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Le capitalisme dominé par la finance après le « *shadow banking* » : Implications analytiques, d'instabilité financière et macroéconomiques

Finance-dominated capitalism after 'shadow banking': Analytical, financial instability and macroeconomic implications

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THÈSE DE DOCTORAT
présentée par

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O capitalismo dominado pelas finanzas depois do "*shadow banking*": Implicaçoes analíticas, de instabilidade financiera e macroeconómicas

Finance-dominated capitalism after 'shadow banking': Analytical, financial instability and macroeconomic implications

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TESE DE DOUTORADO
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Abstract

This thesis aims at reassessing the analysis of shadow banking within the Keynesian and *régulationist* tradition of finance-dominated capitalism macroeconomics. The first part revisits the shadow banking literature to address the subject's definition problem. Chapter 1 builds upon a semantic approach to reveal the polysemy of 'shadow banking'. It identifies four main different characteristations of shadow banking among the fifty most cited publications within the literature, which are assessed quantitatively and qualitatively. Chapter 2 analyses whether the variety of 'shadow banking' characterisations stems from a theoretical issue. Based on a theoretical taxonomy of the literature, an examination of its relation to the characterisations' attributes, and a 'genealogy' of the characterisations, the chapter concludes that the characterisations emerged as an orthodox theory's fix to an anomaly – the GFC – or as a 'regulatory perimeter' defined by the international community of regulators. The second part reassesses the role of 'shadow banking' within the heterodox research agenda. Chapter 3 analyses the use of 'shadow banking' for political purposes to determine its prospects as an analytical category within different theoretical streams. It shows the different vested interests behind the use of the term 'shadow banking' concluding that, for most of the scientific and regulatory community, the term has already fulfilled its objective. Chapter 4 shows evidence for the abandoning of 'shadow banking' and puts forward a proposal for redefining the term within a conceptual framework that integrates the contributions of the literature into the traditional heterodox analytical framework for systemic risk. Finally, the third part brings the latter into the field of macroeconomics building on the finance-dominated capitalism literature and the case study of Spain (1998-2019). Chapter 5 provides a descriptive quantitative and qualitative assessment of the macro-structural changes within the Spanish economy linked to the growth of the financial sector. Chapter 6 offers a quantitative assessment of their relative impact on the pattern of growth using the supermultiplier demand-led growth accounting methodology. All in all, the evidence presented in this thesis suggests that heterodox economists must reassess their use of 'shadow banking' as an analytical category, whose main macroeconomic impact might not be found in private, but in public spending.

Keywords: shadow banking, financial instability, global financial crisis, financial regulation, finance-dominated capitalism, supermultiplier, Spanish economy.

Résumé

Cette thèse vise à réévaluer l'analyse du « shadow banking » dans le cadre de la macroéconomie keynésienne et régulationniste du capitalisme dominé par la finance. La première partie revisite la littérature sur le shadow banking afin de répondre au problème de définition du sujet. Le chapitre 1 s'appuie sur une approche sémantique pour révéler la polysémie du concept de « shadow banking ». Il identifie quatre principales caractérisations du « shadow banking » parmi les cinquante publications les plus citées dans la littérature, qui sont évaluées quantitativement et qualitativement. Le chapitre 2 vise à déterminer si la variété des caractérisations du « shadow banking » résulte d'un problème théorique. Sur la base d'une taxonomie de la littérature, d'un examen de sa relation avec les attributs des caractérisations et d'une "généalogie" des caractérisations, le chapitre conclut que les caractérisations sont apparues comme une réponse de la théorie orthodoxe à une anomalie (la crise financière mondiale) ou comme un « périmètre réglementaire » défini par la communauté internationale des régulateurs. La deuxième partie réévalue le rôle du « shadow banking » dans le programme de recherche hétérodoxe. Le chapitre 3 analyse l'utilisation du « shadow banking » à des fins politiques, afin de déterminer ses perspectives en tant que catégorie analytique au sein de différents courants théoriques. Il montre les différents intérêts en jeu derrière l'utilisation du terme « shadow banking » et conclut que, pour la plupart de la communauté scientifique et réglementaire, le terme a déjà rempli son objectif. Le chapitre 4 montre les preuves de l'abandon du « shadow banking » et présente une proposition de redéfinition du terme dans un cadre conceptuel qui intègre les contributions de la littérature hétérodoxe sur le risque systémique. Enfin, la troisième partie introduit ce dernier dans le champ de la macroéconomie en s'appuyant sur la littérature sur le capitalisme dominé par la finance et sur l'étude de cas de l'Espagne (1998-2019). Le chapitre 5 fournit une évaluation quantitative et qualitative–des changements macro-structurels de l'économie espagnole liés à la croissance du secteur financier. Le chapitre 6 propose une évaluation quantitative de leur impact relatif sur le modèle de croissance à l'aide de la méthodologie de comptabilité de la croissance tirée par la demande à supermultiplicateur. Dans l'ensemble, les preuves présentées dans cette thèse suggèrent que les économistes hétérodoxes doivent réévaluer leur utilisation du "shadow banking" en tant que catégorie analytique, dont le principal impact macroéconomique pourrait ne pas se trouver dans les dépenses privées, mais dans les dépenses publiques.

