOPLES & SUGDEN, 2000, p.177), they pass by the implications of transferring all production abroad to one country while maintaining the center of strategic decision-making and productive coordination in advanced countries, making a firm transnational in this broader sense. According to Durand (2007), such a broad definition "might be articulated with the perspective of global value chains: through the concept of governance, this perspective puts forward the existence of asymmetrical power relations between firms (here understood in the strict sense) within fragmented productive processes in the international scale (Gereffi, Humphrey and Strugeon, 2005)" (DURAND, 2007, p.11, our translation)

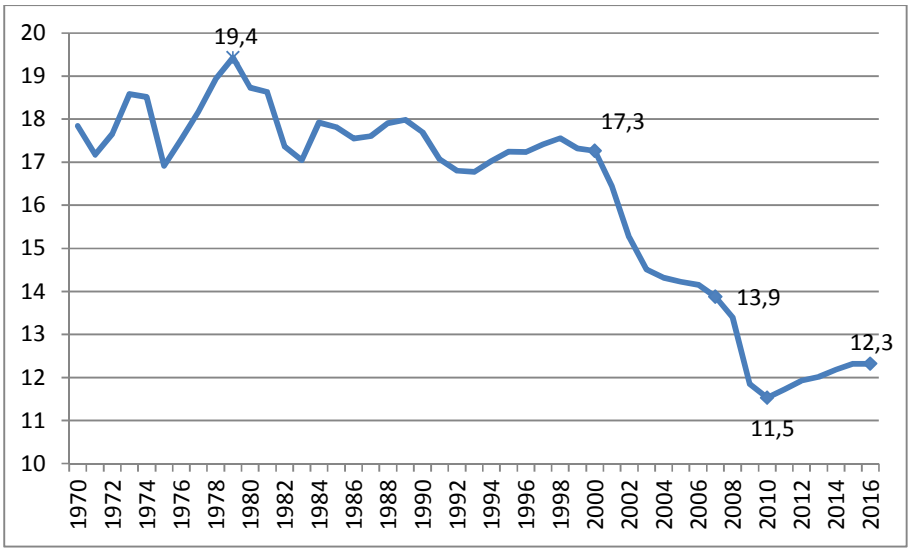
"Une telle vision peut être articulée avec la perspective des chaînes de valeur globale : à travers le concept de gouvernance, cette perspective met en avant l'existence de relations de pouvoir asymétriques entre les firmes (entendues ici au sens strict) au sein de processus productif segmentés à l'échelle internationale [Gereffi, Humphrey and. Sturgeon, 2005]." (DURAND, 2007, p.11).

rule is an additional source of increased profitability, being used against workers in advanced countries and putting downward pressures on the wages of those which remained employed, along with the intensification of labor.

6.4.2 The effects of direct competition with Chinese workers in US manufacturing employment

US manufacturing employment has significantly shrunk since 2001 (graph 6.1). After peaking in 1979, with 19,4 million workers, manufacturing employment in the US has oscillated around 17 to 18 million employees between 1983 and 2000. From 2000 to 2007, employment in the sector has fast declined from 17,3 to 13,9 million workers, further dwindling in the context of the global financial crises whose epicenter was the US economy to 11,1 million employed persons in 2010, when it reached its lowest in the period under scrutiny. The latest years, though, have seen the recuperation of manufacturing employment, with the average monthly figures for January to March, 2016, reaching levels higher than 2009 but still lower than 2008.

Graph 6.1 – Average annual US manufacturing employment (in millions)



Source: BLS (2016)
Note: The 2016 figure is based on the average monthly figures from January to March.

Although it seems clear the globalization of China's industrial reserve army and the transformation of peasant-workers in the backbone of the industrial active army for the global

economy were associated with such decline, particularly by being coetaneous with China's accession to the WTO, measuring the exact extent of this impact is somewhat trickier. Whilst the transfer of manufacturing capacity to China by offshore strategies of US' TNCs has been an undoubtedly significant process in scope and size, there were no official statistics available on its impacts in terms of employment until 2004, and when official estimates were first published they were largely underestimated (BROFENBRENNER & LUCE, 2004).

In order to address the lack of official data and to provide estimates on this process, Bronfenbrenner et al. (2001) and Bronfenbrenner and Luce (2004) developed a media-tracking system that monitored and tracked "all media reported production shifts out of the U.S. to China, Mexico, and other Asian and Latin American countries and out of Asian and Latin American countries into China that occurred between October 1, 2000 and April 30, 2001" (BRONFENBRENNER & AL., 2001), further updating this database for the period January,1 to March 31, 2004 (BRONFENBRENNER & LUCE, 2004). In the seven-month period analyzed in the beginning of the 2000s, Bronfenbrenner et al. (2001) tracked more than eighty announced shifts of production from the US to China, whereas in the three months covered in 2004, they amounted to 58. The recorded number of production shifts in 2004 conferred the US a prime position in production shifts to the country, "however, this is followed closely by Europe, which had 55 shifts. There were 33 shifts from other Asian countries to China, primarily Japan, Taiwan, the Philippines and Singapore" (BRONFENBRENNER & LUCE, 2004, p.*i*).

At beginning of the 2000s, US tracked production shifts to China were estimated to result in job losses "as high as 34,900, compared to 29,267 jobs lost to Mexico, 9061 jobs lost to other Asian countries, and fewer than 1000 jobs lost to other Latin American countries" (BRONFENBRENNER & AL., 2001, p.*i-ii*). The 2004 results, however, give Mexico a predominant role in terms of announced shifts (69) and job losses as "of 48,417 jobs out of the US to other countries in January-March including 23,396 to Mexico, 8,283 to China, 3,895 to India, 5,511 to other Latin American countries, 4,419 to other Asian countries, and 2,933 to all other countries" (BRONFENBRENNER & LUCE, 2004, p.*i*). On the one hand, the authors estimate that their tracking captures about two-thirds of delocalization to Mexico and just one third to other countries; on the other hand, they also found that official statistics released in 2004 significantly underreported job losses due to production shifts: "BLS reported 4,633 private sector workers in establishments with 50 or more workers lost their

jobs due to global outsourcing in January-March 2004" (BRONFENBRENNER & LUCE, 2004, p.*ii*).

Although the period covered is small to assess the general trends of productive shifts, especially as one large announcement to a particular location can be overrepresented in a small time span, the above studies provide a picture in which Mexico and China have a prime role in the unmaking of the traditional core of US' active army of labor, namely, manufacturing workers, particularly in its unionized fraction:

> Unionized workplaces are being disproportionately affected by US production shifts. Twenty-nine percent of the companies shifting production out of the US were unionized and 39 percent of all jobs being shifted out of the US are from unionized facilities. Fifty-three percent of jobs shifting out of the US to Mexico and 34 percent of jobs shifting to China are unionized. Even taking into consideration the higher union density rate in the industries where many of the production shifts are concentrated, these numbers far exceed the union density rate in those industries. (BRONFENBRENNER & LUCE, 2004, p.*ii*)

Mexico has primacy in receiving US' unionized jobs, as the delocalization to the country occurs mainly in the auto and metal-mechanic industry[130] – in which the final products and parts are bulky relative to their value, making transportation costs more important than other industries – which historically had a higher rate unionization and tradition of labor organization; whereas China seems to capture all sorts of manufacturing employment other than automotive, particularly the 'factory hands', workers with specific skills which receive higher than average wages:

> […] our media-tracking data suggest that an increasing percentage of the jobs leaving the U.S. [to China] are in higher-paying industries producing goods such as bicycles, furniture, motors, compressors, generators, fiber optics, clocks, injection molding, and computer components. As our data show, it is these higher-end jobs that are most likely to be unionized and therefore more likely to have a much larger wage and benefit package. Many of those who lost their jobs were high seniority, top-of-the-pay scale employees, who have a great deal invested in their jobs and in their communities. (BRONFENBRENNER & AL., 2001, p.94)

[130] "[…] production shifts out of the U.S. to other Asian countries [than China] where nearly two-thirds of production shifts were in electronics and electrical equipment and with production shifts from the U.S. to Mexico, where 20 percent of production shifts were in industries such as automobiles, auto parts, metal fabrication, and machinery." (BRONFENBRENNER & AL, 2001, p.*ii*)

In 2004, the trend towards a diverse sectorial role of China in receiving US manufacturing production and jobs was confirmed by the media-tracking:

> Today [2004] production shifts from the US to China represent a cross section of industrial sectors including apparel and footwear, sporting goods and toys, wood and paper products, aerospace, appliances, household goods, industrial equipment and machinery, electronics and electrical equipment, metal fabrication and production, chemicals and petroleum, textiles, and plastics, glass, and rubber. This contrasts with 2001 when most production shifts to China were concentrated in a few industries: electronics and electrical equipment, chemicals and petroleum, household goods, sporting goods and toys, textiles, wood and paper products. Unlike shifts from the US to China, shifts from other Asian countries into China tend to be more concentrated, particularly in electronics and electrical equipment production, as well as textiles and metal fabrication and production. Shifts from Europe to China are primarily concentrated in electronics, chemicals and petroleum, and metals industries. (BRONFENBRENNER & LUCE, 2004, p.*ii*)

Their results also corroborate that production shifts to China were mainly the result of large transnationalized US capitals aiming to supply not exclusively the Chinese market, but the US and world markets, being led by corporations with the following profile: "large, publicly held, highly profitable, and well-established […] seventy-two percent [of facilities impacted by production shifts] are owned by US multinationals" (BRONFENBRENNER & LUCE, 2004, p.*ii*). Moreover, the authors found that increasingly productive shifts were multi-destination, particularly when associated to China, which reveals the country's central role in internationally fragmented manufacturing productive processes.

Assuming that their media-coverage just tracked half of productive shifts in 2001 and 1/3 for all countries other than Mexico and 2/3 for Mexico in 2004 and multiplying their estimates for January to March to four as to proxy the annual number of job losses – which is a quite problematic assumption –, the authors arrive to the conclusion that "as many as 99,000 jobs are shifted from the US to China and 140,000 jobs will be shifted to Mexico this year compared to approximately 85,000 jobs to each country in 2001", which should be considered along with the fact that due to the multi-destination shifts associated to China, "jobs lost from shifts to China are often directly linked to job losses to other countries both, near and off shore" (BRONFENBRENNER & LUCE, 2004, p.*ii*).

And this is just the tip of the process of unmaking of a large parcel of US' manufacturing proletariat, as it relates only to facilities whose operations were reduced or shut-down to be opened abroad, mainly by TNCs, in a short temporal glance in the longer process of industrial delocalization that perpassed the 2000s. That means, these estimates give

a flash on the effects of direct competition with Chinese workers on employment and bargaining power of US manufacturing laborers in its first logical moment, not dealing with the effects of competition between the different fractions of capital that transnationalized and remained domestic. Moreover, they do not consider job generation associated with offshoring, which occurred mainly outside the manufacturing sector and will be treated in the context of the broader process of replenishment of national industrial reserve armies.

Whereas throughout the 1990s and the 2000s most of neoclassical empirical studies denied the role of "US trade with China" as relevantly impacting manufacturing employment and wages, pointing to the transformations in US manufacturing as the result of "skill-biased technological change"; recently, empirical studies embedded in neoclassical economics – though relaxing many of its core hypothesis, such as full employment – came out publicly to state that, after all, imports from China are indeed substantially linked to the deterioration of workers' conditions in the US, particularly reducing manufacturing employment.

Scott (2012) estimated that between 2001 and 2011, 2,7 million jobs were lost or displaced, among them 2,1 million in manufacturing, due to US' trade deficit with China. Overall job losses would be higher than manufacturing due to indirect impacts on services "including administrative, support, and waste and management services (160,600), and professional, scientific, and technical services (145,000)" (SCOTT, 2012, p.2). According to the author, these would be conservative estimates for "they include only the direct and indirect jobs displaced by trade, and exclude jobs in domestic wholesale and retail trade or advertising; they also exclude re-spending employment" (SCOTT, 2012, p.3). The latter assumption is highly doubtful, since the expected effects of the massive outsourcing schemes to China led by big retail would be the creation of jobs in domestic wholesale and retail trade and advertising (particularly for TNCs that rely only in global branding): it was not by chance and it cannot pass unnoticed the fact that Walmart becoming the largest single US employer has a relation with industrial delocalization to China.

Scott (2012) stresses the "crucial missing link" which proponents of trade deals would neglect, FDI and outsourcing, and proposes that "China's entry has further tilted the international economic playing field against U.S. domestic workers and firms and in favor of multinational companies from the United States" – dissociating "US national interests" from "US multinationals [which] have enjoyed record profits on their foreign direct investment"

(SCOTT, 2012, p.6-7)[131]. Notwithstanding, at the end of the day the author blames China's unfair trade practices, particularly currency manipulation, for US job losses, although he cites subsidies and lack of environmental and labor standards as "other illegal laws, regulations and policies" (SCOTT, 2012, p.6). In more recent estimates, Scott (2014) assessed that 3,2 million jobs were lost due to the US trade deficit with China between 2001 and 2013, 2,4 million of those in manufacturing.

Acemoglu et Al (2016) provide also high estimates for US job losses due to "import competition" with China, which "was a major force behind both recent reductions in US manufacturing employment and – through input-output linkages and other general equilibrium channels – weak overall US job growth" (ACEMOGLU & Al, 2016, p.S141). According to the authors, between 1999 and 2011, the US would have lost between 2,0 and 2,4 million jobs due to import competition with China. At the national level, the authors estimated that, taking into account direct and indirect effects, job losses in manufacturing would respond to 985 thousand workers between 1999 and 2011, while outside manufacturing they would represent 994 thousand, in a total of 1,98 million lost jobs due import competition with China, composing the lower bound of their estimates.

Additionally, Acemoglu et al (2016) consider relocation and aggregate demand effects through the analysis of local labor markets: "the negative effect of increased import competition on aggregate demand necessarily requires that employment reallocation in response to a negative trade shock is incomplete" (ACEMOGLU & AL, 2016, p. S146). Assessing that the relocation employment effect from industries affected by China's import competition to non-tradable and not significantly exposed industries was statistically insignificant, they concluded that the overall aggregate demand channel predominated, multiplying the negative effects of China's import competition on employment, and providing their higher bound of estimates of overall job losses.

Recent empirical studies have also associated the increase in China's import penetration in the US with the broader deterioration of labor conditions in the latter and

[131] "Partly because the agreement accepting China into the WTO failed to include any protections to maintain or improve labor or environmental standards, China's entry has further tilted the international economic playing field against U.S. domestic workers and firms and in favor of multinational companies from the United States and other countries, as well as state- and privately owned exporters in China. This shift has accelerated the global "race to the bottom" in wages and environmental quality and closed thousands of U.S. factories, decimating employment in a wide range of communities, states, and entire regions of the United States. U.S. national interests have suffered while U.S. multinationals have enjoyed record profits on their foreign direct investments (Scott 2007, 2011b)". (SCOTT, 2012, p.6-7)

downward pressures on wages. In a highly divulgated paper, *The China Syndrome: Local Labor Market Effects of Import Competition in the United States*, Autor, Dorn and Gordon (2013) argued that, between 1990 and 2007:

> Rising [Chinese] imports cause higher unemployment, lower labor force participation, and reduced wages in local labor markets that house import competing manufacturing industries. In our main specification, import competition explains one-quarter of the contemporaneous aggregate decline in US manufacturing employment. Transfer benefits payments for unemployment, disability, retirement, and healthcare also rise sharply in more trade-exposed labor markets. (AUTOR, DORN & GORDON, 2013, p.2121)

Ebenstein, Harrison and McMillan (2015) stress the impacts on wages of employment's shift in composition from manufacturing to services associated with increased offshoring and imports from low wage countries:

> We find evidence that while the wage impacts of switches within manufacturing are mild, leaving manufacturing for services is associated with an appreciable loss in wages, and larger losses still for workers who are forced to switch occupation upon leaving manufacturing. This highlights the importance of examining the impact of globalization by looking beyond workers only employed directly in manufacturing. (EBENSTEIN, HARRISON & MCMILLAN, 2015, p.5)

The shift of employment from manufacturing to services in the US, particularly to big retail, has been associated with the replenishment of US' industrial reserve army as the weighting down of the core of US' industrial active army was, prior to the Great Recession, not so strongly related to increased unemployment, but with outstanding growing precariousness, particularly through part-time and temporary employment, both of them being elements of Marx's industrial reserve army[132]. The globalization of China's industrial reserve army has contributed for such replenishment in both sides, by weighting down the active army and by its connection to employment generation in big retail, which has been associated with the growth of working poor in the US. According to Jonna and Foster (2016), China's reintegration in the world market has contributed, among a series of other factors[133], to

[132]The works of Magdoff, Foster and Jonna have consistent and significantly stressed the shortfalls of official unemployment figures in the US, the necessity of adopting and instrumenting Marx's industrial reserve army framework and the growing precariousness of the US labor market, especially in the figures part-time and temporary work. See Jonna (2013), Magdoff and Foster (2014) and Jonna and Foster (2016).

[133] "This continental shift [of production from the global North to the global South] put pressure on the real wages of workers in the global North, where workers faced higher unemployment and increased competition

"remove the floor on wages and working conditions of workers throughout the world. In general, the global working class and its various segments were soon caught in a race to the bottom, a reality bound to create a new sense of precariousness" (JONNA & FOSTER, 2016).

In the larger picture of the historical offensive of capital over labor throughout the last decades in the US, Magdoff and Foster (2014) highlight a set of trends associated with the deterioration of labor's position vis-à-vis capital in the US: "(1) the decline of employment, (2) erosion of health associated with job loss, (3) wage stagnation, (4) growth of the working poor, (5) increased exploitation of labor on the job, and (6) the drop in the labor share of income" (MAGDOFF & FOSTER, 2014). The weakening of organized labor in the US – "with unions crushed to the point that they now account for only 6.6 percent of private-sector employees, the lowest level in a century" (MAGDOFF & FOSTER, 2014) – is posed by the authors as largely resulting from the increased competition between workers both inside and outside national boundaries:

> There were numerous indications of the decline of organized labor's fortunes and power relative to capital in the United States from the 1970s to the onset of the Great Recession in late 2007. For example, there was a decreased percentage of the workforce that was unionized, a decreased esteem in which union workers were viewed by many in society, and a lower frequency of major strikes (only a few per year compared to literally hundreds per year in the 1950–1980 period).
> There is no doubt that the increased surrender of workers in the face of the assault by capital was due to the fact that they were understandably concerned that the bosses would either hire replacement workers or close the facility and move the jobs to another location in the United States or to another country. (MAGDOFF & FOSTER, 2014)

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from low-wage workers in the South. The latent reserve army of migrant labor from poor countries (for example, Mexican and Central American workers in the case of the United States, Turkish workers in the case of Germany, and Algerian workers in the case of France) generated further conflict within the working class nationally and internationally, as did new waves of imperial wars in the Middle East, the former Yugoslavia, and north Africa in the 1990s and into the opening decades of this century (made possible by the disappearance of the U.S.S.R. from the world stage). The fall of Soviet societies and reintegration of China into the capitalist world market brought hundreds of millions of additional workers into the global reserve army, constituting a new era of globalization. All of this served to remove the floor on wages and working conditions of workers throughout the world. In general, the global working class and its various segments were soon caught in a race to the bottom, a reality bound to create a new sense of precariousness.
The Great Financial Crisis, which emerged in the United States in 2007 and expanded in 2008 and 2009 to the world economy as a whole, led to a vast increase in global unemployment and restructuring. An enormous growth in part-time, temporary, and contingent work, as well as greater unemployment and underemployment generally, constituted the new, more perilous structural condition of the international labor market. The failure of most analysts, even on the left, to understand this in terms of Marx's general law of accumulation created enormous confusion. Conventional social science has characteristically treated the more exploitative relations between labor and capital as anomalies with no essential relation to the system and no prior historical or theoretical basis, while postmodernist left theorists, enamored of mere discursive constructs, have scarcely done any better." (JONNA & FOSTER, 2016)

In this context, some manufacturing jobs can actually be re-shored to the US, as with the replenishment of the national industrial reserve army, divide and rule strategies become much more effective (DURAND, 2007). Unions have increasingly accepted two-tiers agreements, in which new hired workers receive much lower wages than ancient workers and are not entitled to the same benefits. As a result, manufacturing ceases to be a "good job" since the re-shored jobs, filled by temporary and agency workers, pay wages closer to those of Wal-Mart[134] than the ones paid to manufacturing posts which resisted off-shoring and outsourcing.

Furthermore, as China moves up in global value chains, increasingly more jobs in the manufacturing sector of advanced countries, particularly of skilled workers, become exposed to growing competition with Chinese workers. Although China's initial insertion on the global capitalist economy was founded in unskilled labor intensive industries and stages of global value chains, the consistent state efforts in moving up in the latter might be putting downward pressures on the wages of skilled laborers in the center as well, in as much as absolute instead of comparative costs rule international trade.

China's expenditures in higher education are growing, even if still a much smaller share of GDP than in advanced countries. Nonetheless, the large scale of Chinese population makes the absolute number of its graduates much bigger than in advanced countries. In 2013, China graduated 7 million new college students, comparing to 1 million in 2000. Added to the bias of its higher education towards technological areas, each year it graduates in engineering 900 thousand students, more than eleven times the US figure of 80 thousand. As offshorability is not linked to skills, the huge pool of skilled laborers that China has been creating increasingly exposes skilled laborers in the center to the same kind of effects experienced by the unskilled[135], and there are evidences that this has already been occurring, as in the case of the semiconductor industry (see Appendix F).

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[134] "Today, more than 600,000 manufacturing workers make $9.60 an hour or less, and one in four make $11.91 or less, according to the National Employment Law Project. Manufacturing workers once made more than average U.S. wages, but by 2013, they made 7.7 percent less than the median wage for all occupations. And when adjusted for inflation, wages for manufacturing workers have declined 4.4 percent between 2003 and 2013, according to NELP." (SEMUELS, 2015)

[135] As for the more recent period, China jumped from less than 200 foreign invested R&D centers to 1300 in 2011 (KPMG, 2013); and, in 2014, China had caught up with the US in terms of FDI attraction in R&D, with the US attracting 300 million dollars in greenfield investment, while China, one billion and two hundred (FINGAR, 2015).

CONCLUSION

If international trade flows were spontaneous processes that emanate from given diverse national sets of factors' endowments, benefiting the whole world and each and every single nation, it definitely would make no sense for those who own 'factors of production' to displace them across borders, in pursuing an outcome that would be bound to occur regardless of such actions. Therefore, in neoclassical theory, international trade is the channel *par excellence* through which China's integration in the global capitalist economy affects wages in advanced countries, with some laborers losing, other gaining, and the trading nations becoming economically more puissant. Moreover, Chinese laborers appear as the greatest beneficiaries of free trade, for not only their rewards were increased, as skilled workers in advanced countries, but, more importantly, they were lifted out of poverty.

In contrast, we constructed an interpretation through two analytical moments that contemplate both the "inward" and "outward" dimensions of the globalization of China's industrial reserve army, namely, how it was formed by the Chinese state and how its access by advanced countries' productive capitals, in the context of neoliberal globalization, promoted a re-articulation on the international division of labor that undermined the material conditions that historically had put labor in the center in a better position to oppose capital vis-à-vis labor in the periphery. We discussed the formation of China's industrial reserve army that has underpinned the process of proletarianization in the country as creatures of the party-state achieved through means of primitive accumulation. We claimed that the stagnant low wage rates of Chinese unskilled workers which prevailed in the 1990s until mid-2000s, at the core of China's transformation in the factory of the world, resulted not only from the dismantling of the communes and danweis, but also from the constant alienation of peasants' increasing surplus product by the state, which promoted farming real income stagnation and impelled peasants to take the proletarizanization road, forming a vast industrial reserve army.

We provided a statistical analysis of the employment structure in the post-reform period, especially from the 1990s onwards, when China's manufacturing export-oriented sector took off. Behind this analysis lied the story of the formation of China's labor market over the inherited divide between rural and urban laborers, a divide that would be reproduced inside the own urban economy. We analyzed the broad trends in the ongoing structural changes that China has been experiencing since the beginning of the economic reforms, moving away from a predominantly agrarian and rural economy. As rural migration has been

the backbone of these transformations, we discussed the *hukou* system and the particular characteristics it has imprinted in China's labor market. We also considered the distinct ways in which China's statistical systems on employment and wages treated/translated migration and urbanization. We further examined the structures of rural and urban employment, stressing the increasing informalization of employment in both rural and urban areas and significant unemployment in the latter, particularly among urban *hukou* holders.

Whenever possible we associated Marx's different components of the industrial reserve army to China's statistical official categories of employment. We argued that capital accumulation, while drawing labor from the latent component found in China's agriculture to form the active industrial army, also "recycled" part of it as relative surplus population in the form of the floating and the stagnant layers, through the rapid use and substitution of rural migrant workers' generations and the proliferation of "self-employment" and small private enterprises, which are strongly associated with the domestic industry and domestic/personal services. As the latent component was reduced, its transformation into active army and floating and stagnant components occurred through the rural-urban cleavage, forming a multi-layered labor market structured by the intercrossing of both hierarchies. We also discussed that the special status of rural land is a modifying circumstance in Marx's general law of capital accumulation in China, as the latter proceeds without generating official pauperism due to peasant-workers' reintegration in the peasant household when downgraded from other layers of the industrial reserve army, performing agricultural labor if still fit and sharing the household real income.

We considered how the multi-layered labor market in China structures and finds correspondence in the wage scale of the country, while stressing the role of rural households' real income derived from farming as its floor. We presented the evolution of real wage behavior in China, in two broad tendencies – stagnation (or slow growth) from 1990 until mid-2000s followed by fast growth –, on the one hand, through the influence of China's industrial reserve army and its particular dynamics derived from the methods of proletarianization employed in the country, on the other hand, by considering class struggle in its relative autonomy from capital accumulation and the institutional changes that took place in China. We made the case that there was nothing natural on this floor, as China's agriculture experienced significant productivity growth over the period, far from being subsistence agriculture.

The repression of real income of supposedly independent commodity producers was the key to understand proletarianization in the country. Contrasting with the English classic case described by Marx, which relied in the expropriation of land or enclosures, proletarianization in China has, for most of the period, taken this path through exception, not the norm, and was underpinned by state policies aimed at extracting peasants' surplus product in a context of increased agricultural productivity. These policies were responsible for low and stagnant peasants' real income that provoked not only massive exodus from the countryside, but also set the base for the formation of the wages rate.

Through the intensification of class conflicts both in the countryside and in cities, these policies became increasingly unviable, leading to a shift in the sign of state policies regarding the real income of farmers and wages and social security, which responded to the rising real wages of the second period. We also considered recent trends modifying the process of proletarianization in the country from its incomplete character towards a full-fledged one, particularly through increased land seizures for urban development and for the implementation of the agribusiness model – which have been a major source of class conflicts in the countryside –, while stressing the penetration of distinct forms of capital-labor production relations in agriculture.

We analyzed the evolution of China's manufacturing employment and labor compensation costs over the last years, particularly of its export sector. We provided original estimates for dollar labor compensation costs in China by both extending in time the US Bureau of Labor Statistics' estimates that covered the 2002-2009 period – whose program of international labor compensation costs was terminated in 2009 – and by using new official data sets on urban private enterprises and rural migrant workers.

In the "outward" dimensions of the globalization of China's industrial reserve army, we discussed how advanced countries' capitals access to this vast industrial reserve army in preferred terms, actively enabled by the Chinese party-state, has increased profitability through two crucial outcomes, by immediate and drastically reducing unit labor costs and by making China's industrial reserve army global, tilting the balance of power back home towards capital. We then considered the interplay of the opposite effects of these two outcomes – the "terms of trade effect" and the weakening of laborers' bargaining power – over real wages and working conditions in advanced countries. We claimed that the globalization of China's vast industrial reserve army has provided critical mass to break the historical connection between industrial production and consumer markets in advanced

countries that provided the material basis over which workers were able to conquer the construction of institutional links between productivity and real wage growth.

We portrayed the hegemonic narrative that in the 1990s consubstantiated a *Transatlantic Consensus*, encompassing both US and European neoclassical academics and media, in which trade with developing countries was deemed responsible for growing wage inequality in the US and unemployment in Continental Europe. We presented the neoclassical international trade theoretical framework that supported the *Consensus*, namely, the principle of comparative advantage, the HOS model and the factor price equalization theorem. Most of the discussion around the factor price equalization theorem during the 1990s dealt implicitly or explicitly with the equilibrium position of balanced trade and its effects in the US. The mechanism of adjustment to equilibrium and the impact on developing countries were in a large extent neglected. Notwithstanding, in the 2000s, the debate was significantly reshaped. The increased sophistication of Chinese exports and other developing nations to the US, coupled with the latter's massive trade deficit, brought new fissures to the debate in mainstream economics.

We then discussed how the hegemonic narrative consistently started to single out China from the debate of trade with developing countries, accusing the country of currency manipulation. As the impacts of China's trade on wages in advanced countries were stated in terms of distortions on the free international flows of commodities, we presented these accusations along with the expected free trade results of the *Transatlantic Consensus*, showing how these two stories interplayed with each other. We also portrayed the debate inside neoclassical economics of Chinese export sophistication. We pointed to the contradictions of the differentiated outcomes of the Consensus across advanced countries and the inconsistencies with the stylized facts observed in reality, considering both the predicted results for advanced countries and China.

By criticizing the core postulate of neoclassical theory of international trade and by affirming absolute costs as its ruling principle, we discussed how liberalization of trade and FDI, in the context of technological advancements and reduced transportation costs, have unleashed a global quest for reducing unit labor costs led by TNCs of central countries, which has underpinned the formation of a new international division of labor. Through offshoring and outsourcing, TNCs have prompted the conformation of global value chains that, on the one hand, was reflected in the internationalization of manufacturing productive processes

while, on the other hand, entailed the development of a set of mechanisms enabling TNCs to appropriate most of the surplus value produced through these chains.

In this context, China has become the prime destination for the internationalization of manufacturing productive processes due to its low labor costs – the condition *sine qua non* of its attractiveness –, the high direct productivity of its labor force and the productivity gains enabled by the whole of its productive structure – including its good infra-structure, the development of supplier and logistics networks, scale and cluster effects –, along with tax incentives provided by the state to international productive capitals. For becoming the center of gravity in attracting TNCs, China was transformed in the "factory of the world". China's manufacturing productive primacy was assessed by its manifestation in different dimensions, going from China's top position as recipient of greenfield FDIs and recently also of FDIs in general, its manufacturing export predominance in a diverse range of subsectors to its centrality to internationally fragmented manufacturing productive processes and the overreliance of advanced countries' consumer markets in China as foreign supplier.

One important result was to highlight that the compositional shift in the value of China's export towards ICT goods was not to the detriment of the absolute growth in value of its exports of traditional labor intensive manufacturing industries, in which the country kept being the main exporter. Even in the context of productive delocalization to other Asian low-wage countries, the value of their exports taken singly compared to that of China are just a small fraction of the latter. Notwithstanding, it is on ICT final goods that China presented an overwhelming predominance, up to the point in which the country can be considered as virtually being the single supplier of the US for personal computers.

We then assessed the deflationary effects emanating from China's exports on manufacturing wage goods in advanced countries, particularly in the US, resulting in lower costs of reproduction of labor-power in advanced economies. In contrast, the globalization of China's industrial reserve army has contributed to the weakening of labor's bargaining power in the center. The transfer of manufacturing production to China has been manifested in direct competition with workers in advanced countries, weighting down the core of their active industrial armies, particularly affecting the organized sections. Job creation associated to China's integration in the global capitalist economy has occurred in services, especially big retail, in which workers were absorbed in increasingly precarious conditions, replenishing national industrial reserve armies beyond open unemployment. With a weakened working class and larger national industrial reserve armies – to which the globalization of China's

industrial reserve army was one of many reasons –, divide and rule strategies could be implemented more effectively. Recent expansions in US manufacturing employment through re-shoring have occurred in working conditions and payment terms closer to Walmart than those verified in the jobs that resisted offshoring and outsourcing.

As a result, the cheapening of manufactures produced in China destined to supply the consumer markets of advance economies was not translated in real wage growth. Although, unskilled workers in the center could buy more clothes or electronic goods produced in China, inflation of fundamental services, particularly health and education, as well as housing, have encroached real wages. The weakened bargaining power of advanced countries' unskilled workers, to which the globalization of China's industrial reserve army contributed significantly, not only hampered the capacity of workers to conquer wage increases that surpassed inflation, but the own inflation of health, housing and education can be seen as a byproduct of the weakened bargaining power of laborers. In a greater or lesser extent, the working classes of advanced countries have been failing to effectively resist the implementation of neoliberal policies, which dismantling the welfare state, increasingly passed the burden of the funding of education and health from the state to wages. Furthermore, wages were not only supposed to increasingly cover the costs of these services – once before non-profitable services due to their status of state-provided universal rights – but also to pay over and above their costs as health and education became fields for capital accumulation.

Notwithstanding, in as much as this globalization was predicated in transforming Chinese peasant-workers in the backbone of the active industrial army of the global economy, it has heightened class conflicts inside China, where peasants' and workers' clashes have been expressed in fast rising wages and institutional changes since mid-2000s. If capital seems to be reinvigorated in his offensive over labor in advanced countries, the methods it has implemented created frictions and contradictions of their own. Chinese workers have increasingly opposed capital and achieved conquests, even if oppressed by an authoritarian state, proving that the labor movement in not dead in the neoliberal era. The sometimes almost spontaneous character of these conflicts, to which a single event might unleash a collective responsive through paralyzation of production, demonstrates not only the growing discontent among workers, but also that their concentration in large numbers on a single place facilitates collective action, putting them in a structurally better condition to oppose capital.

APPENDIX A. MEASURING AGRICULTURAL EMPLOYMENT AND ITS ENTANGLEMENTS WITH URBAN DATA

China's statistics on employment in the three broad economic sectors are produced by the annual sample survey on labor force (labor force survey, LFS) benchmarked on decennial population censuses. For our period of interest, 1990 to the beginning of the 2010s, the two relevant population censuses are the 2000 and the 2010. Censuses data, at least the 2000 one, have been criticized as being biased, overestimating agricultural employment and underestimating employment on the secondary and tertiary sectors (BANISTER, 2005). The problem seems to be a result of how censuses treat the partial proletarianization of agricultural workers. In the academic literature in English, alternative measures of agricultural employment[136] have been used relying on official statistics originated by administrative data, which for urban units come from *The Reporting Form System on Labour Wage Statistics* (RS), for private enterprises and self-employed individuals, from the SAIC's records, and for TVEs, from the MOA.

The problems about agricultural employment statistics are not only those of reliability – which brings important repercussions on the discussion of the dual economy –, but also their connection to the common estimates of the urban informal labor market. Since administrative data do not provide direct figures on agricultural employment under the household responsibility system and on a large proportion of informal laborers, measures on such categories are inextricably intertwined as they appear as residual employment when contrasting data from both statistical systems.

If the sample surveys revised in light of censuses provide data on rural and urban employment, and administrative data has its employment categories differentiated for both the rural and the urban world, then one could easily jump to the conclusion that the rural residual is the agricultural employment and the urban residual is the informal urban labor market. For instance, Huang and Gao (2013, p.55), by subtracting all rural employment categories provided by MOA and by SAIC's records from total rural employment, construct an estimate of agriculture employment of 196 million workers in 2010, representing 26% of China total employment. In contrast, for the same year, data provided by the LFS in light of the 2010

[136] We are using the term agriculture as a synonym for primary sector, which encompasses also animal husbandry, fishery and forestry.

census presents a total of 279 million persons employed on the primary sector, 37% of China's employment, while the 2010 census itself shows 48,3%, or 367,6 million[137].

Somewhere else (MAJEROWICZ, 2012a; MAJEROWICZ, 2012b), we provided the measures of the LFS and the rural statistical residual for the period 1990-2010 as the lower and higher limits of the interval in which agricultural employment actually is. Nevertheless, such a huge margin of 11 percentage points, representing as much as 83 million people, is highly unsatisfactory. Moreover, this broad interval could affect qualitatively the construction of estimates on surplus labor – which seems to be the obsession of scholars when discussing the Chinese labor market in the context of the dual economy model.

Digging deeper in what could constitute the source of such an enormous discrepancy, we came to realize that although censuses and sample surveys might overestimate employment in the primary sector, the rural residual obtained as mentioned above is even more problematic as an estimate of agricultural employment. On more time, the problem relates to the question of what actually constitutes urban areas in Chinese statistical systems. Although censuses have refined their definition of urban areas over the last decades, urban defined areas still encompass substantial spaces dedicated to agricultural activities. Chan (2009), Maddison (1998), Ghose (2005), Herd, Koen and Reutersward (2010) and Cartier (2011) have all noted the presence of agriculture in China's statistics on urban employment, although in different degrees.

Ghose (2005) analyses the sectorial composition of urban units and urban private enterprises and self-employed individuals, showing that some of them are engaged in primary sector activities[138]. Through that expedient, the author finds a relative small and declining number of agricultural employed persons in urban areas, encompassing 7,8 million in 1990 down to 4,7 in 2002 (GHOSE, 2005, p.28). Nevertheless, this is not the problem we are pointing out, since: *i*) these numbers wouldn't suffice to cause huge distortions; *ii*) their observation is not derived from the problems in the definition of urban areas; and *iii*) these persons are not farmers under the household responsibility system.

Moreover, Ghose (2005) adds these figures on agricultural employment in urban private enterprises and self-employed individuals and in urban units (series C plus series E of

[137] The 2010 census proportion of agricultural employment was derived by Wu (2014, p.39, table 11), who presents the proportion of non-agricultural employment given by the census. For the absolute figure, we multiplied the implied agricultural employment proportion by total employment given in CSY (2014).

[138] The series of employment in urban private enterprises and self-employed individuals by sector was discontinued for "farming, forestry, animal husbandry and fishery" in 2003.

table A.1) to those for "farming, forestry, animal husbandry and fishery" in the official series of "rural employment by sector" (discontinued for all sectors in 2005; series B of table A.1) to compose total employment in agriculture, which are actually the same numbers provided by the official series "employment by sector" (discontinued for all sectors in 2002; series A of table A.1) from 1994 to 2002. Before 1994, the latter series had the component "staff and workers by sector" (series D of table A.1) instead of "urban units by sector" (series E of table A.1).

Table A. 1 - Employment in Farming, Forestry, Animal Husbandry and Fishery in administrative employment official sectorial series (1990-2005)

(in millions)

	Employ-ment by sector (A)	Rural employ-ment by sector (B)	employment in urban private enterprises and individuals by sector (C)	staff and workers by sector (D)	employment in urban units by sector (E)	(A)-(B)	(C)+(D)	(C)+(E)
1990	341,17	333,36	0,006	7,80	-	7,81	7,81	-
1991	349,56	341,86	0,004	7,69	-	7,70	7,69	-
1992	347,95	340,37	-	7,58	-	7,58	7,58	-
1993	339,66	332,58	-	7,08	-	7,08	7,08	-
1994	333,86	326,90	0,054	6,80	6,91	6,96	6,85	6,96
1995	330,18	323,35	0,134	6,60	6,69	6,83	6,73	6,83
1996	329,10	322,61	0,177	6,17	6,31	6,49	6,35	6,49
1997	330,95	324,34	0,318	6,12	6,29	6,61	6,44	6,61
1998	332,32	326,26	0,434	5,46	5,63	6,06	5,89	6,06
1999	334,93	329,12	0,440	5,19	5,37	5,81	5,63	5,80
2000	333,55	327,98	0,405	4,94	5,16	5,57	5,35	5,57
2001	329,74	324,51	0,394	4,58	4,83	5,23	4,98	5,23
2002	324,87	319,91	0,414	4,30	4,55	4,96	4,72	4,97
2003	-	312,60	0,465	4,60	4,85	-	5,06	5,31
2004	-	305,96	-	4,38	4,66	-	-	-
2005	-	299,76	-	4,14	4,46	-	-	-

Sources: China Statistical Yearbook (CSY, several editions), China Labor Statistical Yearbook (CLSY, several editions).
Notes:
(1) Series (A) comes from table 1-6, "Employment by sector" of CLSY (2005, p.9)
(2) Series (B), for 1990 to 2003, comes from table 1-20, "Rural employment by sector and region" of CLSY (2004); and for 2004 e 2005, from the same table of CLSY (2005, 2006).
(3) Series (C) comes from table 5-17, "Number of employed persons in urban private enterprise and self-employed individuals at the year-end by sector" of CSY (2004).

Maddison (1998) also verifies these low figures on agricultural employment in urban data, though he arrives to this conclusion through a different process (series A minus series B of table A.1):

> It should be noted that there is a small amount of agricultural employment which is classified as urban (about 6.8 million in 1995); the number of people involved can be seen by comparing the total number engaged in agriculture, forestry and fishery on p. 92 of the 1996 Yearbook, with the figures on p. 354 for the rural social labour force. (MADDISON, 1998, p.77).

The official series on employment by sector and rural employment by sector in farming, forestry, animal husbandry and fishery – or just "agriculture" – (series A and B of table A.1) have been harshly criticized by Rawski and Mead (1998), for who the numbers seem to be "derived as residuals from information about population, labor force participation rates, and non-farm employment in rural areas." (RAWSKI & MEAD, 1998, p. 767). This is one more reason for us to stick with the primary sector figures from censuses and sample surveys, as they are an actual attempt to count and estimate the number of farmers and, since its methodology is known, one can at least establish what kind of bias the measure might suffer.

For the period 1998-2008, Herd, Koen and Reutersward (2010) present significant numbers for agricultural employment in urban areas. The authors estimate that, in 2005, 39,9 million persons were working in agriculture in urban areas (HERD, KOEN & REUTERSWARD, 2010, p.9), representing 14,6% of urban employment, using LFS' unrevised statistics on both primary sector and urban employment for 2001 to 2008. Their measures were constructed by discounting rural employment in agriculture (series B of table A.1) from LFS estimates on primary sector employment. The authors note that these estimates depend "if the figure for the amount of primary sector employment in rural areas is taken as correct" (HERD, KOEN & REUTERSWARD, 2010, p.9). Considering the revised figures for employment in urban areas and in the primary sector from 2001 onwards, in light of the 2010 census, for 2005 the estimate proposed by the authors drops to 34,7 million, corresponding to 12,2% of urban employment.

By estimating agricultural employment in urban areas, the authors attempt to account for part of the urban statistical residual, obtained by the contrast of LFS data on total urban employment with urban data on employment from the administrative system. We reproduced Herd et Al (2010) estimates, but considering a different and broader period, from 1990 to

2005 – in contrast with their analysis for 1998 to 2008 – and we found some interesting results, as shown in table A.2. In table A.2, the grouping of official categories is different than that presented in China's official publications, as Herd, Koen and Reutersward (2010) lump together engaged persons in "urban private enterprises" with "urban units", separating the former from "self-employed" registered at the SAIC. In discounting these re-arranged official urban categories along with the estimated agricultural employment in urban areas, they present the category "other workers".

Table A. 2 – Estimates of urban employment by sector according to the methodology proposed by Herd, Koen and Reutersward (2010)

(in millions)

	Primary (1)	Rural agricultural (2)	Total urban (3)	Urban agriculture (1 - 2)	registered urban self-employed (4)	total of urban employees (5)	Other urban workers (3 - (1 - 2) - 4 - 5)
1990	389,14	333,36	170,4	55,8	6,1	145,0	-36,5
1991	390,98	341,86	174,7	49,1	6,9	149,8	-31,1
1992	386,99	340,37	178,6	46,6	7,4	153,0	-28,4
1993	376,80	332,58	182,6	44,2	9,3	154,4	-25,3
1994	366,28	326,90	186,5	39,4	12,3	155,8	-20,9
1995	355,30	323,35	190,4	32,0	15,6	157,8	-14,9
1996	348,20	322,61	199,2	25,6	17,1	158,3	-1,8
1997	348,40	324,34	207,8	24,1	19,2	157,7	6,9
1998	351,77	326,26	216,2	25,5	22,6	136,6	31,5
1999	357,68	329,12	224,1	28,6	24,1	131,6	39,8
2000	360,43	327,98	231,5	32,4	21,4	128,5	49,2
2001	363,99	324,51	241,2	39,5	21,3	126,5	53,9
2002	366,40	319,91	251,6	46,5	22,7	128,7	53,7
2003	362,04	312,60	262,3	49,4	23,8	133,5	55,5
2004	348,30	305,96	272,9	42,3	25,2	139,3	66,1
2005	334,42	299,76	283,9	34,7	27,8	146,8	74,6

Sources: China Statistical Yearbook (CSY, several editions), China Labor Statistical Yearbook (CLSY, several editions).
Notes:
(1) Series 2 (rural agricultural), for 1990 to 2003, comes from table 1-20, "Rural employment by sector and region" of CLSY (2004); and for 2004 e 2005, from the same table of CLSY (2005, 2006).
(2) "Total of urban employees" is composed by urban private enterprises and urban units.
(3) Data on urban units' employment is available from 1994 onwards. For the period 1990-1993, China Statistical Yearbook provides data on "staff and workers", which encompassed the great majority of employment in urban units. In 1994, "staff and workers" represented 97,3161% of urban units' employment. We estimated urban units' employment from 1990 to 1993 dividing "staff and workers" employment by the mentioned percentage.

Our results for the estimated urban agricultural employment and "other workers" are only equal to the authors for the years 1998, 1999 and 2000. From 2001 onwards our estimates are different due to the revision in the series "primary" and "total urban employment" generated by the 2010 census. Nonetheless, the most important result is relative to the period prior to their analysis. As we note on the column "other workers" – which would be the urban statistical residual discounted by agricultural employment in urban areas –, the estimates are negative from 1990 to 1996. Even if we took into consideration the fact that agricultural employment in urban units, urban private enterprises and urban self-employed is being double counted by their procedure, for these are small figures, we would still have negative results. Thus, for the broader period of time when the urban statistical residual begins to appear, in 1990, this method seems unfit. The authors try to partially explain why total urban employment is significantly larger than the administrative data by pointing that the definition of urban areas encompasses what should have been deemed as rural areas:

> Urban development has tended to sprawl and includes areas that are predominately rural. As a result, the areas considered as urban are large, even with the more realistic definitions of the urban geographic sector adopted by the NBS in 2006. The size of the agricultural sector in urban areas varies across the country, but amongst the 53 metropolitan areas identified by the OECD, only two have an agricultural share of below 10% and a further 13 have agricultural shares of between 10% and 30%. (HERD, KOEN & REUTERSWARD, 2010, p.9)

Meanwhile, what the negative results derived from the method above could suggest is that the urban areas should have been even more enlarged to comprehend that extra agricultural employment. The authors also remark that this is not the only estimate provided by Chinese statistical sources, pointing out to the results obtained by LFS. In 2006, Herd, Koen and Reutersward (2010, p.9) show that the latter source estimated agricultural employment in urban areas as being 27% of urban employment.

In principle, this measure would be better suited, as total urban employment and its composition supposedly rely on the same urban areas definition, while the rural agricultural employment seems to be derived from administrative data[139]. It should also be noted that the

[139] The once again problem with the different urban definitions is illustrated by one of the tables that show the composition of urban employment status by age and sex in CLSY. Between 2002 and 2004, urban employment in such table was composed by i) urban units; ii) TVEs (!); iii) agriculture; iv) private sector employee; v) private employer; vi) self-employed; vii) others. Although TVEs were only 3,7% of urban employment in 2004, agriculture was estimated in 14% (CLSY, 2005, table 1-61). One cannot see by this table, but it might be the case, also, that part of private enterprises and self-employed individuals that are registered as urban are

latter series was terminated in the reference year of 2005, while we found the figure presented by Herd, Koen and Reutersward (2010) in the table "sector composition of urban employment by age and sex" (CLSY, 2007, table 1-60), which begins in the reference year of 2002. In table A.3 we present the proportions of agriculture in urban areas provided by LFS, with the corresponding absolute numbers obtained when the proportions are applied to total urban employment:

Table A. 3 – Primary sector employment in urban areas

(urban employment in millions, primary sector in urban employment in percentage and in millions)

Year	Urban employment (A)	Primary sector in urban employment (B)	(A * B)
2002	251,6	18,7%	47,0
2003	262,3	16,4%	43,0
2004	272,9	15,5%	42,3
2005	283,9	24,6%	69,8
2006	296,3	27,2%	80,6
2007	309,5	5,8%	18,0
2008	321,0	5,4%	17,3
2009	333,2	9,0%	30,0
2010	346,9	16,0%	55,5
2011	359,1	7,3%	26,2
2012	371,0	8,2%	30,4

Sources: China Labor Statistical Yearbook (CLSY, several editions).

The proportions of primary sector employment in urban areas and corresponding absolute figures present an erratic behavior. As urban areas definition was altered in 2006 and 2008, these changes might explain the abrupt increase and subsequent decline in the percentages in 2005 and 2007, as data of any reference year is processed in the subsequent

counted in census data as rural, while some of their rural administratively registered counterparts are deemed as urban, as the scheme proposed by Chan (2007, p.387) presented in Figure 1.3 of chapter 1 suggests. Unfortunately, we are not able to take these possibilities into account in our calculations. Beginning in 2005, the categories presented in the table discussed above were changed to i) employee; ii) employer; iii) self-employed; and iv) unpaid familial worker. Given the fact that we have only three years of data for TVE in urban areas, which represented small proportions, we also chose not to account for them.

one. Regarding the 2010 figure, if the data was produced by the 2010 census, this might be the motive why it is so discrepant in relation to the data immediately prior and after, which surely come from LFS. Also, these proportions have not passed through revision in light of censuses, consequently, we are not sure if they are only valid in relation to unrevised numbers or not.

The acknowledgement that urban statistical areas defined in censuses and sample surveys comprise high proportions of agricultural employment can be also found in Chan (2009):

> More recent and detailed research by scholars using the 2000 Census data has revealed that there is a considerably higher percentage of agricultural employment among the urban population in 2000 in China than in India, regarded as a more typical developing country. China had about 21% of the workers living in the urban statistical areas working in agriculture, compared to about 7-13% in India. Since genuinely urban areas would not have more than a small proportion of their workers farming, this could imply overly generous urban boundaries, or possible overcounting of migrants in the destinations (mostly in city districts) in 2000 Census, as I have pointed out elsewhere. (CHAN, 2009 p.3)

Analyzing censuses data, Cartier (2011) provides figures on farmers in urban areas. According to the author, the 1990 census counted 38 million farmers working in urban areas[140] (22% of urban employment), while the 2000 census, 46 million (20%)[141]. Cartier also provides data of the 2005 mini-census (1% population sample survey), which estimated 77 million farmers in urban areas (27,1% of urban employment). We should also note that, if we discount the 1990 figure from the urban agricultural residual, we will also have a negative number, in the same way as the methodology proposed by Herd, Koen and Reutersward (2010). As we mentioned before, censuses probably overestimate agricultural employment, which would also be valid for agricultural employment in urban areas:

> […] the census [2000] asked about employment only in the last week of October 2000, the week just prior to the date the census was taken. The census surely detected individuals who work in agriculture during peak planting and harvest

[140] It should be noted, nevertheless, that the author provides three different figures as being the 1990 census data for farmers in urban areas: 37 million (CARTIER, 2011, p.29); 38 million (CARTIER, 2011, p.30, note 8); and 39 million (CARTIER, 2011, p.31). We chose the mean figure.

[141] The author also presents two diverse figures as being the 2000 census counting of farmers in urban areas: 42 million (CARTIER, 2011, p.29) and 46 million (CARTIER, 2011, p.31). We chose the second figure as a proportion of urban employment it is the closest to data provided by Chan (2009)

> seasons, but nor the rest of the time, and these workers were counted as employed in agriculture during the peak autumn harvest season. The way employment questions are asked in China's censuses and the instructions for filling out the census forms apparently bias rural households respondents in favor of reporting all household members as agricultural workers, even if some adults in the family actually work on nonagricultural sectors of the economy most of the time. (BANISTER, 2005, p.10)

So far, we seem to have two distinct problems that are nevertheless interrelated. The first is to discern which one is the best estimate on agricultural employment nationwide. The second is how we should split it between rural and urban areas, as they affect the measures of the urban informal employment.

A.1 NATIONWIDE EMPLOYMENT IN AGRICULTURE

We have already presented four different measures of agricultural employment, three being directly provided by official statistics (censuses, LFS, and sectorial series for agriculture/"administrative") and one that seems to be implied when the statistical systems are confronted, the rural statistical residual. While Cartier (2011) presents both censuses and LFS measures, he seems to be inclined to accept censuses counting as a better measure, as he states that "the annual reports [LFS] systematically underestimate the proportion of the primary sector" (CARTIER, 2011, p.28). Ghose (2005) uses the official sectorial series on agriculture, although through the recomposing of it by the administrative urban components and rural employment in agriculture.

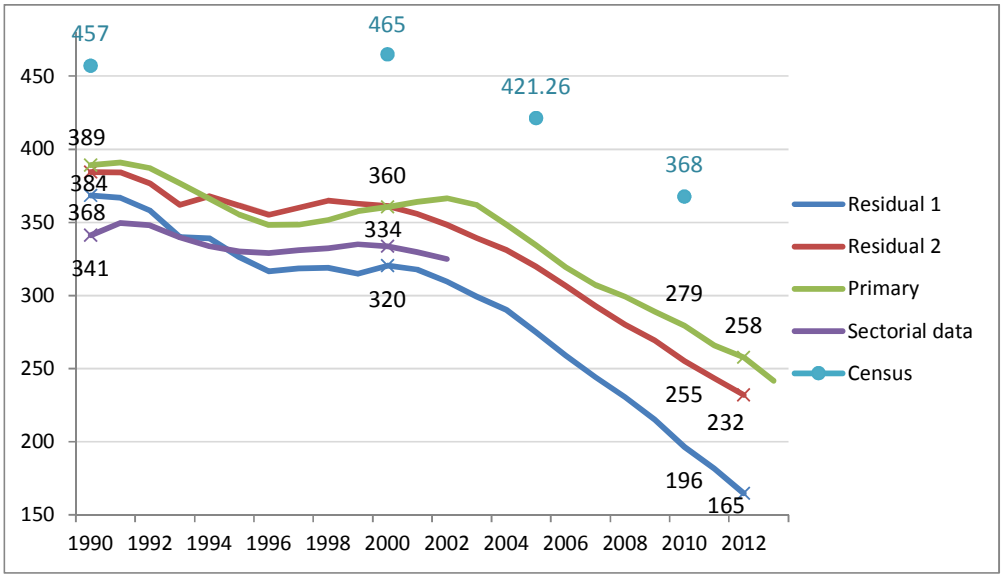
Huang and Gao (2013) employ the rural statistical residual. In relation to the latter, regardless of the question of urban agricultural employment, it should be noted that it is very likely that the figures of rural employment provided by SAIC's records are already taken into account into TVEs data (see appendix B.1). If this is true, then the residual should be calculated only by the subtraction of TVEs data from rural total employment. For that reason, we are including this modified rural statistical residual ("residual 2") as our fifth measure of agricultural employment (graph A.1).

In 1990, the measures were relatively close to each other, with exception of the census. Thus, employment in agriculture as a proportion of total employment, according to the five measures was: 70,6% (census), 60,1% (LFS, series "primary"), 59,4% (residual 2), 56,9% (residual 1) and 52,7% (official sectorial series on agriculture). Two decades of intense labor transfer between sectors – in a context of incomplete proletarianization – and

urbanization achieved by migration and by reclassification of rural into urban areas, had as result not only the shrinkage of employment in agriculture, but also the dispersion of the analyzed measures, as they relate differently with the concepts of urban areas and have different treatment of peasant-workers. According to the four remaining measures, as official sectorial data was terminated in 2002, employment in agriculture as a proportion of total employment was, in 2010, 48,3% (census), 36,7% (LFS, primary), 33,5% (residual 2) and 25,8% (residual 1). The difference between census data and the lowest measure from 1990 to 2010 grew from 116 million persons to 171 million!

Graph A. 1 – Measures of agricultural employment

(number of employed persons in agriculture according to residual 1, residual 2, primary sector, agriculture official sectorial employment and censuses, in million)



Sources: China Statistical Yearbook (CSY, several editions), China Labor Statistical Yearbook (CLSY, several editions), Xu (2014), Cartier (2011).

Notes:

(1) "Residual 1" was obtained by discounting TVEs employment and employment in rural private enterprises and self-employed individuals registered at the SAIC from total rural employment.

(2) "Residual 2" was obtained by discounting TVEs employment – individually-owned TVEs included – from total rural employment.

(3) "Primary" refers to estimates on primary sector employment by the Labor Force Survey.

(4) "Sectorial data" comes from table 1-6, "Employment by sector" of CLSY (2005, p.9)

(5) "Census" was obtained from Wu (2014) and Cartier (2011). For 1990, 2000 and 2010, we used the proportion of agricultural employment derived from Wu (2014, p.39, table 11), who presents the proportion of non-agricultural employment given by the census. For the absolute figure, we multiplied the implied agricultural employment proportion by total employment given in CSY (2014). For the 2005 mini-census, we used data provided by Cartier (2011, p.33, table 7).

From what we discussed, censuses data are likely to overestimate agricultural workers, as they seem to have a bias in treating semi-proletarianizated peasants as if they were strictly peasants. As for the official series on agricultural employment – the one that was composed by agricultural employment in urban units and urban private enterprises and self-employed individuals plus rural agricultural employment –, it not only disregarded agricultural urban employment outside administrative data, but also had its rural component likely obtained by residual, as criticized by Rawski and Mead (1998).

Concerning the rural statistical residuals, they should not be considered as estimates of agricultural employment – even if the series residual 2 is very close to LFS estimates on primary employment –, for they disregard urban agricultural employment, ignoring that a significant share of households under the household responsibility system are being counted as urban employment. Consequently, these households are captured in the urban statistical residual, which, by its turn, does not account only for the urban informal labor market, as noted by Herd, Koen and Reutersward (2010) – that means, as long as we don't consider employment under the household responsibility system as part of the informal labor market. Analogously, why should we discard a priori the existence of non-agricultural irregular laborers in the rural statistical residual? It is very likely that there are non-registered laborers outside agriculture in rural areas working as self-employed and even in large TVEs.

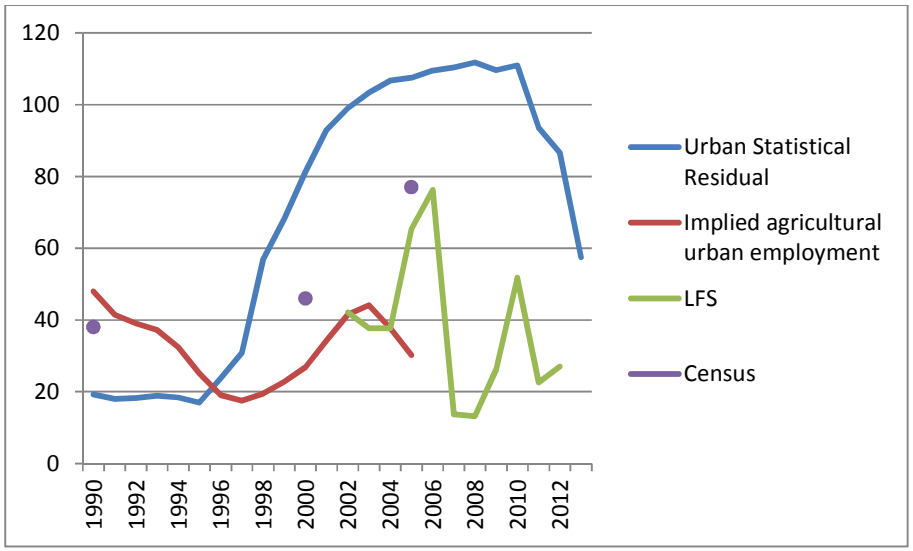
For the above mentioned reasons, we argue that the primary sector series provided by LFS and revised in light of censuses is the preferable one. We now turn to the second problem:

> Labour markets developments in China cannot be fully understood, however, without distinguishing between its rural and urban components and further dividing the urban market into subsectors. Indeed, people wanting to move from the rural to the urban market face major obstacles and the conditions enjoyed by employees in the relatively protected SOE and government sectors differ from those elsewhere. Quantification of these movements, however, raises substantial problems. The main difficulties stem from the failure of the aggregate employment data for rural and urban areas to distinguish between employment in the primary, secondary and tertiary sector. Given that a substantial, but unknown, proportion of urban workers are in agriculture, this complicates analysis of the urban labour market. In addition, the number of informal self-employed workers is difficult to measure. (HERD, KOEN & REUTERSWARD, 2010, p.158)

A.2 AGRICULTURAL EMPLOYMENT IN URBAN AREAS AND THE INFORMAL LABOR MARKET

Graph A. 2 – Measures of urban agricultural employment and residual

(number of employed persons in the urban statistical residual, in the implied agricultural urban employment adjusted for agricultural employment in urban official categories, in urban agricultural employment estimated by the labor force survey adjusted for agricultural employment in urban official categories and in urban agricultural employment reported by the 1990 and 2000 censuses and estimated by the 2005 mini-census, in millions)



Sources: China Statistical Yearbook (CSY, several editions), China Labor Statistical Yearbook (CLSY, several editions), Cartier (2011)

Notes:

(1) "Urban statistical residual" was obtained by discounting employment in urban private enterprises and self-employed individuals and urban units' employment from total urban employment. Data on urban units' employment is available from 1994 onwards. For the period 1990-1993, China Statistical Yearbook provides data on "staff and workers", which encompassed the great majority of employment in urban units. In 1994, "staff and workers" represented 97,3161% of urban units' employment. We estimated urban units' employment from 1990 to 1993 dividing "staff and workers" employment by the mentioned percentage.

(2) "Implied agricultural urban employment" was obtained by subtracting rural agricultural employment – for 1990 to 2003, comes from table 1-20, "Rural employment by sector and region" of CLSY (2004); and for 2004 e 2005, from the same table of CLSY (2005, 2006) – from LFS' primary employment estimates and further subtracting: *i*) for 1990 to 1993, staff and workers employed in agriculture and urban private enterprises and self-employed individuals in agriculture; *ii*) for 1994 to 2003, urban units' employment in agriculture and urban private enterprises and self-employed individuals in agriculture; *iii*) for 2004-2005, urban units' employment in agriculture.

(3) "LFS" series was obtained by applying the proportion of agricultural employment in urban areas given by CLSY on total urban employment and, from the latter result, discounting: *i*) for 2002-2003, urban units' employment in agriculture and urban private enterprises and self-employed individuals in agriculture; *ii*) for 2004 to 2012, urban units' employment in agriculture.

(4) "Census" estimates for 1990, 2000 and the 2005 mini-census on urban agricultural employment were obtained in Cartier (2011).

After assessing the measures of agricultural employment in urban areas, we came to the conclusion that all of them are extremely problematic. Censuses count on agricultural urban employment is probably overreported; LFS proportions of agriculture in urban employment behave erratically, which might be related to changing definitions of urban areas; and Herd, Koen and Reutersward (2010) procedure of estimation is a derivation from a highly questionable series, rural agricultural employment by sector. Also, both the available estimates for the beginning of the 1990s led us to negative results when discounted from total urban employment. Graph A.2 illustrates the urban statistical residual and the measures of agricultural urban employment provided by censuses, LFS and implied in the contrast of LFS estimates on primary employment and the official administrative series on rural agricultural employment as proposed by Herd, Koen and Reutersward (2010) which we named "implied agricultural urban employment". The latter series along with the LFS estimates on agricultural employment in urban areas were adjusted by discounting agricultural employment in urban units and urban private enterprises and self-employed individuals, for *i*) these laborers are not under the household responsibility system; and ii) they would be counted twice in urban employment structure.

Until 1995, the urban statistical residual was stable near 20 million employed persons. It began to grow in 1996, although it was only when the laid-off were statistically disconnected from their former work units, in 1998, that it entered in a fast paced growth trajectory until the beginning of the 2000s. After stabilizing near 110 million persons in the second half of the 2000s, the residual started dropping substantially. From 2012 to 2013, it felt in 29,2 million persons, which should be substantially explained by the incorporation of large TVEs in urban units' data without total urban employment responding for such massive inclusion of workers. If these laborers were already captured in urban total employment, then, from 2013 onwards, the inconsistencies between both statistical systems were attenuated due to the inclusion of laborers in large TVEs in administrative urban data. In the latter scenario, measures on rural non-agricultural employment by residual prior to 2013 would be extremely inappropriate, as we would be discounting a large chunk of TVE employment unduly from rural employment.

Whereas Herd, Koen and Reutersward (2010) state that urban defined areas are large, encompassing substantial agricultural workers, Wang and Wan (2014) argue that urban total employment has been underestimated by censuses and LFS and rural total employment overestimated. The authors claim that censuses omit a large amount of rural migrant workers.

One of the reasons for that might be, according to them, the omission of migrants which live at their workplaces or temporary nonresidential places, as basements of buildings (WANG & WAN, 2014, p.37). If these migrants are really omitted, then the distortions on statistics should be massive, as the extent of such facilities are so widespread to the point that Pun and Smith (2007) characterize it as being the dormitory labor regime in post-socialist China:

> In new global factories, the dormitory labour regime has been extended to the majority of production workers and is the norm. It is now more systemic and extensive. Moreover, the Chinese dormitory labour system applies to companies irrespective of product characteristics, seasonality, location specificities or employer preferences. […] Workers are typically single, migrant, young and disproportionately female. (PUN & SMITH, 2007, p.32)

For Wang and Wan (2014), other possible reasons for the omission of migrant workers would be: i) migrants who work close to their rural homes and come back home frequently, as well as migrant workers living in urban fringes that are counted as rural areas; ii) some unprofessional surveyors; and iii) the definition of urban population requiring people to be living in the area for more than six months. For we assume that urban areas are largely defined, the first possibility seems minor. Probably the main distortions would come from omitting workplaces of residence and the definition of urban population, since it is well documented that huge amounts of migrant workers are seasonally employed in agriculture during peak planting and harvest seasons. In adjusting urban total employment, the authors propose that the official numbers should be enlarged in 31,6 million, in 2007, up to 47,2, in 2012.

Considering that the urban statistical residual might have a bias to underestimate informal employment due to the omission of large numbers of migrant workers in the total urban workforce, as well as a bias to overestimate informal employment for the large amounts of farmers under the household responsibility system in urban areas, one cannot know which one would prevail without using a large set of assumptions, entailing substantial data manipulation. The more the assumptions needed the great the risk of creating a completely distorted picture of reality, which could be even worse than the one painted by official statistics. Not to mention that if aggregate official census data were to be reconciled with administrative data, urban unemployment rates should be estimated, as the official ones are not to be taken seriously at all. Thus, this would also mean some more assumptions in the treatment and manipulation of the residual.

Thus, we highlight to the reader that our estimates for nationwide categories of employment are much more reliable than our attempt to present it for the urban and rural labor markets separately. And due to the many problems in China's official statistics, all attempts to separate the formal, informal and agricultural employment under the household responsibility system in the rural and urban markets – and unemployment for the latter – are a priori highly prone to be criticized as it is impossible to do so without many strong suppositions.

Since many rural to urban migrant workers are being probably counted as rural workers in censuses and LFS data, as well as many farmers under the responsibility system are counted as urban instead of rural workers, we will assume that these biases offset each other or that the resultant is minor and can be disregarded. Taking in consideration that our modified rural statistical residual (residual 2 in graph A.1) is quite close to the measure of primary employment from LFS and censuses, we will take it as a proxy of agricultural employment when dealing with the rural employment structure. This means that we are assuming that there is no employment under the household responsibility system in urban areas and no irregular employment outside agriculture in rural areas, two quite problematic assumptions. Analogously, for urban areas, we will consider all the statistical residual as being informal urban employment.

APPENDIX B. SELF-EMPLOYED INDIVIDUALS AND PRIVATE ENTERPRISES IN RURAL AREAS

B.1 RURAL NON-AGRICULTURAL EMPLOYMENT CATEGORIES: OVERLAP OR MUTUAL EXCLUSION?

The dispersion of the responsibility for the production of employment data in distinct governmental departments – in the case of rural non-agricultural employment being both at MOA's and SAIC's auspicious – and the conceptual entanglement of the statistical categories pose serious problems for data analysis. We contrasted data from the two mentioned sources for private enterprises and self-employed individuals in table B.1.

For self-employment and private TVEs, MOA's data is significantly higher than SAIC's registers. The combined difference of self-employment and private enterprises between both sources has been expressive and most of the time growing, giving room for divergences that can be as high as 63,5 million workers. Consequently, depending on the treatment given to such categories in the construction of the employment structure, it is possible to be significantly over or undercounting laborers. Thus, what can be seen by many as a mere detail or unnecessary preciosity is justified in the massive distortion that it can create in the employment analysis if not properly addressed.

Are these mutually exclusive groups of enterprises? If so, what determines whether such enterprises should register on SAIC or be under the auspicious of MOA? In the case that the categories overlap, are SAIC's registers totally contained in MOA's TVEs data or just partially? And why are not all individual-owned and private TVEs registered at the SAIC?

The academic literature in English evidencing such problem is scarce and contradictory. Highlighting the issue when analyzing 2002 data, Huang (2008) states:

> Notice also that the TVE [total] employment reported by CYS [for 2002], 132.9 million, matches exactly with the data from the Ministry of Agriculture. Thus, both publications are based on the same data source, but they report the employment data differently. […] From the reporting of CYS, 14.1million in the rural private-run enterprises and 24.7 million in the rural individual businesses are not included in the 132.9 million total. One possibility, of course, is that this is a reporting error. Another possibility is that CYS data refer to those stand-alone rural private-run and individual businesses that do not simultaneously carry a TVE label (and, therefore, they are outside the coverage of Ministry of Agriculture data). If this is the case, the size of the rural private sector is even larger than that reported by Ministry of Agriculture. Thus, the true rural private sector consists of rural private TVEs and stand-alone rural businesses. (HUANG, 2008, p. 106-107)

Table B. 1 – Discrepancies in employment between rural private enterprises and rural self-employed individuals with the corresponding TVEs' categories (1985-2011)

(in millions)

Category/ Year	Rural Private Enterprises (1)	Private TVEs (2)	Difference (2-1)	Rural self-employed (3)	Individual-owned TVEs (4)	Difference (4-3)	Combined difference
1985	-	4,8	-	-	23,5	-	-
1986	-	8,3	-	-	25,6	-	-
1987	-	9,2	-	-	31,6	-	-
1988	-	9,8	-	-	36,8	-	-
1989	-	8,8	-	-	37,6	-	-
1990	1,1	8,1	**7,0**	14,9	38,6	**23,7**	**30,7**
1991	1,2	7,3	**6,1**	16,2	41,2	**25,0**	**31,2**
1992	1,3	7,7	**6,4**	17,3	46,8	**29,5**	**35,9**
1993	1,9	9,1	**7,3**	20,1	56,6	**36,5**	**43,8**
1994	3,2	7,3	**4,1**	25,5	53,9	**28,4**	**32,5**
1995	4,7	8,7	**4,0**	30,5	59,3	**28,8**	**32,8**
1996	5,5	24,6	**19,1**	33,1	50,9	**17,8**	**36,9**
1997	6,0	26,3	**20,3**	35,2	51,0	**15,8**	**36,1**
1998	7,4	26,2	**18,8**	38,6	50,9	**12,4**	**31,2**
1999	9,7	28,5	**18,8**	38,3	54,8	**16,5**	**35,3**
2000	11,4	32,5	**21,1**	29,3	57,3	**28,0**	**49,1**
2001	11,9	36,9	**25,0**	26,3	60,2	**33,9**	**58,9**
2002	14,1	35,0	**20,9**	24,7	59,8	**35,1**	**56,0**
2003	17,5	38,7	**21,2**	22,6	60,9	**38,3**	**59,5**
2004	20,2	42,5	**22,3**	20,7	61,9	**41,3**	**63,5**
2005	23,7	49,7	**26,0**	21,2	58,5	**37,2**	**63,2**
2006	26,3	54,9	**28,6**	21,5	56,4	**34,9**	**63,5**
2007	26,7	54,4	**27,7**	21,9	57,6	**35,7**	**63,4**
2008	27,8	-	**-**	21,7	-	-	**-**
2009	30,6	56,2	**25,6**	23,4	59,5	**36,1**	**61,7**
2010	33,5	56,5	**23,0**	25,4	60,8	**35,4**	**58,4**
2011	34,4	56,6	**22,2**	27,2	61,7	**34,5**	**56,8**

Sources: Own elaboration with data from CSY 2013, MOA (2003 *apud* Huang, 2008) and TVE yearbook (several editions). Individual-owned TVEs series for the period 2003-2011 was constructed according to appendix B.2.

Although total employment in TVEs (presented by CSY until its 2011 edition) was provided by the Ministry of Agriculture, the brief introduction of the section on employment and wages in CSY states that private enterprise and self-employment data come from the SAIC (CSY, 2011, 2013). Thus, it is not only a matter of reporting the same data source differently, since data on CSY come from the combination of two sources. Banister (2005), when analyzing the employment in the manufacturing sector, suggests that the rural self-

employed and rural private enterprises were probably included in TVE data. In this sense, the rural self-employed and the rural private enterprises would be, respectively, a subset contained in individual-owned TVEs and private owned TVEs:

> Among manufacturing workers in 2002, there were 21,35 million employees in private enterprises (saying qiye) or in individual or family enterprises (geti duzi qiye). Of those, 8,21 million were in the cities, while 13,14 were classified as 'rural', meaning noncity; it is likely that the latter group was included in 2002 TVE manufacturing employment and wage statistics. (BANISTER, nov 2005, p. 15)

In contrast with Banister (2005) and Huang (2008), Guangwen (2008) is categorical. The latter, while discussing data on small and medium enterprises and microenterprises, affirms that "the TVE category overlaps with that of private enterprises" (GUANGWEN, 2008, p.6). Notwithstanding, the author does not specify in which extent these categories overlap.

Due to the contrasting opinions on the relation between the discussed categories, we cannot be totally sure of one or another without further documentation, which none of the mentioned authors provide to sustain their positions. It is clear, however, that the statistics provided by the SAIC are underestimated, as the institution "estimates that its register of firms misses as many firms as it captures." (OCDE, 2005, p.82). The question whether the categories overlap or are mutually exclusive is fundamental to assess the size of the rural non-agricultural sector, as well as to try to quantify the remaining labor surplus in the countryside. As we needed to make a methodological choice to construct the rural employment structure, we assumed the position of Banister (2005) and Guangwen (2008).

B.2 Construction of employment in individually-owned TVEs series (self-employment TVEs) for 2003-2011

Regarding individually-owned TVEs, several changes were made in the category from 2003 onwards. For 2003 and 2004 data, there seems to be a definitional shift that provoked a notable break in the series between 2002 and 2003, for the employment dropped in 50%. Apparently, the category was split in "other TVEs businesses", as the latter was approximately equivalent in size to the so mentioned decline.

In the biennium 2005-2006, the category individually-owned TVEs disappeared while other TVE businesses almost doubled its size. For the period 2007-2011, the category other TVE businesses was excluded, and a category entitled individual industrial and commercial households TVEs was created. To address these modifications, we added both categories in 2003-2004 and used the other TVE businesses in 2005-2006 as being the individually-owned TVEs. Data for 2008 is missing due to the difficulty in accessing the 2009 China TVEs Statistical Yearbook.

Table B. 2 – Proposed adjustment for the self-employed in TVEs

(engaged persons and number of enterprises in individually-owned, other businesses, individual industrial and commercial households and adjusted series, in millions)

Year	Employment				Number of enterprises			
	Individually-owned	Other	Individual industrial and commercial households	Adjusted series	Individually-owned	Other	Individual industrial and commercial households	Adjusted series
2003	29,92	31,02		60,94	8,94	9,67		18,61
2004	31,69	30,26		61,95	8,59	10,07		18,66
2005	-	58,46	-	58,46	-	17,09	-	17,09
2006	-	56,39	-	56,39	-	17,45	-	17,45
2007		-	57,61	57,61		-	17,92	17,92
2008								
2009		-	59,55	59,55		-	20,89	20,89
2010		-	60,77	60,77		-	21,26	21,26
2011		-	61,73	61,73		-	21,99	21,99

Source: China TVEs Statistical Yearbook (several editions) and author's adjustments.

Although we were unable to access the 2013 TVEs yearbook, we know from the 2013 CLSY that individually-owned TVEs were completely excluded from TVEs data beginning in the reference year of 2012, provoking a major break in TVEs total employment.

B.3 ESTIMATES OF SELF-EMPLOYED TVES SECTORIAL COMPOSITION

China TVE Statistical Yearbook provides data on employment by ownership and by sector separately, although the publication does not offer data classified by both parameters simultaneously. Until 2006, sectorial employment in TVEs referred to the universe of all types of TVEs ownership. In 2007, sectorial data disregarded employment in individually-

owned TVEs or self-employed TVEs. Despite the fact that 2008 data included again the self-employed in the universe of sectorial data on TVEs, from 2009 onwards these enterprises were permanently dropped from sectorial data, while they were still considered in total TVE employment up to 2012.

Table B.3 exhibits the sectorial participation in total TVE employment. Given the relative stability of each sector's participation in total TVE employment from 2003 to 2006[142], as well as their relative stability from 2007 to 2011[143] (2008 excluded), subperiod when the self-employed were excluded from sectorial data although not from total employment, we constructed a rough estimate of sectorial participation in self-employed TVEs by contrasting the two subperiods. In order to produce these estimates, we assumed that the sectorial share of self-employed TVEs on total TVE employment remained constant from 2003 to 2011.

For the sectors in which sectorial participation in total TVE employment was invariant in each subperiod, we deducted the value of the second subperiod from the first, in percentage points, and assumed the result to be the sectorial participation of self-employed TVEs in total TVE employment. For instance, transportation and warehousing represented 6% of total TVE employment every year from 2003 to 2006, being afterwards reduced to 2% in 2007 and in 2009 up to 2011. Thus, we estimated employment in self-employed TVEs in transportation and warehousing to be 4% of total TVE employment throughout the 2003-2011 period. Whenever there was a variation of 1 percentage point in one or both subperiods, we subtracted the 2007 value from the 2006 one, using the series break as an estimate of sectorial employment in self-employed TVEs as percentage of total TVE employment.

Regarding sectorial employment in TVEs excluding individually-owned TVEs, we used the figures of the 2007-2011 subperiod as proxy for the whole 2003-2011 period. Just in the cases of manufacturing and electricity, gas and water, which experienced a 1 percentage point variation throughout the second subperiod, we used 2007 figures.

Finally, figures 1.5 and 1.6 exhibited in chapter 1 were constructed by mere proportional adaptation in the above mentioned percentages to totalize 100%, in order to have employment in TVEs excluding the self-employed and employment in individually-owned TVEs as their universe, respectively, instead of total TVE employment.

[142] When individual sectors' participation were stable or varied in no more than 1 percentage point.
[143] When individual sectors' participation were stable or varied in no more than 1 percentage point.

Table B. 3 – TVE employment by sector and estimated derived sectorial participation of self-employed TVEs on total TVEs employment

(employed persons, in % of total TVE employment and total in % and millions)

	Self-employed included in sectorial employment				Self-employed excluded from sectorial employment				Est. Self
Sector/Year	2003	2004	2005	2006	2007	2009	2010	2011	
Agriculture[1]	2%	2%	2%	2%	1%	1%	1%	1%	1%
Industry	58%	59%	59%	58%	45%	45%	45%	44%	13%
Minning	4%	4%	4%	4%	3%	3%	3%	3%	1%
Manufacturing	54%	55%	55%	54%	42%	41%	41%	41%	12%
Electricity, gas and water	-	-	-	-	0%	0%	0%	1%	-
Construction	10%	10%	10%	9%	5%	5%	5%	5%	4%
Quality rating TVEs	3%	3%	3%	3%	2%	2%	2%	2%	1%
Transportation and warehousing	6%	6%	6%	6%	2%	2%	2%	2%	4%
Wholesale and retail	12%	12%	13%	13%	4%	4%	4%	4%	9%
Accomodation and catering	6%	6%	6%	6%	2%	2%	2%	2%	4%
Catering	3%	4%	4%	4%	1%	1%	1%	1%	3%
Social services	3%	3%	3%	4%	-	-	-	-	3%
Resident services, other services and entertainment	-	-	-	-	1%	1%	1%	1%	
Other	2%	2%	2%	2%	1%	1%	1%	1%	1%
Total (%)	99%	100%	101%	100%	61%	60%	61%	60%	39%
Total (millions)	136	139	143	147	151	156	159	162	-

Source: China TVEs Statistical Yearbook (several editions).

Notes:
(1) Agriculture encompasses the whole primary sector, which includes forestry, husbandry and fishery.
(2) "Est. Self." stands for estimated self-employment. Sectorial employment in self-employed TVEs as a percentage of total TVE employment was estimated by deducting 2007 figures from 2006 data.
(3) Due to rounding, total employment in percentage and the industry subtotal in percentage are sometimes different than 100%.

APPENDIX C. THE SIZE OF THE STATE SECTOR IN TERMS OF LABOR ABSORPTION

To consider a broader definition of the state sector – including all controlled state enterprises – one needs to sum "state-owned units" and "state-owned and state-holding enterprises" and discount SOEs, since both categories include them. Until CLSY 2010, data on state-owned units was split into enterprises (SOEs), institutions, agencies and organizations, non-profit organizations and other, the latter two being negligible categories (CSLY, 2010, table 4-1). Therefore, we were able to construct the measure for employment in the broader definition of the state sector from 1999 to 2009 by using data on "employment in state-owned controlling share holding enterprises" [sic.] (for 2009 see CLSY, 2010, table 4-6) added to "employment in state-owned units" subtracted by "state-owned enterprises". Afterwards, CLSY editions ceased to present such data breakdown, and we could not find employment figures just for SOEs in both CSY and CLSY.

Table C. 1 – Employment in the state sector

(in millions and % of EAP)

YEAR	EAP	STATE-OWNED UNITS								SOE+ SHE	STATE SECTOR
		Total	Enterprises		Institutions (A)		Ag. & Org. (B)		(A) + (B)		
				% EAP		% EAP		% EAP	% EAP		
1999	728	85,7	48,6	6,7%	26,5	3,6%	10,6	1,5%	5,1%	59,8	96,9
2000	740	81,0	43,9	5,9%	26,4	3,6%	10,7	1,4%	5,0%	57,3	94,4
2001	739	76,4	39,5	5,4%	26,2	3,5%	10,7	1,4%	5,0%	53,3	90,2
2002	745	71,6	35,3	4,7%	25,8	3,5%	10,5	1,4%	4,9%	50,3	86,6
2003	749	68,8	32,3	4,3%	25,8	3,4%	10,7	1,4%	4,9%	46,9	83,4
2004	753	67,1	30,1	4,0%	26,1	3,5%	10,9	1,4%	4,9%	45,8	82,8
2005	761	64,9	27,3	3,6%	26,6	3,5%	10,9	1,4%	4,9%	42,9	80,5
2006	763	64,3	26,2	3,4%	27,1	3,5%	11,1	1,5%	5,0%	42,9	81,0
2007	765	64,2	25,5	3,3%	27,4	3,6%	11,3	1,5%	5,1%	42,9	81,7
2008	770	64,5	25,0	3,2%	27,9	3,6%	11,6	1,5%	5,1%	42,7	82,1
2009	775	64,2	24,1	3,1%	28,2	3,6%	11,8	1,5%	5,2%	37,6	77,7

Source: China Labour Statistical Yearbook (several editions)
Notes:
(1) "Ag. & Org." stands for "agencies and organizations".
(2) "SOE+SHE" stands for "employment in state-owned controlling share holding enterprises".
(3) The "state sector" was calculated by adding state-owned units' total to "SOE+SHE" and subtracting "enterprises".

For the period 2010-2012, we estimated employment in SOEs by residual, as employment in institutions and agencies and organizations tends to maintain a more or less

stable relation with the EAP (column (A) + (B) in table C.1). Using the proportion of employment in institutions and agencies and organizations in the EAP verified in 2009 (5,2%) as proxy, we estimated employment in the latter and discounted it from employment in state-owned units, providing an estimate for employment in SOEs. Estimates were not provided for 2013-2014 due to lack of access to CLSY corresponding editions, which provide data on employment in "state-owned controlling share hold enterprises" that are not available in CSY.

Table C. 2 – Estimates for employment in the state sector, 2010-2012

(in millions)

Year	EAP	State-owned units	Estimated inst., ag. & org.	Estimated SOEs	SOE+SHE	Estimated State sector
2010	784	65,2	40,8	24,4	37,8	78,6
2011	786	67,0	40,9	26,2	45,1	86,0
2012	789	68,4	41,0	27,4	42,2	83,2

Source: China Labour Statistical Yearbook (several editions)
Notes:
(1) "Inst., ag. & org." stands for "institutions, agencies and organizations".
(2) "SOE+SHE" stands for "employment in state-owned controlling share holding enterprises".
(3) The "estimated state sector" was calculated by adding "estimated institutions, agencies and organizations" total to "SOE+SHE".

APPENDIX D. AGGREGATE EMPLOYMENT AND HOURLY LABOR COMPENSATION COSTS IN MANUFACTURING

D.1 MEASURING AGGREGATE MANUFACTURING EMPLOYMENT

Manufacturing employment is presented in China's annual official statistics into the following categories: *i*) urban units; *ii*) urban private enterprises and self-employed individuals; *iii*) private enterprises and self-employed individuals; and *iv*) TVEs. Regarding private enterprises and self-employed individuals, it is impossible from China Statistical Yearbooks to separate manufacturing employment of private enterprises from self-employed individuals, as well as manufacturing urban private enterprises from urban self-employed individuals. One can obtain by residual rural private enterprises and self-employed in manufacturing, but not separate them.

As we discussed in appendix B.1, there is a possible overlap between rural private enterprises and self-employed individuals and TVEs. Although China TVE statistical yearbooks present breakdown for ownership and for sector, they do not present both breakdowns simultaneously. From 2007 onwards, self-employed TVEs were excluded from sectorial data (except for 2008). Banister (2013) was able to exclude these persons from manufacturing TVE data for the period 2002 to 2006, although without explaining how she implemented such procedure. The exclusion of self-employed TVEs from manufacturing data, in principle, would allow us to include the rural self-employed registered by SAIC in the aggregate series of manufacturing employment without any risk of double counting. Nonetheless, as they are presented together with rural private enterprises in China Statistical Yearbook, this would imply double counting the latter in the hypothesis of overlapping categories.

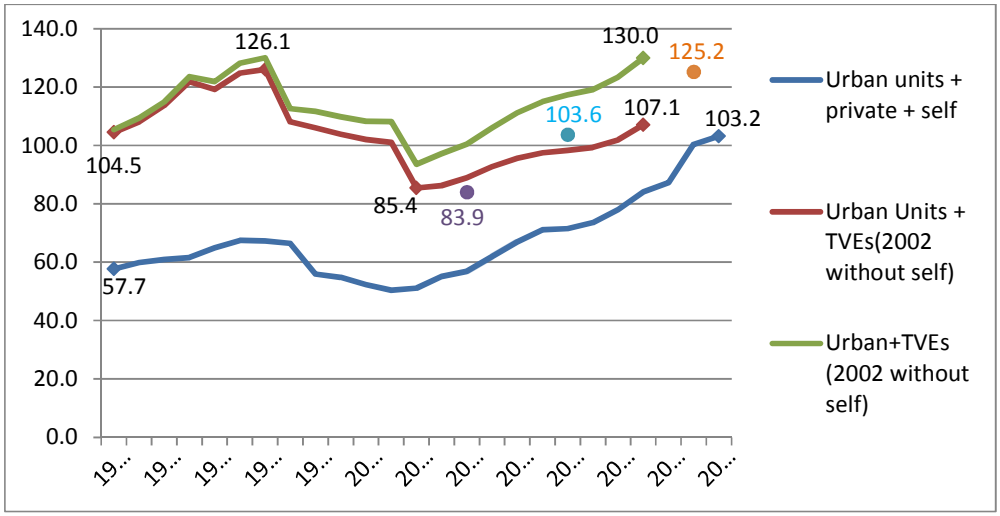
To avoid the possibility of partially or completely double counting the "rural self-employed and private enterprises", we can construct an aggregate manufacturing employment series composed by *i*) urban units, *ii*) TVEs and *iii*) urban private enterprises and self-employed individuals (series green from graph C.1, with self-employed TVEs excluded from 2002 onwards), for there is no overlap with urban units' data. Despite the facts that such series would in principle provide a more complete assessment of manufacturing employment based on official data and avoid the risk of double counting due to overlapping categories, two problems emerge when the objective is to use this aggregate series for calculating average

manufacturing earnings, namely: *i*) there are no data on manufacturing earnings for urban self-employed individuals and we cannot just separate them from urban private enterprises; *ii*) for urban private enterprises data are only available for 2009 onwards. Moreover, according to Banister (2013), such a series would also entail inconsistencies of definitions between urban and rural manufacturing employment:

> However, through 2006, the definition of TVE manufacturing employment included workers outside of established enterprises who were self-employed or worked in household, neighborhood, or other small manufacturing groupings. Since 2007, China's official statistics on TVE manufacturing have excluded these informal manufacturing workers. BLS adjusts the reported yearend and average annual TVE employment data to get a definition of TVE manufacturing employment consistent with the urban manufacturing definition for all years. Combined with the published manufacturing employment data from urban units, this result in annual figures for total manufacturing employment based on China's current definitions, which are also reasonably consistent with the BLS International Labor Comparisons definition of manufacturing employment. (BANISTER, 2013, p.2)

Nevertheless, as TVEs also include private enterprises, the inconsistency between urban and rural manufacturing definitions is inevitable, as including urban private and self-employed manufacturing would generate an inconstancy with TVEs after 2006 (or in the case of series green after 2001), and not including them generates inconsistencies for the whole timespan, as TVEs encompass private enterprises (the case of series red, and before 2002 also due to self-employed individuals in TVE data). Banister (2013), though, proposes an aggregate manufacturing employment series that is composed by *i*) urban units and *ii*) TVEs without self-employed (series red in graph C.1 used in chapter 3). The author provides data for the period 2002-2009, while data for the longer period of 1990 to 2002, drawn from Banister (2005), still included self-employed TVEs. As we did not have access to many TVEs statistical yearbooks and even in the cases in which we had, no sufficient information was furnished to enable the procedure of discounting the self-employed from sectorial TVEs series, we had to use both Banister's (2005, 2013) series together, displacing the break in official data from 2007 to 2002. Therefore, both series green and red in graph C.1 have a break in 2002 due to the exclusion of self-employed TVEs from manufacturing data.

Graph D. 1 – Different manufacturing aggregate employment series (in millions)



Source: Banister (2005, 2013), Communiqué on Major Data of the First National Economic Census of China (2005), Communiqué on Major Data of the Second National Economic Census of China (2009), Communiqué on Major Data of the Third National Economic Census of China (2014), China TVE Statistical Yearbook (2011, 2012) [in Chinese], China Statistical Yearbook (several editions).

Notes:

(1) Data on manufacturing employment in urban units from 1990 to 2001 come from Banister (2005), from 2002 to 2009 from Banister (2013) and from 2010 to 2014, from China Statistical Yearbook. For 1990 to 1993, Banister (2005) estimates manufacturing employment in urban units having as proxy the category "staff and workers". There is a minor source of incongruence after 2009, for data provided by Banister (2005, 2013) are average yearly figures, whereas China Statistical Yearbook furnishes year-end figures. Breaks in 1998, due to the exclusion of all previously laid-off workers from statistical data, and 2013, due to the inclusion of large scale TVEs.

(2) Data on manufacturing employment in TVEs from 1990 to 2001 are estimates retrieved from Banister (2005) and include self-employed TVEs. From 2002 to 2009, data were drawn from Banister (2013) and exclude self-employed TVEs. For 2010 and 2011, data were retrieved from China TVE Statistical Yearbook (2011, 2012) and exclude self-employed TVEs. There is a minor source of incongruence after 2009, for data provided by Banister (2005, 2013) are average yearly figures, whereas China TVE Statistical Yearbook furnishes year-end figures. Breaks in 1997, 1998, due to the exclusion and subsequent re-inclusion of small TVEs, and 2002.

(3) Data on manufacturing employment in urban private enterprises and self-employed individuals and manufacturing employment in private enterprises and self-employed individuals were drawn from China Statistical Yearbook.

(4) Series green "Urban+TVEs (2002 without self)" refers to manufacturing employment in urban areas and TVEs excluding self-employed TVEs from 2002 onwards. The series was obtained by adding manufacturing employment in urban units', manufacturing employment in urban private enterprises and self-employed individuals and manufacturing employment in TVEs.

(5) Series red "Urban Units+TVEs (2002 without self)" refers to manufacturing employment in urban units and TVEs excluding self-employed TVEs from 2002 onwards. The series was obtained by adding manufacturing employment in urban units' and manufacturing employment in TVEs.

(6) Series blue "Urban Units + private + self" refers to manufacturing employment in urban units and private enterprises and self-employed individuals (both rural and urban). The series was obtained by adding manufacturing employment in urban units' and manufacturing employment in private enterprises and self-employed individuals.

(7) The purple dot in 2004 represents manufacturing employment counted by the First National Economic Census of China.

(8) The blue dot in 2008 represents manufacturing employment counted by the Second National Economic Census of China.

(9) The orange dot in 2013 represents manufacturing employment counted by the Third National Economic Census of China.

(10) The estimates of manufacturing employment from the National Economic Censuses of China presented here exclude self-employment.

Moreover, Banister and Cook (2011) highlight that before 2002 there were only data for TVE employment in industry, which includes also mining and utilities, so they estimated TVE manufacturing employment for the period prior to 2002: "For the purpose of constructing a longer time series, TVE manufacturing employment during each of the years 1990–2001 is assumed to be 92.4 percent of TVE industry employment as calculated with the published figures for 2002" (BANISTER & COOK, 2011, p.41). Using Banister (2005) estimates for TVE manufacturing employment plus the estimates for 2002 to 2009 in Banister (2013), we extended the aggregate manufacturing series proposed by the author to 2010 and 2011, years in which we had access to China TVE Statistical Yearbooks, although a minor source of incongruence is to be found as we always drawn from yearbooks year-end employment figures, while BLS papers consider average yearly figures.

Notwithstanding, the incorporation of large TVEs in urban units' data, from 2013 onwards, posed problems for both sets of series proposed (series green and red of graph C.1). One alternative would be to aggregate manufacturing employment in urban units with private and self-employed enterprises (both urban and rural), as in the blue series of graph C.1. This might be a solution from 2013 onwards, though it makes the series to largely underestimate employment in manufacturing before 2013. Until more data can be accessed or made available, it has become extremely difficult to do a meaningful manufacturing aggregate employment series to cover the period from 1990 to any date after 2012. In this sense, we opted to stick to the proposed series by Banister (2005, 2013) until 2011, as they are also the closest to the estimates on manufacturing employment, excluding self-employment, provided by the three National Economic Censuses of China.

D.2 Calculating manufacturing hourly labor compensation costs (formal urban and TVEs)

D.2.1 Calculating annual hours worked in urban units and TVEs

For urban areas, China Labor Statistical Yearbook (2006, 2011, 2012, 2013) provides weekly working hours measured in the first week of November, except for 2002, when the measurement was made in the first week of October. Nonetheless, Banister (2005) had access to data on the Labor Force Survey in which two reference weeks were measured in 2002, in

May and in September (the latter seeming to be equal to the October data published by 2006 China Labor Statistical Yearbook). The May estimate was 44,86 hours in the week, whereas the September one was 46,0 hours. Since then, no more data has been published for the May week. To account for seasonal variations in hours worked, in BLS' follow-up papers (LETT & BANISTER, 2006; LETT & BANISTER, 2009; BANISTER & COOK, 2011; BANISTER, 2013), the authors proposed to apply the year-to-year variation verified in the reference week published by CLSY to the 2002 May measure. Banister (2005) also assumed 48 weeks worked annually in urban areas and held this constant in all subsequent papers.

Table D. 1 – Estimates of annual hours worked

	Urban units' estimation							TVE estimation	
Year	weekly	Annual 1	Variation	Estimated spring	Average	Annual 2	Implicit	weekly	Annual
2002	46,0	2208	-		45,4	2181	2179*	50,00	2200*
2003	46,4	2226	1,0083	45,23	45,8	2198	2198	50,41	2218
2004	46,9	2252	1,0119	45,77	46,3	2224	2222	51,01	2244
2005	51,1	2453	1,0893	49,85	50,5	2307	2305	52,90	2328
2006	50,4	2419	0,9861	49,16	49,8	2389	2388	54,79	2411
2007	49,4	2371	0,9802	48,19	48,8	2342	2341	53,71	2363
2008	47,9	2299	0,9696	46,72	47,3	2271	2271	52,08	2291
2009	48,5	2328	1,0125	47,31	47,9	2299	-	52,73	2320
2010	49,0	2352	1,0105	47,81	48,4	2324	-	53,28	2344
2011	48,1	2307	0,9808	46,89	47,5	2279	-	52,26	2299
2012	48,2	2311	1,0017	46,97	47,6	2283	-	52,35	2303
2013[1]	48,3	2321	1,0041	47,16	47,8	2292	-	52,56	2313
2014[1]	48,3	2321	1	47,16	47,8	2292	-	52,56	2313

Sources: Banister (2005), Lett and Banister (2006), Lett & Banister (2009), Banister and Cook (2011), China Labor Statistical Yearbook (2006, 2011, 2012, 2013).
Notes:
(1) Due to lack of access to the latest editions of CLSY, we estimated weekly working hours in urban areas in manufacturing through an average of data from 2002 to 2012.
(2) The baseline for estimating spring weekly hours worked was 44,86 from May 2002 (BANISTER, 2005)
(3) Data provided in CLSY are from the first week of October, for 2002, and first week of November for 2003 to 2012.
(4) Assumed annual weeks worked were 48 for urban units and 44 for TVEs (BANISTER, 2005)
(5) 'Annual 1' is estimated by applying weekly working hours as provided by CLSY assuming 48 weeks, while 'Annual 2' applies the average between the latter and 'estimated spring'.
(6) 'Implicit' are the figures implicit in Lett and Banister (2006, 2009) and Banister and Cook (2011) and were obtained by dividing annual compensation per hourly compensation in yuan. Banister (2005) provides explicitly the data for 2002, which is marked by "*".

Regarding TVEs, Banister (2005) assumed 44 weeks worked and 50 weekly hours worked in 2002. To estimate weekly hours worked in TVEs for the subsequent years, BLS'

papers applied the year-to-year variation in weekly hours worked in urban areas, as provided by CLSY, to the assumed 50 hours in 2002.

As we had no access to 2014 and 2015 CLSY to drawn the data on weekly hours worked in urban areas, we made an average for the period 2002 to 2012 and used as estimate for 2013 and 2014. Table D.1 provides our calculations of annual hours worked taking into consideration just the reference week published in CSLY (urban units' "Annual 1") and according to the BLS methodology (urban units' "Annual 2"; TVE's "Annual"), with us filling the gap for the base parameter of calculations in 2013 and 2014. The table also compares the results obtained by applying BLS methodology ("Annual 2"), which we utilized to calculate urban units' and urban private enterprises' hourly labor compensation costs, with those implied in BLS estimates.

D.2.2 Underlying employment figures to use as weight for manufacturing hourly labor compensation costs and annual average earnings

Table D. 2 – Employment and annual average earnings used to replicate and extend estimates in Banister (2013)

(employment in million and average earnings in yuan)

	Employment			Average earnings	
	Total	Urban	TVE	Urban	TVE
2002	85,9	30,3	55,6	11152	6927
2003	86,4	29,8	56,5	12671	7462
2004	88,6	30,2	58,4	14251	7751
2005	92	31,3	60,7	15934	8732
2006	94,9	32,8	62,1	18225	9463
2007	96,9	34,1	62,8	21144	10698
2008	98,5	34,5	64	24404	12033
2009	99	34,6	64,4	26810	13043
2010	101,9	36,4	65,6	30916	14184
2011	107,1	40,9	66,2	36665	18193
2012	-	42,6	-	41650	-
2013	-	52,6	-	46431	-
2014	-	52,4	-	51369	-

Source: Banister (2013), China TVE Yearbook (2011, 2012), China Statistical Yearbook (several editions)
Notes:
(1) Data from 2002 to 2009 come from Banister and are slightly incongruent with data we extracted from yearbooks because the former refer to average annual figures, while data from yearbooks are year-end figures.
(2) TVE employment figures that included the self-employed were adjusted by Banister (2013) to exclude them, while the average earnings underling her calculations are those directly given by TVE yearbooks, therefore unadjusted for the exclusion of self-employed from the sectorial mean in the years 2002 to 2006 and 2008.

D.3 ESTIMATING MANUFACTURING HOURLY LABOR COMPENSATION COSTS FOR RURAL MIGRANT WORKERS

D.3.1 Estimating manufacturing monthly earnings of rural migrant workers

The National Monitoring Survey Report on Rural Migrant Workers (RRMW, 2012, 2013, 2014) provides income monthly figures for all migrant workers for the period 2008-2014. Nevertheless, for manufacturing monthly income, the reports only offered figures for 2013 and 2014. For the 2008 to 2012 period we estimated monthly income in manufacturing based on average monthly income (all sectors), applying the ratio of manufacturing monthly income to average monthly income found on 2013, which was equal to 97,240322%.

Table D. 3 – Migrant workers' monthly income and manufacturing monthly income

(in yuan)

	Monthly income	Monthly income in manufacturing
2008	1340	1303
2009	1417	1378
2010	1690	1643
2011	2049	1992
2012	2290	2227
2013	2609	2537
2014	2864	2832

Source: National Monitoring Survey Report on Rural Migrant Workers (2012, 2013, 2014) [in Chinese]
Notes: Monthly income in manufacturing from 2008 to 2012 are estimates (red figures) based on monthly income for all sectors. They were obtained by applying the ratio of manufacturing monthly income to monthly income (all sectors) verified in 2013 data, in which the income in manufacturing represented 97,240322% of the monthly income (all sectors).

D.3.2 Estimating monthly hours worked by rural migrant workers

The RRMW (2012, 2013, 2014) provides figures on hours worked by rural migrant workers outside their location for 2012 to 2014. As rural migrant workers' earnings are provided in monthly basis, we estimated the days worked per month and the hours worked per day for the 2008 to 2011 period by using the most common value between 2012 and 2014. The actual figures and estimates for monthly hours worked by rural migrant workers are exhibited in table D.4.

To estimate hourly figures for rural migrant workers, we divided the monthly income in manufacturing (table D.3) by monthly hours presented in table D.4. Nonetheless, this procedure is problematic since the number of monthly hours workerd refer to rural migrant workers outside their location and working in all sectors.

Table D. 4 – Migrant workers' time/intensity of labor and estimates for monthly hours worked

Outside location migrant workers							
	2008	2009	2010	2011	2012	2013	2014
Months	9,9	9,9	9,9	9,9	9,9	9,9	10
days in month	25,3	25,3	25,3	25,3	25,3	25,2	25,3
hours in day	8,8	8,8	8,8	8,8	8,7	8,8	8,8
% more than 8 hours day					39,6	41	40,8
% more than 44 hours week					84,4	84,7	85,4
monthly hours	222,64	222,64	222,64	222,64	220,11	221,76	222,64

Source: National Monitoring Survey Report on Rural Migrant Workers (2012, 2013, 2014) [in Chinese]
Notes: Data for 2012 to 2014 are actual figures provided by the National Monitoring Survey Report on Rural Migrant Workers, whereas 2008 to 2011 data are estimates (in red) obtained by the usage of the most common value verified between 2012 and 2014.

D.3.3 Estimating compensation costs as percentage over monthly income of rural migrant workers ('migrant 2')

To estimate compensation costs as percentage over the monthly income of rural migrant workers we considered only social security costs, proceeding in two steps. First, as social security requirements vary from region to region, we assessed the commonly legal social security requirements from employers. When a range of rates existed, we averaged the extremes and assumed the mean as the required parameter for the social security item, except for maternity insurance, which was taken by its lower value. Second, we drew from the RRMW the coverage rate of each social security item among manufacturing rural migrant workers in 2012 (outside location) and in 2014 (all migrants). We then multiplied the coverage rate of each social security item by the employers' required rate of contribution to social security (as calculated above), assuming the sum of the resulting percentages to be the compensation costs over wages. For 2013, we used an average between 2012 and 2014, whereas for 2008 to 2011, we assumed the percentages of 2012.

Table D. 5 – Employers' contribution to social security

Employer contribution to social security		
	General compulsory rates	Assumed parameters
Pension	20%	20%
Medical	7% - 12%	9,50%
Injury	0,4% - 3%	1,70%
Unemployment	2%	2%
Maternity	0,5% to 1%	0,50%
Housing	7% to 13%	10%
Total		43,7%

Source: The commonly required employers' rates of contribution to social security were drawn from Livermore (2012).
Note: The assumed parameters are the average of the intervals of the generally legal requirements, except for the maternity insurance.

Table D. 6 – Coverage rate of social security items among outside location manufacturing migrant workers (2012) and all manufacturing migrant workers (2014)

	Pension	Medical	Injury	Unemployment	Maternity	Housing Fund
2012	15,2%	18,5%	28,9%	8,1%	5,3%	-
2014	21,4%	22,1%	34,2%	13,1%	9,3%	5,3%

Source: National Monitoring Survey Report on Rural Migrant Workers (2012, 2014) [in Chinese]

Table D. 7 – Compensation costs as percentage of wages accruing to social security

	Pension	Medical	Injury	Unemployment	Maternity	Housing	Sum
2012	3,0%	1,8%	0,5%	0,2%	0,0%	-	5,5%
2014	4,3%	2,1%	0,6%	0,3%	0,0%	0,5%	7,8%

Source: Author's calculations with data provided by Livermore (2012) and by the National Monitoring Survey Report on Rural Migrant Workers (2012, 2014) [in Chinese]

APPENDIX E. CHINA'S TOP TEN NET EXPORTS AND IMPORTS AND COMPLETE TIVA ESTIMATES

Table E. 1 – Chinese top 10 net exports (selected years, in U$ billion and position P)

HS Code/Product name		2014		2011		2009		2008		2004		2001	
		U$	P	U$	P	U$	P	U$	P	U$	P	U$	P
8471	automatic data process machines, magn reader, etc. computer hardware	152	1	130	1	89	1	99	1	45	1	8	1
8525	trans apparatus for radiotelephony etc, tv cameras cordless telephones	115	2	67	2	44	2	45	2	18	2	3	9
7113	articles of jewelry & parts, of prec metal or clad	48	3	-	-	-	-	-	-	-	-	-	-
8517	elec apparatus for line telephony, telephone sets, pts	37	4	41	3	29	3	34	3	-	-	-	-
9405	lamps & lighting fittings & parts etc nesoi	31	5	-	-	-	-	-	-	-	-	-	-
9403	furniture nesoi and parts thereof	27	6	20	7	13	7	13	10	6	9	-	-
6402	footwear, outer sole & upper rubber or plastic nesoi	26	7	17	10	-	-	-	-	24	2	4	8
8528	television receivers (incl monitors & proj receivers)	26	8	22	6	16	5	18	4	-	-	-	-
4202	travel goods, handbags, wallets, jewelry cases etc	26	9	23	5	12	10	14	9	6	8	4	7
6204	women's or girls' suits, ensemb etc, not knit etc	25	10	-	-	13	8	14	8	8	4	5	2
8901	vessels for the transport of persons or goods	-	-	37	4	23	4	16	6	-	-	-	-
6110	sweaters, pullovers, vests etc, knit or crocheted	-	-	20	8	15	6	16	7	6	6	5	4
6104	women's or girls' suits, ensemb etc, knit or croch	-	-	19	9	-	-	-	-	-	-	-	-
8473	parts etc for typewriters & other office machines computer accessories	-	-	-	-	13	9	16	5	10	3	-	-
8521	video recording or reproducing apparatus	-	-	-	-	-	-	-	-	7	5	-	-
6403	footwear, outer sole rub, plastic or lea & upper lea	-	-	-	-	-	-	-	-	6	7	4	5
9503	toys nesoi, scale models etc, puzzles, parts etc	-	-	-	-	-	-	-	-	6	10	5	3
6203	men's or boys' suits, ensembles etc, not knit etc	-	-	-	-	-	-	-	-	-	-	4	6
4203	articles of apparel & access, leather & comp leather	-	-	-	-	-	-	-	-	-	-	3	10

Source: WITS-UNComtrade.

Table E. 2 – Chinese top 10 net imports (selected years, in U$ billion and position P)

HS Code/Product name		2014		2011		2009		2008		2004		2001	
		U$	P	U$	P	U$	P	U$	P	U$	P	U$	P
2709	crude oil from petroleum and bituminous minerals	-228	1	-195	1	-87	2	-126	1	-33	2	-10	2
8542	electronic integrated circuits & microassembl, pts	-157	2	-138	2	-97	1	-105	2	-50	1	-14	1
2601	iron ores & concentrates, including roast pyrites	-94	3	-112	3	-50	3	-61	3	-13	4	-3	8
9999	----------	-80	4	-47	4	-	-	-	-	-	-	-	-
8703	motor cars & vehicles for transporting persons	-55	5	-37	5	-13	7	-11	8	-	-	-	-
1201	soybeans, whether or not broken	-40	6	-30	6	-19	4	-21	5	-7	6	-3	7
2711	petroleum gases & other gaseous hydrocarbons	-28	7	-	-	-	-	-	-	-	-	-	-
7103	precious nesoi & semiprec stones, not strung etc	-25	8	-	-	-	-	-	-	-	-	-	-
8802	aircraft, powered, spacecraft & launch vehicles	-25	9	-	-	-9	8	-	-	-	-	-4	4
7403	refined copper & alloys (no mast alloy), unwrought	-24	10	-24	8	-15	6	-9	10	-	-	-	-
8479	machines etc having individual functions nesoi, pt	-	-	-25	7	-9	10	-12	7	-9	5	-4	3
9013	liquid crystal devices nesoi, lasers, opt appl, pt	-	-	-21	9	-18	5	-25	4	-16	3	-	-
2701	coal, briquettes, ovoids etc, mfr from coal	-	-	-18	10	-	-	-	-	-	-	-	-
3901	polymers of ethylene, in primary forms	-	-	-	-	-9	9	-	-	-5	9	-3	5
2710	oil (not crude) from petrol & bitum mineral etc,	-	-	-	-	-	-	-16	6	-5	8	-	-
2603	copper ores and concentrates	-	-	-	-	-	-	-10	9	-	-	-	-
8541	semiconductor devices, light-emit diodes etc, pts	-	-	-	-	-	-	-	-	-7	7	-2	9
2917	polycarboxylic acids & anhyd etc, halog, sulf etc	-	-	-	-	-	-	-	-	-5	10	-	-
3903	polymers of styrene, in primary forms	-	-	-	-	-	-	-	-	-	-	-3	6
8540	thermionic, cold cathode or photocathode tubes, pt	-	-	-	-	-	-	-	-	-	-	-2	10

Source: WITS-UNComtrade.

Table E. 3 – Economies' participation in international trade generated by fragmented manufacturing productive processes

	1995	2000	2005	2008	2009	2010	2011
OECD	77%	72%	67%	64%	63%	61%	61%
CHN: CHINA (PEOPLE'S REPUBLIC OF)	3,4%	4,9%	9,1%	10,1%	11,2%	11,8%	11,7%
USA: UNITED STATES	11,8%	12,7%	8,9%	8,2%	8,4%	8,3%	8,0%
DEU: GERMANY	9,8%	7,9%	8,9%	9,0%	8,5%	7,7%	7,9%
ROW: REST OF THE WORLD	4,0%	6,4%	6,3%	7,8%	7,1%	7,0%	7,3%
JPN: JAPAN	7,4%	6,8%	6,1%	5,4%	5,1%	5,6%	5,1%
KOR: KOREA	3,1%	3,6%	4,2%	4,2%	4,6%	4,8%	4,8%
FRA: FRANCE	5,9%	5,0%	4,7%	4,1%	4,0%	3,7%	3,7%
GBR: UNITED KINGDOM	5,6%	4,7%	3,9%	3,5%	3,5%	3,3%	3,4%
ITA: ITALY	4,6%	3,7%	3,8%	3,7%	3,5%	3,3%	3,4%
RUS: RUSSIA	1,7%	1,8%	2,5%	3,2%	2,5%	2,8%	3,1%
TWN: CHINESE TAIPEI	3,2%	3,2%	3,1%	2,7%	2,8%	3,1%	2,8%
CAN: CANADA	3,7%	4,0%	2,9%	2,4%	2,3%	2,4%	2,4%
ESP: SPAIN	2,1%	2,2%	2,4%	2,2%	2,2%	2,1%	2,2%
MEX: MEXICO	1,8%	3,0%	2,3%	1,9%	2,0%	2,2%	2,0%
IND: INDIA	0,4%	0,5%	1,0%	1,4%	1,6%	2,0%	2,0%
MYS: MALAYSIA	1,5%	2,6%	2,1%	1,7%	1,9%	2,0%	1,8%
SAU: SAUDI ARABIA	0,7%	0,9%	1,4%	1,7%	1,3%	1,5%	1,8%
CHE: SWITZERLAND	2,0%	1,5%	1,6%	1,5%	1,7%	1,6%	1,6%
THA: THAILAND	1,2%	1,1%	1,3%	1,4%	1,5%	1,6%	1,6%
SGP: SINGAPORE	2,2%	2,0%	1,2%	0,9%	1,5%	1,5%	1,5%
AUS: AUSTRALIA	1,0%	1,0%	1,0%	1,1%	1,1%	1,3%	1,4%
POL: POLAND	0,5%	0,6%	1,1%	1,3%	1,3%	1,3%	1,3%
BEL: BELGIUM	3,1%	1,9%	1,7%	1,7%	1,5%	1,2%	1,3%
SWE: SWEDEN	2,2%	1,8%	1,6%	1,5%	1,4%	1,3%	1,3%
CZE: CZECH REPUBLIC	0,6%	0,7%	1,1%	1,2%	1,2%	1,2%	1,2%
NLD: NETHERLANDS	3,0%	1,7%	1,4%	1,4%	1,3%	1,2%	1,1%
BRA: BRAZIL	0,6%	0,6%	0,8%	1,0%	0,9%	1,0%	1,1%
IDN: INDONESIA	0,8%	0,9%	0,8%	0,8%	0,8%	1,0%	1,0%
AUT: AUSTRIA	1,4%	1,2%	1,2%	1,2%	1,2%	1,0%	1,0%
NOR: NORWAY	1,0%	1,0%	1,1%	1,2%	1,0%	1,0%	1,0%
IRL: IRELAND	1,3%	1,6%	1,5%	1,2%	1,4%	1,1%	1,0%
TUR: TURKEY	0,4%	0,4%	0,7%	0,9%	0,9%	0,8%	0,8%
HUN: HUNGARY	0,4%	0,8%	1,0%	0,8%	0,9%	0,9%	0,8%
FIN: FINLAND	1,1%	1,0%	0,9%	0,8%	0,7%	0,7%	0,7%
ZAF: SOUTH AFRICA	0,5%	0,5%	0,6%	0,6%	0,5%	0,6%	0,6%
SVK: SLOVAK REPUBLIC	0,2%	0,3%	0,5%	0,6%	0,6%	0,6%	0,6%
VNM: VIET NAM	0,1%	0,2%	0,3%	0,4%	0,5%	0,5%	0,5%
DNK: DENMARK	1,0%	0,7%	0,8%	0,7%	0,7%	0,6%	0,5%
CHL: CHILE	0,3%	0,3%	0,4%	0,4%	0,5%	0,5%	0,5%
PRT: PORTUGAL	0,6%	0,5%	0,5%	0,5%	0,4%	0,4%	0,4%
ISR: ISRAEL	0,4%	0,5%	0,4%	0,4%	0,4%	0,4%	0,4%
PHL: PHILIPPINES	0,5%	0,6%	0,5%	0,5%	0,5%	0,5%	0,4%
HKG: HONG KONG, CHINA	0,7%	0,5%	0,4%	0,3%	0,4%	0,4%	0,4%
ROU: ROMANIA	0,2%	0,1%	0,3%	0,3%	0,3%	0,3%	0,3%
ARG: ARGENTINA	0,2%	0,2%	0,3%	0,3%	0,3%	0,3%	0,3%
COL: COLOMBIA	0,1%	0,1%	0,1%	0,2%	0,2%	0,2%	0,2%
GRC: GREECE	0,3%	0,2%	0,3%	0,3%	0,3%	0,2%	0,2%
BGR: BULGARIA	0,1%	0,1%	0,1%	0,2%	0,2%	0,2%	0,2%
LUX: LUXEMBOURG	0,3%	0,2%	0,2%	0,2%	0,2%	0,2%	0,2%

SVN: SLOVENIA	0,2%	0,2%	0,2%	0,2%	0,2%	0,2%	0,2%
NZL: NEW ZEALAND	0,2%	0,2%	0,1%	0,1%	0,1%	0,2%	0,1%
TUN: TUNISIA	0,1%	0,1%	0,1%	0,1%	0,1%	0,1%	0,1%
LTU: LITHUANIA	0,0%	0,0%	0,1%	0,1%	0,1%	0,1%	0,1%
CRI: COSTA RICA	0,1%	0,1%	0,1%	0,1%	0,1%	0,1%	0,1%
EST: ESTONIA	0,0%	0,1%	0,1%	0,1%	0,1%	0,1%	0,1%
LVA: LATVIA	0,0%	0,0%	0,1%	0,1%	0,1%	0,1%	0,1%
BRN: BRUNEI DARUSSALAM	0,0%	0,0%	0,0%	0,1%	0,0%	0,0%	0,1%
HRV: CROATIA	0,1%	0,1%	0,1%	0,1%	0,1%	0,1%	0,1%
ISL: ICELAND	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%
KHM: CAMBODIA	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%
CYP: CYPRUS	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%
MLT: MALTA	0,1%	0,1%	0,0%	0,0%	0,0%	0,0%	0,0%

Source: OECD-WTO TiVA (2015)

Table E. 4 – Economies' share of international trade generated by backward linkages in fragmented manufacturing productive processes

	1995	2000	2005	2008	2009	2010	2011
CHN: CHINA (PEOPLE'S REPUBLIC OF)	5,5%	7,8%	13,9%	13,9%	16,1%	16,9%	16,7%
DEU: GERMANY	8,6%	7,8%	8,8%	9,7%	8,9%	8,0%	8,4%
KOR: KOREA	3,6%	4,3%	4,8%	5,6%	5,9%	6,2%	6,5%
USA: UNITED STATES	8,9%	8,8%	6,2%	6,5%	5,7%	6,0%	6,3%
FRA: FRANCE	5,9%	5,6%	5,1%	4,5%	4,3%	4,0%	4,0%
ITA: ITALY	4,8%	3,8%	4,0%	4,2%	3,7%	3,8%	3,9%
TWN: CHINESE TAIPEI	4,3%	4,0%	3,6%	3,5%	3,3%	3,9%	3,7%
GBR: UNITED KINGDOM	5,4%	4,0%	3,1%	3,0%	3,1%	3,2%	3,3%
JPN: JAPAN	2,8%	2,7%	3,0%	3,6%	2,6%	3,1%	3,1%
MEX: MEXICO	2,7%	4,8%	3,6%	2,9%	3,1%	3,3%	2,9%
CAN: CANADA	5,2%	5,9%	4,0%	2,8%	2,8%	2,8%	2,7%
ROW: REST OF THE WORLD	2,8%	3,6%	3,2%	3,2%	3,7%	3,1%	2,7%
ESP: SPAIN	2,5%	2,8%	2,9%	2,7%	2,4%	2,3%	2,5%
MYS: MALAYSIA	1,9%	3,9%	3,1%	2,4%	2,6%	2,7%	2,4%
IND: INDIA	0,3%	0,4%	0,9%	1,6%	1,8%	2,2%	2,3%
THA: THAILAND	1,6%	1,6%	1,8%	2,0%	2,1%	2,2%	2,2%
SGP: SINGAPORE	3,3%	2,7%	1,4%	0,9%	1,8%	1,8%	1,8%
CZE: CZECH REPUBLIC	0,8%	0,9%	1,5%	1,6%	1,7%	1,7%	1,7%
POL: POLAND	0,5%	0,7%	1,2%	1,5%	1,5%	1,6%	1,6%
BEL: BELGIUM	4,0%	2,4%	1,9%	2,1%	1,7%	1,4%	1,6%
SWE: SWEDEN	2,7%	2,2%	1,9%	1,8%	1,6%	1,5%	1,5%
CHE: SWITZERLAND	2,0%	1,6%	1,9%	1,5%	1,7%	1,5%	1,5%
RUS: RUSSIA	1,1%	1,0%	1,1%	1,5%	1,2%	1,3%	1,5%
IRL: IRELAND	2,0%	2,4%	2,1%	1,6%	1,9%	1,5%	1,3%
HUN: HUNGARY	0,5%	1,2%	1,5%	1,2%	1,3%	1,3%	1,2%
AUT: AUSTRIA	1,6%	1,2%	1,3%	1,3%	1,2%	1,1%	1,1%
TUR: TURKEY	0,3%	0,4%	0,9%	1,1%	1,1%	1,0%	1,1%
NLD: NETHERLANDS	3,3%	1,6%	1,0%	1,0%	0,9%	0,9%	0,9%
FIN: FINLAND	1,2%	1,2%	1,1%	1,0%	0,9%	0,8%	0,8%
SVK: SLOVAK REPUBLIC	0,3%	0,4%	0,7%	0,9%	0,9%	0,8%	0,8%
VNM: VIET NAM	0,1%	0,2%	0,4%	0,5%	0,7%	0,7%	0,8%

PRT: PORTUGAL	0,9%	0,7%	0,7%	0,6%	0,6%	0,6%	0,6%
BRA: BRAZIL	0,4%	0,5%	0,6%	0,7%	0,5%	0,5%	0,6%
AUS: AUSTRALIA	0,6%	0,6%	0,4%	0,5%	0,5%	0,5%	0,5%
IDN: INDONESIA	0,7%	0,7%	0,6%	0,5%	0,4%	0,5%	0,5%
ISR: ISRAEL	0,6%	0,6%	0,5%	0,5%	0,5%	0,5%	0,5%
DNK: DENMARK	1,1%	0,7%	0,7%	0,6%	0,6%	0,5%	0,5%
ZAF: SOUTH AFRICA	0,4%	0,4%	0,5%	0,5%	0,5%	0,5%	0,5%
NOR: NORWAY	0,7%	0,5%	0,5%	0,5%	0,5%	0,4%	0,4%
CHL: CHILE	0,2%	0,2%	0,3%	0,3%	0,3%	0,3%	0,3%
PHL: PHILIPPINES	0,7%	0,7%	0,7%	0,5%	0,5%	0,5%	0,3%
ROU: ROMANIA	0,2%	0,1%	0,3%	0,3%	0,3%	0,2%	0,3%
ARG: ARGENTINA	0,1%	0,1%	0,2%	0,3%	0,2%	0,3%	0,3%
BGR: BULGARIA	0,2%	0,1%	0,1%	0,3%	0,2%	0,2%	0,3%
GRC: GREECE	0,3%	0,3%	0,3%	0,3%	0,3%	0,2%	0,3%
SVN: SLOVENIA	0,3%	0,3%	0,3%	0,3%	0,2%	0,2%	0,2%
SAU: SAUDI ARABIA	0,2%	0,1%	0,2%	0,3%	0,2%	0,2%	0,2%
LUX: LUXEMBOURG	0,4%	0,2%	0,3%	0,2%	0,2%	0,2%	0,2%
TUN: TUNISIA	0,2%	0,1%	0,2%	0,2%	0,2%	0,2%	0,1%
NZL: NEW ZEALAND	0,2%	0,2%	0,1%	0,1%	0,1%	0,1%	0,1%
HKG: HONG KONG, CHINA	0,7%	0,2%	0,1%	0,1%	0,1%	0,1%	0,1%
LTU: LITHUANIA	0,0%	0,0%	0,0%	0,1%	0,1%	0,1%	0,1%
EST: ESTONIA	0,1%	0,1%	0,1%	0,1%	0,1%	0,1%	0,1%
CRI: COSTA RICA	0,1%	0,1%	0,1%	0,1%	0,1%	0,1%	0,1%
COL: COLOMBIA	0,1%	0,1%	0,1%	0,1%	0,1%	0,1%	0,1%
LVA: LATVIA	0,0%	0,0%	0,1%	0,1%	0,1%	0,1%	0,1%
HRV: CROATIA	0,1%	0,1%	0,1%	0,1%	0,1%	0,1%	0,1%
KHM: CAMBODIA	0,0%	0,0%	0,1%	0,1%	0,1%	0,1%	0,0%
ISL: ICELAND	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%
CYP: CYPRUS	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%
MLT: MALTA	0,1%	0,1%	0,1%	0,0%	0,0%	0,0%	0,0%
BRN: BRUNEI DARUSSALAM	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%

Source: OECD-WTO TiVA (2015)

Table E. 5 – Economies' share of international trade generated by forward linkages in fragmented manufacturing productive processes

	1995	2000	2005	2008	2009	2010	2011
ROW: REST OF THE WORLD	5,1%	9,2%	9,4%	12,4%	10,5%	11,0%	12,0%
USA: UNITED STATES	14,7%	16,6%	11,6%	9,8%	11,1%	10,6%	9,7%
DEU: GERMANY	11,1%	8,1%	9,0%	8,3%	8,2%	7,5%	7,4%
JPN: JAPAN	11,9%	11,0%	9,1%	7,3%	7,7%	8,1%	7,1%
CHN: CHINA (PEOPLE'S REPUBLIC OF)	1,3%	1,9%	4,3%	6,3%	6,4%	6,8%	6,8%
RUS: RUSSIA	2,2%	2,5%	3,9%	4,8%	3,8%	4,2%	4,7%
GBR: UNITED KINGDOM	5,7%	5,3%	4,7%	4,0%	3,9%	3,4%	3,5%
SAU: SAUDI ARABIA	1,3%	1,8%	2,6%	3,1%	2,4%	2,7%	3,4%
FRA: FRANCE	5,8%	4,5%	4,3%	3,8%	3,8%	3,4%	3,3%
KOR: KOREA	2,6%	3,0%	3,5%	2,9%	3,3%	3,4%	3,1%
ITA: ITALY	4,3%	3,5%	3,7%	3,2%	3,2%	2,9%	2,9%
CAN: CANADA	2,1%	2,2%	1,8%	2,1%	1,9%	2,0%	2,2%
AUS: AUSTRALIA	1,3%	1,3%	1,5%	1,7%	1,7%	2,1%	2,2%

TWN: CHINESE TAIPEI	2,1%	2,5%	2,6%	2,0%	2,3%	2,3%	2,0%
ESP: SPAIN	1,8%	1,7%	1,9%	1,8%	1,9%	1,8%	1,8%
IND: INDIA	0,5%	0,7%	1,1%	1,3%	1,4%	1,7%	1,7%
NOR: NORWAY	1,3%	1,6%	1,6%	1,8%	1,6%	1,5%	1,7%
CHE: SWITZERLAND	2,0%	1,5%	1,4%	1,5%	1,7%	1,6%	1,7%
IDN: INDONESIA	0,9%	1,0%	1,0%	1,1%	1,3%	1,5%	1,6%
BRA: BRAZIL	0,8%	0,7%	1,0%	1,3%	1,2%	1,4%	1,6%
NLD: NETHERLANDS	2,7%	1,8%	1,8%	1,7%	1,7%	1,5%	1,4%
MEX: MEXICO	1,0%	1,3%	1,0%	1,0%	0,9%	1,0%	1,2%
MYS: MALAYSIA	1,0%	1,2%	1,1%	1,1%	1,2%	1,2%	1,2%
SGP: SINGAPORE	1,0%	1,2%	1,1%	0,8%	1,1%	1,2%	1,1%
SWE: SWEDEN	1,8%	1,4%	1,3%	1,2%	1,1%	1,1%	1,1%
BEL: BELGIUM	2,2%	1,5%	1,4%	1,3%	1,3%	1,1%	1,1%
POL: POLAND	0,6%	0,6%	0,9%	1,0%	1,1%	1,1%	1,1%
AUT: AUSTRIA	1,3%	1,1%	1,2%	1,1%	1,1%	1,0%	1,0%
THA: THAILAND	0,8%	0,7%	0,8%	0,8%	0,9%	1,0%	0,9%
ZAF: SOUTH AFRICA	0,7%	0,5%	0,6%	0,6%	0,6%	0,7%	0,7%
CHL: CHILE	0,4%	0,3%	0,6%	0,5%	0,7%	0,8%	0,7%
IRL: IRELAND	0,6%	0,7%	0,8%	0,7%	0,9%	0,7%	0,7%
CZE: CZECH REPUBLIC	0,5%	0,4%	0,6%	0,7%	0,7%	0,7%	0,7%
DNK: DENMARK	0,9%	0,8%	0,8%	0,8%	0,8%	0,7%	0,6%
TUR: TURKEY	0,5%	0,5%	0,5%	0,6%	0,6%	0,6%	0,6%
HKG: HONG KONG, CHINA	0,8%	0,7%	0,6%	0,5%	0,6%	0,7%	0,6%
FIN: FINLAND	0,9%	0,8%	0,7%	0,6%	0,6%	0,6%	0,5%
PHL: PHILIPPINES	0,3%	0,4%	0,4%	0,5%	0,5%	0,5%	0,4%
COL: COLOMBIA	0,2%	0,2%	0,2%	0,3%	0,3%	0,3%	0,4%
HUN: HUNGARY	0,3%	0,3%	0,4%	0,4%	0,4%	0,4%	0,4%
ISR: ISRAEL	0,3%	0,5%	0,3%	0,3%	0,4%	0,4%	0,4%
SVK: SLOVAK REPUBLIC	0,2%	0,2%	0,3%	0,4%	0,4%	0,3%	0,3%
VNM: VIET NAM	0,1%	0,2%	0,2%	0,3%	0,3%	0,3%	0,3%
ARG: ARGENTINA	0,3%	0,4%	0,3%	0,3%	0,3%	0,3%	0,3%
ROU: ROMANIA	0,2%	0,1%	0,2%	0,3%	0,3%	0,3%	0,3%
PRT: PORTUGAL	0,4%	0,3%	0,3%	0,3%	0,3%	0,3%	0,3%
GRC: GREECE	0,2%	0,2%	0,3%	0,3%	0,2%	0,2%	0,2%
LUX: LUXEMBOURG	0,2%	0,2%	0,2%	0,2%	0,2%	0,2%	0,2%
NZL: NEW ZEALAND	0,2%	0,2%	0,2%	0,1%	0,2%	0,2%	0,2%
SVN: SLOVENIA	0,1%	0,1%	0,2%	0,2%	0,1%	0,1%	0,1%
BGR: BULGARIA	0,1%	0,1%	0,1%	0,1%	0,1%	0,1%	0,1%
BRN: BRUNEI DARUSSALAM	0,0%	0,1%	0,1%	0,1%	0,1%	0,1%	0,1%
TUN: TUNISIA	0,1%	0,1%	0,1%	0,1%	0,1%	0,1%	0,1%
LTU: LITHUANIA	0,0%	0,0%	0,1%	0,1%	0,1%	0,1%	0,1%
LVA: LATVIA	0,0%	0,0%	0,1%	0,1%	0,1%	0,1%	0,1%
CRI: COSTA RICA	0,0%	0,1%	0,1%	0,1%	0,1%	0,1%	0,1%
EST: ESTONIA	0,0%	0,0%	0,1%	0,1%	0,1%	0,1%	0,1%
HRV: CROATIA	0,1%	0,1%	0,1%	0,1%	0,1%	0,1%	0,1%
ISL: ICELAND	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%
CYP: CYPRUS	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%
KHM: CAMBODIA	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%
MLT: MALTA	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%

Source: OECD-WTO TiVA (2015)

APPENDIX F. MOVING UP IN GLOBAL VALUE CHAINS AND INCREASED COMPETITION BETWEEN SKILLED WORKERS: EVIDENCES FROM THE CASE STUDY OF THE SEMICONDUCTOR INDUSTRY IN CHINA

The incorporation of China's enormous population to the industrial workforce of the capitalist world has negatively influenced wages in central countries, in as much as it constituted a vast industrial reserve army to the global economy. China's industrialization – transcending low-technology traditional sectors, as textiles – has progressed to new industries, of high sophistication, such as ICT. In producing the same goods as developed economies – and counting with capitals from the latter –, Chinese capitalist development has affected the earnings of unskilled workers in central countries.

Even if China's process of industrialization had fast progressed in the last quarter of century, its insertion in high-tech industries fundamentally occurred in assembling activities, under the command of TNCs from the US, Europe and developed Asia. Notwithstanding, the Chinese states has actively pursued the technological capacitation of the country, launching "a comprehensive effort to become an innovative nation by 2020 and a global scientific power by 2050" (SPRINGUT, SCHLAIKJER & CHEN, 2011, p.6). The concretization of such ambition would significantly alter China's insertion in the global capitalist economy, as the country could cease to be an economy marked by the low value added activities of global value chains, which are characterized by high intensity of low wage unskilled labor.

At the core of Chinese exports' process of sophistication lies the electronic industry, in which the country has become the main world assembler. Nonetheless, a substantial parcel of electronics' value is found in their parts and components, particularly in the chips or integrated circuits (ICs), which are the "intelligence" of those goods. Furthermore, ICs have a strategic character – due to their civilian and military use – and impact the productivity of the economy as a whole, for their widespread use in innumerable productive processes and in the distribution of commodities. In this context, the semiconductor industry – whose main segment is constituted by ICs – is one of the priority targets of China's state efforts of technological capacitation, embodying an excellent case study to gauge the signs of progress in China's attempt to move up in global value chains.

In Asian advanced economies, the development of skilled labor intense activities occurred to the detriment of their insertion and employment in unskilled labor intensive

activities of GVCs, observing upward pressures over the wages of the latter. In contrast, in China it does not seem evident or incompatible that more sophisticated industrial activities develop side by side with the maintenance and growth of unskilled labor-intensive activities, as the analysis of exports from the ICT and textile industries has revealed. In this sense, the present case study has two objectives: *i*) to identify if China has been indeed moving up in GVCs and provoking increasing competition among Chinese and Northern qualified workers; *ii*) to discern whether this movement has been occurring to the detriment of or in parallel to China's position in unskilled labor intensive productive stages. *Grosso modo*, we seek to identify, through the case analysis, if China is exerting a downward pressure over the wages of skilled manufacturing workers in advanced countries, and if such pressure would be complementary or antagonistic to that experienced by unskilled workers.

In this condition of thermometer of China's state effort to alter its insertion in the global economy, the present appendix aims to analyze the semiconductor industry in China. Besides this introduction, the appendix is divided in four sections. Given the fact that the semiconductor industry constitutes a GVC highly fragmented in the Asian space, first section's objective is to characterize, in broad terms, the nature of China's insertion in GVCs and the main transformations in intra-Asian trade in the 2000s. Section two aims to describe the integrated circuits' GVC, highlighting its distinctive productive stages and their characteristics regarding capital and (skilled or unskilled) labor utilization, consubstantiated in the value added by each stage of the productive process. The third section is dedicated to the historical process of productive fragmentation in this chain, delineating its main tendencies since the 1960s – when the industry was born – until actuality. Section four establishes China's positioning in the chain and is devoted to the conclusions.

F.1 Brief notes on the nature of China's insertion in internationally fragmented manufacturing productive processes and recent transformations in intra-Asian trade

China's integration in GVCs was predicated in the low level of Chinese wages in dollars, in a way that the country has specialized in unskilled labor-intensive stages of production, particularly in assembling (MEDEIROS, 2010). Low wages in dollar were fruit of state policies both in relation to the exchange rate – keeping the yuan pegged to the dollar in a devaluated level from 1994 to 2004, when it slowly began to appreciate – and regarding the

constitution of a new working class made available for the development of the private sector in the country.

On the one hand, China is inserted in labor-intensive stages of manufacturing productive processes; on the other hand, the commodities subject to such fragmentation are, in general, those of high technology. According to Paprzycki and Ito (2010), the increase in intra-Asian trade as byproduct of productive processes fragmentation in the region "to a considerable degree is in fact the story of one sector, the electrical machinery industry" (PAPRZYCKI& ITO, 2010, p.8). Modularization, scale effects, product portability, time sensitivity and technological diversity – factors that enable for a greater degree of fragmentation in a particular industry along with the policy environment (KIMURA, HAYAKAWA & JI *apud* PAPRZYCKI & ITO, 2010) –, are "characteristics of the electrical machinery/electronics industry [which] are particularly conducive to production fragmentation" (PAPRZYCKI& ITO, 2010, p.8). As a result, there is a marked contrast between the sophistication of China's export list and the nature of the productive stages that are executed in the country. Such dichotomy is also found among other Asian economies, particularly the ASEAN-4[144].

China's ascension in the global economy and the increased fragmentation of manufacturing productive processes, phenomena inextricably intertwined, imposed deep transformations on intra-Asian trade during the 2000s. The primordial *locus* of fragmentation is trade in intermediary goods, especially in parts and components. Analyzing the import-export matrix of intermediary goods between the economies of the region, as shares in bilateral trade, Paprzycki and Ito (2010) identified a significant transformation in the intra-Asian trade pattern of the referred goods.

During the 1980s, a triangular pattern of trade was conformed in Asia. Japanese manufacturing goods' loss of competitiveness – in the aftermath of the Plaza Agreement –, added to the strategies of a part of low wage Asian economies to unilaterally liberalize trade and investments in order to attract FDIs have led Japanese TNCs to delocalize their assembling activities to these economies, importing capital goods and parts and components from Japan and exporting final goods to the US and Europe (MEDEIROS, 2006). From the Asian standpoint, trade flows revealed a relatively simple structure, given the

[144]. Group composed by Indonesia, Malaysia, the Philippines and Thailand.

unidirectionality of these flows, easily evidencing the technological hierarchy between the involved economies.

In the 1990s, Taiwan, South Korea and Singapore also became providers of intermediary goods to the ASEAN-4, exporting through the latter to the US and European markets, without essentially altering the triangular nature of trade, even though the ASEAN-4 began to export some industrial inputs back to the former (PAPRZYCKI& ITO, 2010). Such movement expressed a technological leap, providing a parameter for the hierarchy between these economies and enabling the identification of those which held command and organizational capacity over production in the Asian space.

Gaulier, Lemoine e Ünal-Kesenci (2005) affirm that China's ascension – as manufacturing center – has accentuated the triangular character of intra-Asian trade, accelerating the exit process of more developed economies from the production and exports of labor intensive goods – identified by the authors as final consumption goods – and increasing trade in sophisticated intermediary goods in the region. Despite the fact that the net effect of trade flows could be described in terms of triangular trade, this description masks significant changes in intra-Asian trade relative to previous periods.

China's affirmation as manufacturing center has occurred concomitantly with the alteration of intra-Asian trade flows' structure. This transformation was not restrained to reflecting the simple entrance of China by the side of the ASEAN-4 as importer of capital and intermediary goods, particularly of parts and components, from Japan, Taiwan, South Korea and Singapore (and as exporter of final consumption goods to the US and Europe). The deepening of fragmentation in the production of parts and components, coetaneous to China's ascension, implied the establishment of multidirectional flows of parts and components between Asian economies involved in GVCs. Therefore, the direction of parts and components flows ceased to be an indicator of economies' placement in the regional technological hierarchy and a central parameter for the analysis of their position in GVCs. That means, the following associations ceased to necessarily hold: *i*) that economies that export parts and components present significant technological development; and *ii*) that importers of parts and components are merely assemblers of final goods in GVCs.

Paprzycki and Ito (2010) point to qualitative transformations in the pattern of triangular trade during the 2000s, signalizing to a further complexification of regional trade. According to the authors, the most noticeable change was China's ascension not only as a

large importer of parts and components, but also as a substantial supplier of these industrial inputs to almost all the economies of the region. The growth of Chinese exports of intermediary goods to Asia was so fast that, in 2007, Malaysia's and Indonesia's intermediate goods imports from China were approximately equivalent in size to those from Japan. In that same year, China was the main supplier of intermediary goods to Japan and the second largest, behind Japan, to South Korea and Taiwan (PAPRZYCKI& ITO, 2010).

This phenomenon is not a Chinese exclusivity. The ASEAN-4, especially Malaysia, became suppliers of industrial inputs among each other, as well as exporters, though in a smaller scale, of intermediary goods back to the economies of FDIs' origin, that means, Japan, South Korea and Taiwan (PAPRZYCKI& ITO, 2010). In the same way, if China became increasingly a provider of intermediary goods to the ASEAN-4, the latter also augmented their exports of intermediary goods to China. This increase in the exports of intermediary goods, particularly parts and components, from China and the ASEAN-4 to developed Asian economies, augmenting further their export sophistication, should not be directly associated with a significant curtailment of the technological gap between the former and the latter. Even less so as evidence, by itself, that China and the ASEAN-4 would be altering their insertions in internationally fragmented manufacturing productive processes towards stages intensive in technology/knowledge.

Despite the fact that fragmentation had assumed, at the beginning, the simple separation of assembling activities of imported parts and components, the deepening of fragmentation in some industries, prominently in the electrical/electronic equipment one, also engendered the separation of stages in the own production of parts and components (PAPRZYCKI& ITO, 2010). The semiconductor industry is an exemplary case of such process, given that its production was fragmented into stages intensive in unskilled labor, in skilled labor and in capital.

In this sense, in intermediary goods trade, the pattern of unilateral provision of parts and components by the more developed economies to those specialized in labor intensive activities gave room to a multidirectional pattern of trade, revealing the further segmentation of manufacturing productive processes commanded by the strategies of Japanese, Taiwanese and Korean TNCs, as well as extra-regional ones. Moreover, the contradiction of existing sophisticated export lists being a byproduct of activities prominently intensive in unskilled labor, in the case of Asian low wage economies, was accentuated.

As a result, international trade data became still more insufficient and precarious to the correct evaluation of Asian economies' type of insertion in GVCs and the corresponding degree of technological sophistication of productive activities executed by them. In the Chinese case, the tendency towards the proportional shrinkage of consumption goods exports in favor of parts and components and capital goods, in the 2000s, has been pointed as important evidence towards a greater technological sophistication and significant transformations in the country's insertion in GVCs. However, this change has been over dimensioned in a significant part of academic literature. First, due to productive fragmentation, parts and components' exports might result from unskilled labor-intensive activities. Second, it has been common in many studies[145] to consider final goods of the electronic industry that are widely used by households and firms – personal computers and phones – as capital goods[146]. Consequently, a large parcel of this change towards capital goods is just the consecrated assembling activities.

In this context, China's insertion in GVCs still occurs mainly in unskilled labor-intensive stages of production. Despite of this profile, the Chinese state has been committed in absorbing technology and developing the country's capacity of innovation. Medeiros (2012, 2013) highlights that the building of the processing exports' sector in China, achieved through FDIs of TNCs, was accompanied by a state effort of technological capacitation, which has already resulted in significant impact over ordinary exports and import substituting, particularly in the semiconductor industry, besides the great diffusion of modern infrastructure and technologies of telecommunications.

F.2 INTEGRATED CIRCUITS' VALUE CHAIN

The semiconductor industry is characterized by being one of the most capital-intensive industries of the world, presenting R&D expenditures of around 20% of annual revenues[147]. In 2013, the world market of semiconductors reached U$305,6 billion, a historical sales record for the industry, expressing a 4,8% growth relative to 2012, when sales totaled

[145]. For instance, in studies applying the methodology of Lemoine and Ünal-Kesenci (2004) and that of Aminian, Fung and Iizaka (2007).

[146]. A methodology that takes into account these problems is proposed by Zhu, Yamano e Cimper (2011) and serves as base to OECD's Structural Analysis Database, STAN.

[147]. European Semiconductor Industry Association *apud* Millard *et al*. (2012). This proportion is also found in the semiconductor manufacturing equipment industry (SME). According to Sykes and Yinug (2006), expenditures in R&D equivalent to 20% of annual sales are not unusual in the SME industry.

U$291,6 billion (ROSSO, 2014). Being technological enablers of the whole value chain of electronic goods, semiconductors make viable, indirectly, the existence of markets significantly larger than the own industry. In 2010, accruing a production of U$298 billion, the semiconductor industry enabled the market of electronic systems, equivalent to U$ 1,6 trillion and of services (i.e. games, telecom operators, internet service providers etc.) amounting to U$6,8 trillion (MILLARD *et al.*, 2012).

The large diversity of semiconductors components is subsumed in two industrial segments, namely, integrated circuits and optoelectronics-sensor-discrete devices (O-S-D). Although O-S-D devices have been acquiring more relevance in the latest years – growing from 14% of the world semiconductor market in 2002 to represent 19% in 2012 –[148], ICs or chips still constitute the bulk of demand due to their presence "in all electronic equipment and metal-mechanic technology goods which embody electronic modules as support for their functioning" (GUTIERREZ & MENDES, 2009, p.161, our translation). According to Gutierrez and Mendes (2009), the widespread application of ICs is responsible for their common utilization as synonym for the term semiconductor, even if O-S-D components possess specific utilization and markets, in which there are no perspectives of substitution for ICs. Given the weight of ICs in the semiconductor market and their higher technological sophistication, this section is focused on the ICs segment of the semiconductor industry.

ICs' value chain is divided in five stages: *i*) conception, in which ICs functionalities are specified; *ii*) design (project) of the ICs structure; *iii*) wafer processing, which constitutes the front-end of fabrication proper, the stage in which ICs are built through hundreds of physicochemical operations over their substrate, the crystal silicon wafer; *iv*) assembling, packaging and testing of ICs, the back-end of fabrication; and *v*) customer services, including distribution and technical assistance[149] (CONSÓRCIO A.T.Kearney/Azevedo Sette/IDC, 2004 *apud* GUTIERREZ & LEAL, 2004).

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[148]. Among the main products responsible for this growth are light emitting diodes (LEDs) and complementary metal oxide semiconductor (CMOS) image sensors utilized for facial recognition in medical equipment, automobiles, surveillance equipment, etc. (ICINSIGHTS, 2013)

[149]. ICs' value chain division varies in the academic literature. Ballhaus, Pagella and Vogel (2009) split the chain in six stages : *i*) silicon extraction and the production of raw wafer ; *ii*) semiconductor design ; *iii*) mask production ; *iv*) front-end productive processes ; *v*) back-end productive processes ; *vi*) logistics, marketing and sales. Millard *et al.* (2012) identify only four stages: *i*) raw wafer production; *ii*) front-end processing; *iii*) back-end operations; *iv*) distribution.

Differently of these two typologies, Goh (2001 *apud* Nambiar [?], p.5) affirms that raw (non-processed) wafer production involves the production of silicon wafers by chemical manufacturers, being diverse from semiconductor production and not constituting a technological intensive stage. Hence, the author divides the

Conception and design are marked by the intense use of skilled labor. In the early days of the industry these stages were executed manually. Beginning in the 1980s, both productive phases were performed through the use of ICs' project softwares, the electronic design automation (EDA) tools. The process (technology) to be employed in the manufacturing of ICs and the specification of their functionalities are defined in the conception stage, considering the application to which they will be destined, the market to supply and production costs, among other factors. After being described in a high-level of abstraction, the design develops the detailed manner through which ICs should be physically implemented. The final result of the design stage is the layout, an electronic format design necessary to fabrication.

Wafer processing or the front-end of fabrication (or just fabrication) is characterized by the intense use of machinery, with very high capital requirements, involving some manufacturing operations that are among the most complex in the world. By 2006, according to Sykes and Yinug (2006), the construction of a state-of-the-art front-end factory or *fab* costed U$3 billion to U$4 billion, with most of it being accrued to machinery[150]. In 2011, such value had already reached U$6 billion, though it was possible to find *fabs* with above average size and much higher capital requirements, as the *gigafabs* of the Taiwanese TSMC, which in 2010 had started the construction of its third *gigafab* costing U$9,3 billion (NYSTEDT, 2010). With significant technological changes projected in the coming years, when it is expected that Intel's and TSMC's pioneering 450 mm wafer processing *fabs* would start operating, the cost of a state-of-the-art *fab* is projected to be at least U$10 billion.

Front-end fabrication consists in the building of ICs over the silicon wafer[151], having the former's layout replicated numerous times over the substrate, through hundreds of

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chain in four stages: *i*) P&D; *ii*) wafer processing; *iii*) assembling; *iv*) testing. Despite the different typologies of ICs' value chain, for the analysis that intend to evaluate the industry as a whole, it becomes of the utmost importance to adopt a typology that minimally contemplates the activities of design, front-end and back-end as distinct stages, as indeed occurs in most occasions.

[150]. In 1980, a cutting edge fab costed approximately U$100 million (Futrfab, [?]).

[151]. Crystal silicon wafer's fabrication (raw wafer) is made from sand, which is heated to 1.600° C, melted as to become a source of silicon (BATES, 2000). A pure crystal of silicon is put in the melted sand being pulled and spun simultaneous and slowly, which results in a silicon cylinder, the ingot (BATES, 2000). The latter's diameter is determined by the temperature and the ratio by which it is removed (MILLARD *et al.*, 2012). The ingot is sliced with diamond blades, providing thin silicon wafers that, after being polished and clean, serve as substrate for ICs' fabrication. Differently from Goh (2001 *apud* Nambiar [?]), who does not consider such as a sophisticated production, Millard *et al.* (2012) affirm that the process of production is complex, involving several steps and diverse materials. Although we are not considering the fabrication of raw wafers as part of

physicochemical operations performed in controlled environment. The final product of this stage is the processed wafer, a crystal silicon disc over which a multiplicity of identical chips was fabricated. From the technological standpoint, the main parameters that characterize front-end activities are: the wafer's diameter and the width of the lines to be etched in the wafer. According to the US Government Accountability Office (GAO, 2006, p.5):

> The technological complexity of semiconductors is indicated by the diameter of the wafer and the density of the etched lines (feature size) on the wafer. The size of the wafer is an important element because the number of chips per wafer increases dramatically as the wafer size increases. The current leading-edge manufacturers produce 12-inch (300 millimeters) wafers. Smaller feature size measured in microns [currently in nanometers] allows for more components to be integrated on a single semiconductor, thus creating more powerful semiconductors. Each reduction in feature size—from 0.35 micron [350 nm] to 0.25 micron [250 nm], for example—is considered a move to greater technological sophistication.

Finally, the assembling, packaging and testing, or the back-end of fabrication, "although still relatively technologically sophisticated" (GAO, 2006, p.4) is the simplest phase of the productive process, being intensive in unskilled labor. According to research conducted by Gartner, in the global semiconductor industry, only 6% of workers employed in the back-end had engineering diplomas. In the front-end, such proportion was 24%, whereas in design 85% had higher education (Wang & Wang *apud* Mays, 2013).

Notwithstanding, over the last years the back-end has undergone significant technological changes with the advent of advanced packing technologies. In broad lines, the main procedures in the back-end consist in: testing the chips still in the silicon wafer[152]; slicing the processed wafer in chips or dies; package the dies; and performing a final test. Despite automation in the back-end and new packaging technologies, the high degree of sophistication of front-end operations make the machinery used in the back-end appears as relatively cheap. Therefore, for instance, a machinery system of photolithography, one of the most complexes front-end processes, costed in 2005 U$15,2 million; whereas a wire-bonding machine used in the back-end was acquired by approximately U$100 thousand (SYKES & YINUG, 2006).

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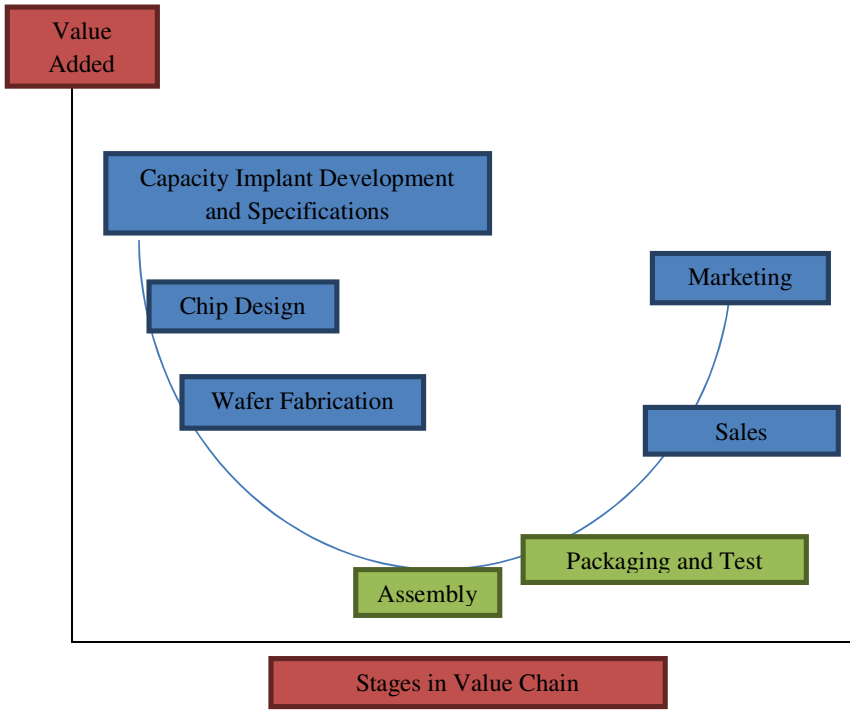
the ICs' value chain, the machinery destined to the production of raw wafers is considered by Sykes and Yinug (2006) as part of the set of SME dedicated to front-end fabrication.

[152]. It should be noted that throughout the whole ICs' value chain numerous forms of testing are performed.

The different characteristics of each phase of ICs' value chain regarding technological sophistication and the nature of labor employed, though not directly translated in international trade statistics, are expressed in the distinct value added accrued to each phase in the value of the final product, the IC, as shown in figure F.1.

Figure F. 1– ICs' Value Chain, 2010



Source: Rasiah (2010, p. 12, Figure 5).

As we discuss below, ICs' value chain fragmentation started by the delocalization of assembling, packaging and testing, the lower value added phase, to Asian economies. Some of them, notably South Korea and Taiwan, managed to move up in the value chain, whilst China fundamentally continued to perform these activities with lower value added through the operations of TNCs. Even if China has been engaging in remarkable efforts towards the development of higher value added activities in the chain, presenting significant results, this pursuit does not seem to be conflictive with the maintenance of its dominant position in the assembling, packaging and testing stage.

F.3 THE ICS' VALUE CHAIN FRAGMENTATION: MAIN TENDENCIES FROM THE 1960S TO ACTUALITY

The semiconductor industry came into being in the US, resulting from the invention of the transistor, in 1947, and of the integrated circuit, in 1958, by Texas Instruments (first prototypal) and, in 1961, by Fairchild (first private firm to produce for commercialization) (MILLARD *et al.*, 2012). ICs commercialization began in 1961, though the initial innovations that enabled their creation were fruit of R&D investments of the US government, which, in the context of the Second World War, pursued the development of radar precision in controlling and monitoring for its military (MALERBA *apud* RASIAH, 2010).

From its outset, the US government has considered the semiconductor industry as strategic, particularly its IC segment, intervening whenever necessary and monitoring the value chain, as to restrict the exports of products and equipment[153] (MILLARD *et al.*, 2012), aiming not only to guarantee its prominent position in the technological frontier, but also to maintain its military supremacy, given the dual usage of these technologies and products.

In broad lines, the process of ICs' productive delocalization has observed these considerations, maintaining in the country of origin the stages of the value chain associated to technological development and control, with higher value added, and the fabrication of products in the technological frontier. In this sense, it is emblematic that the year in which Fairchild, pioneering, began ICs' manufacturing, with the first commercial monolithic IC in the world, was also the year in which the firm started offshoring the back-end of discrete semiconductors, opening the first assembling and testing plant, specifically of diodes and transistors – no longer deemed in the industry's technological frontier – in Hong Kong.

This strategy of US TNCs, responding to competitive pressures posed by Japanese firms, had the aim to reduce costs through the transfer of the unskilled labor intensive stage of production of the semiconductor industry, the back-end of fabrication, to Asian economies with significant availability of cheap and literate labor-power and good infrastructure and security. The success of such strategy in terms of cost reduction has transformed it in an imperative to other players in the global semiconductor industry, being also adopted by Japanese and European firms. In the wake of this intra-firm movement of back-end activities

[153]. At least over the last two decades, according to Mays (2013), the control over exports has not been a hindrance for the development of the semiconductor industry in China. US restrictions, when effectively applicable, have been easily circumvented by equipment acquisition from Europe and Japan.

delocalization to Asian low wage economies, a new type of enterprise emerged, the semiconductor assembly and test services (SATS) or outsourced assembly and test (OSAT), specialized in the back-end of production, commercializing their productive capacity and enabling the outsourcing of this stage of the value chain.

From the standpoint of Asian economies, the first economies to be incorporated in the semiconductor value chain, in the back-end of fabrication, besides Hong Kong, were Taiwan and South Korea, in the 1960s, and Malaysia and China in the 1970s and 1980s respectively (RASIAH *et al.*, 2008). The entrance of each of them in ICs' assembling, packaging and testing followed the opening of special economic zones dedicated to processing exports.

The most significant fragmentation of the ICs' value chain, which would revolutionize the entrepreneurial organization pattern in the industry, however, was still to occur with the detaching of front-end fabrication from the activities of conception and design. US firms had already transferred part of ICs' front-end fabrication to Europe, in the 1970s, as a strategy to access European markets in face of commercial barriers to US exports. Nonetheless, it was only at the beginning of the 1980s that the detachment of fabrication from design was affirmed with the emergence of fabless firms – enterprises with no front-end and back-end operations –, pure-play foundries – enterprises detaining fabs which commercialize their productive capacity to other firms – and design houses (MILLARD *et al.*, 2012). In the outset of the semiconductor industry, each enterprise, by itself, was the whole 'value chain', being designated as integrated device manufacturers (IDMs). Though, the focus on core competencies progressively expelled internal activities, resulting in the creation of a complete commercial value chain (MILLARD *et al.*, 2012). IDMs' organizational model still persists in the actuality, being IDMs some of the top ICs' firms, among them the two largest in the world, Intel and Samsung.

With the advent of EDA tools, in 1981, IDMs were able to outsource the computer-aided-design (CAD) tools they were developing internally, besides parcel of their designs to the incipient design houses (MILLARD *et al.*, 2012). The latter became viable to the extent that standardization of microelectronic devices and corresponding manufacturing methods had enabled them, through specific design rules, to have their designs fabricated in distinct foundries.

Notwithstanding, as IDMs demand was not stable, design houses started to develop their own products – becoming fabless – and seeking for who to produce them, finding

laboratories and small enterprises capable of producing prototypes and small production volumes (MILLARD *et al.*, 2012). In 1981, the metal oxide semiconductor implementation service (MOSIS) emerged, in which IDMs that had fabs with idle productive capacity commercialized it to fabless. In 1987, the first pure-play foundry was created, the Taiwanese TSMC, whose activity was the full commercialization of productive capacity, without developing or selling own ICs.

The consolidation of the pure-play foundry model enabled the proliferation of design houses and fabless, which could then enter the industry circumventing the high entry costs associated with fabs. Moreover, to deal with excess demand and production of particular lines of ICs considered economically disadvantageous, IDMs started also to utilize the service of pure-play foundries (GAO, 2006), as they had done with SATS.

Finally, in the 1990s, fragmentation touched the design segment, starting from the development of system-on-chip, with the separation of EDA suppliers from design houses and silicon intellectual property (SIP) suppliers, which are firms that commercialize IP cores or IP blocks, functional units already tested and that can be replicated in other projects (MILLARD *et al.*, 2012).

The diverse characteristics of the stages of ICs' value chain and the distinct moments in which they were externalized from IDMs, added to the specificities of the economies involved, guided by different national strategies, imposed particular dynamics to the delocalization of each stage of this GVC. Differently from back-end delocalization to Asian economies, a byproduct of US, European and Japanese IDMs own initiative, generating afterwards the development of SATS; the detachment of front-end fabrication was a phenomenon exogenous to IDMs, brought by the emergence of Asian pure-play foundries, especially Taiwanese, being subsequently followed, in a lesser extent than in back-end, by the offshoring of IDMs' front-end plants. Hence, the building of fabs in Asia was primarily accrued to Asian firms investing in their economies of origin – being IDMs such as South Korea's Samsung or pure-play foundries, as TSMC – than to FDIs from Asian, European and US TNCs.

Considerations taken into account by IDMs in order to relocate front-end activities are significantly distinct from those of back-end. First, in fabs, labor costs tend to respond for 5% to 10% to total costs, not being a fundamental parameter even if delocalization to Asia might bring this advantage as well (SYKES & YINUG, 2006). Second, IDMs' front-end offshoring

tend to occur in the production of less sophisticated ICs, maintaining most advanced plants and products home, either due to the greater availability of talents or to avoid technological absorption by competitors. Diversely, in back-end, offshoring tends to generalize despite the sophistication of the IC.

In this sense, Intel's case is emblematic. In 2010, all its seven assembling and testing plants were out of the US: two in China, three in Malaysia, one in Costa Rica and one in Vietnam (INTEL, [?]). In contrast, from its nine fabs in operation only three were offshored, being located in China (Dalian), Ireland and Israel (INTEL, [?]). In the US, besides de six fabs in operation, two new were projected for the coming years. One of them, D1X module 2, in Hillsboro, Oregon, will possibly be the first fab in the world to use 450mm wafers (FARRELL, 2013). From the technological standpoint, the process (or geometry) the most advanced in utilization by the firm was the 22nm in wafers of 300mm. In its new plants, Intel projected manufacturing processors with 14nm technology, at the same time in which it developed the 10nm node. In contradistinction, the Dalian fab, inaugurated in 2010, operated with 65nm geometry and did not produce microprocessors, only chipsets, whose complexity are inferior to the former (INTEL, [?]).

Even if the development of front-end activities by Asian pure-play foundries has enabled the specialization of European and US firms[154] in design, front-end appears to increasingly be more relevant to attract design close to itself, especially due to two reasons: *i*) the proximity to Asian consumers, enabling design houses to better respond to client specifications; *ii*) technological development, since the tightening of links between design and production proper, enabling feedbacks, seems to be a growingly necessity as ICs' geometry dwindle. Firms unable to close cooperation deals through the market will need to increasingly pass and disclose information to foundries (GAO, 2006; MILLARD *et al.*, 2012).[155]

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[154]. The proliferation of fabless occurred with higher intensity in the US, where main brands are located such as Qualcomm, nVdia, Broadcom and even AMD, formerly an IDM.

[155]. It should be noted that such perspective is not consensual. According to the US' National Research Council Committee on Comparative National Innovation Policies, vertical disintegration allows localization of fabs to be an irrelevant factor regarding design's locational decisions: "Because chip designs can be transmitted digitally, design R&D does not need to be close to wafer production plants. Indeed, an SIA survey found that location of fabrication capacity is not a key factor in a company's decision of where to locate design R&D. By the same token, however, the shift to the foundry model means that design can be based any place with the best available talent. A number of governments are targeting semiconductor design and development for rapid development." (NATIONAL RESEARCH COUNCIL (US) COMMITTEE ON COMPARATIVE NATIONAL INNOVATION POLICIES: BEST PRACTICE FOR THE 21ST CENTURY, 2012, p. 347).

The perception that front-end fabrication acts as mainstay of design has been shared among EU[156]and US[157]official organs with great alarmism, since these are economies in the technological frontier which have seen their shares in world's production of processed wafers dwindle substantially since the 1980s. Such diagnosis is also found among countries which aim to alter their insertions in ICs' GVC towards activities of higher value added.

Even though Malaysia had entered in the ICs' value chain in the 1970s, the country was not able to develop the front-end stage; whereas China, despite being incorporated later in the chain, has succeeded in developing such activities from the 2000s onwards, counting on significant inflows of FDIs, including Taiwanese. Differently from Taiwan's case, in which front-end activities' consolidation occurred in parallel to the transfer of assembling, packaging and testing previously developed on the island especially to mainland China; China's affirmation in front-end fabrication has not been to the detriment of its attractiveness to back-end activities.

If, on the one hand, this characterization privileges the foundation of the economies' insertions in the ICs GVC; on the other hand, it neglects the initiatives and activities that, though still not predominant, might constitute or come to be the most dynamic elements of the ICs industry in these countries, as with the case of the design segment in China.

F.4 CHINA'S INSERTION IN THE GLOBAL VALUE CHAIN OF INTEGRATED CIRCUITS

Currently, China is the main assembler of semiconductors in the world. Nevertheless, this is a recent phenomenon. At least until half of the 1980s, China not even figured as a

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156. As in the study of Millard *et al.*(2012) prepared for European Comission.

157. Cf. (PCAST, 2004) "Without new manufacturing plants, the U.S. economy is facing perilous times. The semiconductor industry has entered the nanotechnology era, and the manufacturing processes it is developing for the deposition of materials will transform the next generation of products and determine the economic fate of countries. The semiconductor industry operates in an 'innovation ecosystem' whose two primary pillars are manufacturing and research and development. Without one, there cannot be the other, according to a largely ignored report from the President's Council of Advisors on Science and Technology (PCAST) and authored by Scalise. The United States economy cannot be dependent on 'knowledge' if its research and development is "de-coupled" from manufacturing. 'Design, product development and process evolution all benefit from proximity to manufacturing, so that new ideas can be tested and discussed with those working 'on the ground,' ' says the report that was released during the George W. Bush administration entitled 'Sustaining the Nation's Innovation Ecosystems, Information Technology Manufacturing and Competitiveness.' 'As the velocity of technology development accelerates, the interdependency between new research and manufacturing becomes vitally important, and those linkages are provided by people. Locations that possess both strong R&D centers and manufacturing capabilities have a competitive edge.' The U.S. leadership in high technology is at risk if the manufacturing 'anchor' is damaged, said the PCAST study." (MCCORMACK, 2010)

competitor to other Asian countries in the industry, particularly to Malaysia, which then held China's present position. In 1986, the publication *Transnational corporations in the international semiconductor industry* of United Nations Centre on Transnational Corporations (UNCTC) "since the first semiconductor transnational corporations entered in Malaysia, in 1972, the country has become the main offshore assembler of semiconductor devices in the world" (UNCTC, 1986, p. 412). According to the latter, when TNCs entered in the country, Malaysia had lower labor costs relative to the regions and countries of more advanced development in Asia, however presenting disadvantages vis-à-vis the Philippines, Indonesia and Thailand. Malaysian specialization on lower value ICs' assembling, relative to those assembled by Singapore, would be a reflex of these labor cost differences. The publication, though, highlighted that TNCs suffered from the lack of particular types of workers and competed for them by raising wages. As consequence, the diagnosis was that there was a tendency to accelerate automation in plants already installed in the country, though Malaysia would certainly suffer increased competition in labor-intensive assembling activities from other developing economies with larger labor supplies of unskilled and semi-skilled labor (UNCTC, p. 415, 1986).

Finally, the publication remarked the lack of backward integration of TNCs activities developed in Malaysia both relative to front-end operations and to design/R&D activities. Besides the apparent lack of skilled workers, other presumable restrictions accounting for the absence of such activities would be Malaysia's lesser development of supplier and support industries, its limited domestic market (i.e. electronic consumer and industrial industries) and an industrial and technological infrastructure relatively less developed. It was also mentioned that, regarding the domestic market for semiconductors, the rise in earnings could generate an increased demand for consumer's electronics, circumventing such restriction. As conclusion, the publication was incisive in affirming that countries such as Malaysia would find increasingly more problematic to enter in the more sophisticated ICs' production (UNCTC, p. 416, 1986).

As significant as the confirmation, *grosso modo*, of such prognoses is the fact that notwithstanding the publication discussed Malaysia position vis-à-vis Singapore, the Philippines, Indonesia and Thailand, besides postulating the competitive pressures Malaysia was bound to suffer, there was no mention to China in this context. Ironically, even if Malaysia were the main offshore assembler of semiconductors, it was only in 1986, year in which the book was published, that the Malaysian government defined the semiconductor

industry as strategic, with the First Industrial Master Plan. In China, this status was granted still in the Maoist period, with the creation of the Electronic Industry Ministry (RASIAH *et al.*, 2008).

Equally ironical, though China was not mentioned, it was who effectively took Malaysia's position as main semiconductor assembler, holding 28% of world's back-end productive capacity[158] in 2012, followed by Taiwan (19%) and Japan (13%). China occupied the first position in the world in terms of installed productive capacity, in 2012, for the fourth consecutive year (PwC, 2013). In terms of reported laborers by back-end firms, China also had first position, with 23%, followed by Taiwan (18%) and Malaysia (15%) (PwC, 2013). The 117 assembling, packaging and testing plants operating in the country represented 21% of the number of these plants in the world (PwC, 2013). The value of Chinese back-end production, in 2011, corresponded to almost 31% of world production in this stage (PwC, 2012).

Despite these numbers being expressive, most of the productive capacity installed in China was destined to products and packages of larger volume and lower price (PwC, 2012). Moreover, as in Malaysia, the largest share of enterprises in China's back-end production was foreign: in 2011, just 37% were from the mainland, 12% came from Taiwan and 2% from Hong Kong, whilst the US was the main foreign-owner, with 18% (PwC, 2012). In terms of value capture or value added, there is a significant segmentation in back-end fabrication, particularly for those enterprises which outsource their productive capacity, whose sales already surpass those of IDMs in this stage, for in 2012 51% of world revenues from back-end production were attributed to the SATS market – which grew from U$5 billion in 1997 to U$24,5 billion in 2012 (GARTNER, 2013) –, totaling more than 130 enterprises (WALKER, 2013).

The four main enterprises in 2014 – ASE, Amkor, SPIL and STATS ChipPAC – had instituted a race for the more expensive packages involving large investments[159] and new technologies, which implied a truly revolution in back-end operations materialized in advanced packaging[160]. *Grosso modo*, other SATS firms compete mainly through prices in

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[158]. Data on productive capacity have factory floor-space as proxy (PwC, 2013).

[159]. Emblematic of such process was the fact that in 2010, for the first time, two SATS – ASE and SPIL – entered the top 20 ranking of semiconductor enterprises in capital expenditures (Jim Walker *apud* SOLID STATE TECHNOLOGY, 2010). In the 2012-2013 biennium, all four largest SATS were in the ranking (GARTNER, 2013a).

[160]. This set of new Technologies enables packaging to reduce ICs' energy consumption, augment chips' capacity and data transfer speed, besides shrinking their size. Advanced packaging involves technologies and

large volume packs for being distant from the technological frontier. In 2015, China's JCET took over STATS ChipPAC, placing the country in the technological race in back-end activities.

The importance of China's market for semiconductors both for posterior exports of final goods and for domestic consumption – which already accrues for more than half of the world market, superposing to (and in large extent resulting from) cost advantages derived from the low wages associated to its vast industrial reserve army – has become a central element in the strategy of big back-end players. According to Cai (2013), eight out of ten top IDMs in the world had back-end facilities in China, whereas all top ten SATS had plants in the country, even if they had entered after IDMs.

As tendency, China's position as main destination to the back-end of worldwide semiconductor production will probably be even more strengthened if it is taken into account that, by the end of 2012, out of the world's 17 new planned assembling, packaging and testing plants, five were in the country, which represented 90% of projected factory floor-space (PwC, 2013).

In contrast, front-end operations, particularly the more advanced plants and lines of products, mainly remained in the headquarter economies. In 2014, the main regions in terms of planned fab projects were Taiwan (U$1,8 billion), South Korea (U$1,6 billion) and the Americas (U$1,2 billion) (SEMI, 2014), probably expressing TSMC, Samsung and Intel expenditures, the three largest semiconductor firms in sales. Considering that in 2013 a fab in the state-of-the-art utilized 300mm wafers (12 inches) with technological process of 28nm/22nm or less; a brief analysis of 300mm operating fabs' location evidences the mentioned pattern. In November 2015, the US had at least 27 fabs of 300mm in operation, whereas Japan at least 20 (SEMI, 2015a, 2015b). In contrast, China had 8 in 2012 (PwC, 2013) – one of them from the Chinese SMIC.

The preference to remain in headquarter economies is also the result of state policies, whose aim is to assure the technological lead. Evidences of such policies are to be found not exclusively in the US. In the case of Taiwan, "until the latest ruling the Taiwan government

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processes that create competition and convergence among front-end, back-end and printed circuits board assembling (WALKER, 2013). According to Chappell (2013), a certain blur already exists between front-end and back-end activities, as the last stages of what would traditionally be deemed wafer processing are being implemented by SATS.

forbade Taiwanese companies from owning and operating fabs [in the mainland] that process the more cost efficient larger wafer size" (CLARKE, 2016). Recently these policies were relaxed, though their core objective was preserved: "The authorities relaxed the prohibition on Taiwan companies investing in 300mm wafer fabs in China in September 2015, saying that it would allow a maximum of three such plants" (CLARKE, 2016). In this context TSMC, which already had a Chinese fab, announced by the end of 2015 plans for its first 300mm fab in China, a projected investment of U$3 billion, which, according to its chairman, aimed "to provide closer support to TSMC's customers there and further expand the company's business opportunities" (Morris Chang *apud* CLARKE, 2016). The fab was supposed to operate with 16nm geometry, though "before TSMC can move equipment into the Chinese wafer fab the Investment Commission will require proof that the foundry has begun manufacturing the more advanced 10nm manufacturing process in Taiwan" (Investment Commission of the Taiwanese Ministry of Economic Affairs *apud* CLARKE, 2016).

Even if China lagged significantly behind the technological frontier and had relatively few 300mm fabs – compared to headquarter economies from main IDMs and pure-play foundries –, it was noticeable how the country managed to significantly develop this stage in contradistinction to Malaysia. In 2012, besides the eight 300mm fabs operating in the country, China had 15 fabs of 200mm and 140 that processed wafers smaller than 200mm (PwC, 2013). Many of the latter were in the O-S-D segment, especially for LEDs production (PwC, 2013). Distinctively from other countries, China was able to attract many fabs of foreign origin, notwithstanding the tendency of firms operating in this stage to privilege production in headquarter economies.

The pattern of location from main Asian ICs' manufacturers reveals that the choice to produce in China obeyed a completely distinct logic from that centered in labor costs' reduction. With most of its fabs in South Korea, Samsung offshored just two fabs: one to the US (Semiconductor-technology.com, [?]) and other to China (BAE, 2014). Excepted for a joint-venture in Singapore, TSMC had the same model, maintaining 9 fabs in Taiwan, one in the US and one in China (TSMC, [?]). Whereas the consideration for choosing the US seems to be the pursuit of technological capacitation[161]; in the decision to delocalize to China what

[161]. "Samsung worked with Austin officials for 16 months before announcing the decision [to construct the fab]. The company was concerned about the lack of direct flights from Austin to Seoul, meaning that finished wafers must be sent via the Dallas air freight terminal. The I-35 highway between Austin and Dallas is often busy, adding delays to shipments destined for Korea for final assembly and testing Samsung sought reassurances about congestion on and around the I-35 over the next ten to 15 years. The nearness to the University of Texas

appears to have preponderated was the proximity to back-end and to the consumer market[162], the industries of electronic final goods.

Nonetheless, design is the most dynamic sector of ICs' industry in China. Considering the semiconductor industry as a whole, according to PwC (2016), in 2014, the industry's sales revenues in China had the following composition: 36,5% was accrued to O-S-D devices; 26,5% to back-end; 15% to front-end; and 22% to design. The strong dynamism of ICs' design segment was reflected in its high annual compound growth rate of 35,8% between 2003 and 2014, responsible for the leap in revenues from U$541 million to U$17,1 billion during the period (PwC, 2016). Such significant growth was expressed in the increased participation in the world's ICs market of the industry in China, which "has grown from representing just 0.4% of the worldwide IC market and 2.5% of the worldwide fabless IC industry in 2003 to representing almost 6% of the worldwide IC market and 19.4% of the worldwide fabless IC industry in 2014" (PwC, 2016, p.12).

According to PwC (2016), the development of design was strongly related to TNCs productive delocalization and was accelerated by fiscal incentives provided by the Chinese state from 2011 onwards (12th Five Year Plan): "Of the 664 IC design enterprises reported at the end of 2014 as many as 250 could be the design or research and development (R&D) units or activities of foreign invested or subsidiary multinational companies (MNC)" (PwC, 2016, p.13). To this process was fundamental the existence of a large supply of skilled labor-power, which was already materialized in expressive figures in terms of employment: "according to the China Center of Information Industry Development (CCID), the total number of employees in the IC design sector increased by almost 15% in 2014 to about 147,000" (PwC, 2016).

Despite the advancements in ICs' production, China's impact on the semiconductor market is primarily as consumer. Distinctively from the restriction posed to Malaysia by its domestic market for the development of other stages of the semiconductor GVC – pointed by UNCTC publication –; China counts with the main consumer market in the world, accruing for 56,6% of world semiconductor consumption – slightly more than 57% in the ICs' segment

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was an attraction, making it easier for Samsung to recruit future engineers." (Semiconductor-technology.com, [?]).

[162]. As put forward by the chief of Samsung's memory chip business division: "The Chinese market accounts for about 50 percent of global demand for NAND memory chips. So, we are actively considering investing more in China" (Kim Ki-nam *apud* YONHAP NEWS AGENCY, 2014).

– in 2014, resulting from the ongoing transfer of world production of electronic equipment to the country and the higher than average semiconductor content of such goods (PwC, 2016).

Although most of China's consumption of semiconductors was destined to exports – 63% in 2011 –, consumption accruing to the domestic market was fast increasing and represented a significant share of the world market – almost 19% in 2011 (PwC, 2012). Due to the vast growth of China's domestic market, the country became the main market for mobile phones, digital televisions and automobiles, in 2010, as well as to personal computer in 2011 (PwC, 2012) and smartphones in 2012 (SAVITZ, 2012). According to PwC (2012), China's domestic market expansion, regarding consumption of final goods from the electronic industry, was responsible for 34% of worldwide semiconductor market growth between 2003 and 2011. As a result, the value of semiconductors utilized for assembling final goods sold in China leaped from U$10 billion in 2003 to U$56 billion in 2011.

Taking into consideration the set of ICs' distinct productive stages and the O-S-D segment, semiconductor production in China represented 13,4% of world production value in 2014, hitting more than U$77,3 billion in revenues (U$49,1 billion in ICs), according to PwC (2016) estimates. Notwithstanding the fast development of production in the country mainly due to industrial transfer from advanced economies; an enormous mismatch existed relative to the evolution of China's demand. According to PwC (2016), the gap between production and consumption of ICs in China reached U$120,1 billion in 2013 up from U$20,8 billion in 2003, expanding still further in 2014 and presenting a growing tendency in the coming years, despite the significant improvement in the ratio between production and consumption. Chinese semiconductor consumption related to final goods sold in the country presented increases that surpassed the industry's revenue growth in China. Though the gap was large, an expanding demand is a fundamental condition for the country to pursue assertion in the industry. As Crotty emphasizes, "entry into core industries is thus unlikely unless demand growth has been quite rapid and industry profit rates high for an extended period" (CROTTY, 2000, p.10).

China's insertion in this GVC occurs mainly through TNCs and predominantly in the simplest stage of the productive process, intensive in unskilled labor, although also significantly in the skilled-intensive stage. Regarding the capital-intensive stage, the fast growth of China's market for final goods of the electronic industry – already surpassing that of the US in many cases – decisively contributed to the development of front-end fabrication

in the country, through the attraction of FDI and not as much due to domestic enterprises' efforts.

Differently from Taiwan, South Korea and Japan, the development of front-end in China is not occurring to the detriment of assembling, packaging and testing, which keeps attracting significant FDI inflows. Even if China already detained expressive and growing insertion in skilled labor-intensive design, creating competition between its workers and those in advanced countries, this occurred in parallel and not to the detriment of unskilled labor-intensive activities. Therefore, the case study revealed signs that China is providing a vast pool of cheap unskilled labor side-by-side to the development of higher value added stages in the ICs' GVC, supplying also a large pool of skilled workers to the expansion of TNCs operations in the country.

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RÉSUMÉ SUBSTANTIEL EN FRANÇAIS

L'objectif de cette thèse est d'évaluer dans quelle mesure l'intégration de la Chine dans l'économie capitaliste mondiale a été associée à la détérioration du pouvoir de négociation du travail vis-à-vis du capital dans les pays développés, exprimée par la stagnation des salaires réels et la détérioration des conditions de travail. Adoptant une posture critique à l'égard de l'interprétation orthodoxe qui relie ces deux phénomènes à travers le modèle d'Heckscher-Ohlin-Samuelson et le théorème de l'égalisation du prix des facteurs de production, nous proposons une interprétation fondée sur la mondialisation de la vaste armée de réserve industrielle chinoise, comme effet de l'alliance entre l'État chinois et le capital des pays développés sous sa forme productive. Nous construisons cette interprétation à travers deux étapes analytiques qui prennent en compte à la fois la dimension "vers l'intérieur " et la dimension "vers l'extérieur " de la mondialisation de l'armée industrielle de réserve chinoise. En particulier, comment cette armée de réserve industrielle a-t-elle été formée par l'État chinois ; et comment l'accès du capital productif des pays développés à elle, dans le contexte de la mondialisation néolibérale, a favorisé une réorganisation de la division internationale du travail, mettant en péril les conditions matérielles qui, historiquement, avaient mis le travail des métropoles du capitalisme en position de force vis-à-vis du capital, par rapport au travail de la périphérie. Nous analysons d'abord la formation de l'armée industrielle de réserve chinoise qui a sous-tendu le processus de prolétarisation dans le pays comme conséquences de l'action de l'État-parti, réalisée à travers l'accumulation primitive. Nous affirmons que les taux de salaire bas et stagnants des travailleurs chinois non qualifiés qui prévalaient dans les années 1990 et jusqu'au milieu des années 2000 - cruciaux dans la transformation de la Chine en "usine du monde" - ne proviennent pas que de la destruction des communes et des *danweis*. Ils proviennent aussi de l'aliénation constante des surplus croissants des paysans par l'État, qui a favorisé la stagnation des revenus réels de l'agriculture fermière et a poussé les paysans à prendre le chemin de la prolétarisation, formant une vaste armée industrielle de réserve. Nous expliquons ensuite comment l'accès préférentiel du capital des pays développés à cette armée industrielle de réserve massive - encouragé activement par l'État-parti chinois - a augmenté la profitabilité à travers deux effets cruciaux : la réduction immédiate et drastique des coûts unitaires du travail ; la transformation du rapport de force domestique au détriment du travail en faveur du capital via la mondialisation de l'armée de réserve industrielle chinoise. Ainsi, nous considérons l'interaction entre ces deux effets opposés – l'effet « termes de l'échange » et l'affaiblissement du pouvoir de négociation des travailleurs – sur les salaires réels et les conditions de travail dans les pays développés. Nous affirmons que la mondialisation de la vaste armée industrielle de réserve chinoise a fourni la masse critique pour briser la connexion historique entre la production industrielle et les marchés de biens de consommation dans les pays développés, qui fournissaient la base matérielle sur laquelle se cristallisait les compromis institutionnels entre croissance de la productivité et des salaires réels. Cela contraste avec l'intensification des conflits de classe en Chine - la mondialisation ayant transformé les travailleurs-paysans chinois en colonne vertébrale de l'armée industrielle active de l'économie mondiale - où les luttes des paysans et des travailleurs ont été exprimées par une croissance rapide des salaires et des changements institutionnels depuis le milieu des années 2000.

RÉSUMÉ SUBSTANTIEL EN PORTUGUAIS

O objetivo da presente tese é estudar como a integração da China na economia mundial capitalista tem sido associada à deterioração da posição do trabalho em relação ao capital nas economias avançadas, expressa pela estagnação dos salários reais e pela degradação das condições de trabalho. Ao negar a narrativa econômica dominante que relaciona esses dois fatores por meio do modelo Heckscher-Ohlin-Samuelson e do teorema da equalização dos preços dos fatores de produção, nós propomos uma interpretação fundamentada na globalização do vasto exército industrial de reserva da China como subproduto da aliança entre o Estado chinês e o capital das economias avançadas em sua forma produtiva. Construímos essa interpretação através de dois momentos analíticos que contemplam tanto a dimensão "para dentro" e como a "para fora" da globalização do exército industrial de reserva da China, especialmente, como ele foi formado pelo estado chinês e como o seu acesso pelos capitais produtivos dos países avançados, no contexto da globalização neoliberal, promoveu uma rearticulação na divisão internacional do trabalho que minou as condições materiais que historicamente colocaram o trabalho, nos países centrais, numa posição melhor para se opor ao capital vis-à-vis o trabalho na periferia. Por um lado, discutimos a formação do exército industrial de reserva da China que tem sustentado o processo de proletarização no país como criaturas do partido-estado logradas por meio de acumulação primitiva. Afirmamos que os salários baixos e estagnados dos trabalhadores não qualificados chineses, que prevaleceram na década de 1990 até meados dos anos 2000, no cerne da transformação da China na fábrica do mundo, resultaram não somente do desmantelamento das comunas e danweis, mas também da alienação do crescente produto excedente dos camponeses pelo estado, promovendo a estagnação da renda real na agricultura e impelindo os camponeses a seguir o rumo da proletarização, formando um grande exército industrial de reserva. Por outro lado, discutimos como o acesso dos capitais dos países avançados a esse vasto exército industrial de reserva em termos preferenciais, ativamente possibilitado pelo partido-estado chinês, aumentou a rentabilidade por meio de dois resultados cruciais: reduzindo imediata e drasticamente os custos unitários do trabalho e tornando global o exército industrial de reserva da China, inclinando a balança de poder em direção ao capital nas economias centrais. Em seguida, abordamos a interação dos efeitos opostos desses dois resultados - o "efeito dos termos de troca" e do enfraquecimento do poder de barganha dos trabalhadores - sobre os salários reais e as condições de trabalho nos países avançados. Afirmamos que a globalização do vasto exército industrial de reserva da China forneceu massa crítica para quebrar a ligação histórica entre produção industrial e mercados consumidores nos países avançados, condição que forneceu a base material sobre a qual os trabalhadores foram capazes de conquistar vínculos institucionais entre o crescimento da produtividade e dos salários reais. Em contrapartida, à medida que essa globalização foi predicada na transformação dos camponeses chineses na espinha dorsal do exército industrial ativo da economia global, ela elevou os conflitos de classe no interior da China, onde as lutas dos camponeses e trabalhadores têm se expressado em rápido crescimento dos salários e em mudanças institucionais a partir de meados dos anos 2000.

Palavras-chave: exército industrial de reserva; globalização; internacionalização produtiva; China; proletarização; salários; cadeias de valor globais; relocalização industrial

RÉSUMÉ en français: Cette thèse évalue dans quelle mesure l'intégration de la Chine dans l'économie capitaliste mondiale a été associée à la détérioration du pouvoir de négociation du travail vis-à-vis du capital dans les pays développés, exprimée par la stagnation des salaires réels et la détérioration des conditions de travail. Nous proposons une interprétation fondée sur la mondialisation de l'armée de réserve industrielle chinoise, comme effet de l'alliance entre l'État chinois et le capital des pays développés sous sa forme productive. D'une part, nous analysons la formation de l'armée industrielle de réserve chinoise qui a sous-tendu le processus de prolétarisation dans le pays comme conséquences de l'action de l'État-parti, réalisée à travers l'accumulation primitive. D'autre part, nous expliquons comment le fait que le capital des pays développés ait un accès à cette armée industrielle de réserve a augmenté la profitabilité à travers de : la réduction des coûts unitaires du travail, et en rendant l'armée industrielle de réserve chinoise globale, décalant le rapport de force domestique au détriment du travail. Nous considérons l'interaction entre l'effet «termes de l'échange» et l'affaiblissement du pouvoir de négociation des travailleurs sur les salaires réels dans les pays développés. La mondialisation de l'armée industrielle de réserve chinoise a fourni la masse critique pour briser la connexion historique entre la production industrielle et les marchés de biens de consommation dans les pays développés, qui fournissaient la base matérielle sur laquelle se cristallisait les compromis institutionnels entre croissance de la productivité et des salaires réels.

TITRE en anglais: The globalization of China's industrial reserve army: its formation and impacts on wages in advanced countries

RÉSUMÉ en anglais: The present thesis assesses how China's integration in the global capitalist economy has been associated with the deterioration of labor position vis-à-vis capital in advanced economies expressed in stagnant real wages and worsening working conditions. We propose an interpretation grounded on the globalization of China's vast industrial reserve army as a byproduct of the alliance between the Chinese state and advanced countries' capitals in their productive form. On the one hand, we discuss the formation of China's industrial reserve army which has underpinned the process of proletarianization in the country as creatures of the party-state achieved through means of primitive accumulation. On the other hand, we discuss how advanced countries' capitals access to this vast reserve industrial reserve army in preferred terms, actively enabled by the Chinese party-state, has increased profitability through two crucial outcomes, by immediate and drastically reducing unit labor costs and by making China's industrial reserve army global, tilting the balance of power back home towards capital. We then consider the interplay of the opposite effects of these two outcomes – the 'terms of trade effect' and the weakening of laborers' bargaining power – over real wages and working conditions in advanced countries. We claim that the globalization of China's vast industrial reserve army has provided critical mass to break the historical connection between industrial production and consumer markets in advanced countries that provided the material basis in which workers were able to conquer the construction of institutional links between productivity and real wage growth.

DISCIPLINE: Sciences Économiques

MOTS-CLÉS: armée industrielle de réserve; mondialisation; internationalisation productive; Chine; prolétarisation; salaires ; chaînes globales de valeur; délocalisation industrielle

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