Mots clés: shadow banking, instabilité financière, crises financière mondiale, réglementation financière, capitalisme dominé par la finance, supermultiplicateur, économie espagnole

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List of acronyms

ABCP	-	Asset-backed commercial paper
ABS	-	Asset-backed security
AFME	-	Association for Financial Markets in Europe
AFP	-	Association for Financial Professionals
AIFMD	-	EU's Alternative Investment Fund Managers Directive
BCBS	-	Basel Committee on Banking Supervision
BHC	-	Bank holding company
BIS	-	Bank for International Settlements
CDO	-	Collateralised debt obligation
CGFS	-	Committee on the Global Financial System
CLOs	-	Collateralised loan obligations
CNAV	-	Constant net asset value
CRR	-	EU Capital Requirements Regulation
EBA	-	European Banking Authority
ECB	-	European Central Bank
EF	-	Economic function
EMU	-	European Monetary Union
ESMA	-	European Securities Market Association
ESRB	-	European Systemic Risk Board
FASB	-	Financial Accounting Standards Board
FHC	-	Financial holding company
FSB	-	Financial Stability Board
FSOC	-	Financial Stability Oversight Council
GIIPS	-	Greece, Ireland, Italy, Portugal and Spain
ICP	-	Institutional cash pool
IFRS	-	International Financial Reporting Standards
IMF	-	International Monetary Fund
INE	-	Spanish National Institute of Statistics
IOSCO	-	International Organization of Securities Commissions
LVNAV	-	Low volatility net asset value
MFI	-	Monetary financial institution
MMF	-	Money market fund
MMMF	-	Money market mutual fund
NAV	-	Net asset value
REIT	-	Real estate investment fund

SB1 - First shadow banking characterisation
SB2 - Second shadow banking characterisation
SB3 - Third shadow banking characterisation
SB4 - Fourth shadow banking characterisation
SBS - Shadow banking system
SEC - Securities Exchange Commission
SFC - Stock-flow consistent
SGP - Stability and Growth Pact
SIFI - Systemically important financial institution
SIFMA - Securities Industry and Financial Markets Association
SIV - Structured investment vehicle
SMP - ECB's Securities Market Programme
SPE - Special purpose entity
SPV - Special purpose vehicle

Introduction

1. Background

1.1. Financial liberalisation and the emergence of finance-dominated capitalism

The shift towards financial liberalisation led by the US in the 1970s put an end to the post-war 'embedded liberalism' – the combination of free trade and restricted finance – to address the international hegemon challenges (Helleiner, 1996; Tavares, 1985; Fiori, 2017) and broke away from the New Deal to tackle domestic distributive conflicts and policy dilemmas (Krippner, 2011). National barriers to capital flows were lifted, leading to the re-emergence of global finance; so were the domestic geographical and functional boundaries that led to heightened competition both within and between the previously compartmentalised sectors of the financial system. Financial liberalisation was implemented with the theoretical support of orthodox economics and financial economics – notably the 1960s' efficient market hypothesis and rational expectations theory (MacKenzie, 2006, chap. 2; Scialom, 2019, p. 108) – that defended the efficiency and stability of unfettered finance. Meanwhile, the 'public interest view' of regulation as a tool to improve welfare was replaced by the 'private interest theory' in the late 1960s-early 1970s, which assumed that any state intervention responded to the vested interests of particular sectors (Harnay and Scialom, 2016). All in all, the New Deal financial regulation was re-assessed as onerous 'financial repression', an inefficient barrier to competition for the benefit of banks (ibid, p. 7).

Financial liberalisation was soon followed by an emerging period of recurrent financial crises (Schularick and Taylor, 2012; Bordo et al., 2001). Heterodox scholars – notably French regulationists, post-Keynesians and US institutionalists – made the connection between both phenomena, challenging the dominant view defending the efficiency of financial

markets and advocating for letting practitioners self-regulate the system (Minsky, 1986; Aglietta, 1991; Tordjman, 1997; Orléan, 1999; Lavoie, 1986; Kindleberger, 1987). Nevertheless, with the only exception of the German bank Herstatt's failure that led eventually to the Basel's minimum capital requirements, crisis after crisis, orthodox economists blamed everything but financial liberalisation. Indeed, insufficient liberalisation was, in addition to wrong government policies, the most common diagnosis (Dymski, 2017, p. 100). The 1980s Latin American debt crisis was interpreted as an agent-principal problem of information asymmetries in which borrower countries found it more appealing to default than to meet their commitments. The solution was, hence, to increase non-payment penalties and monitoring (Dymski, 2019, p. 105). After the 1997 Asian crisis, the IMF reconsidered whether the pace and sequence of financial liberalisation had been appropriate but showed no doubts that solutions involved to advance the process (IMF, 2000). Similarly, after the 1998 Russian debt crisis, despite the Committee on the Global Financial System (CGFS) identifying financial instability problems associated with repos – a highly pro-cyclical form of collateralised securities financing and key wholesale money market – confined its final recommendations to promoting enhanced market self-discipline (Gabor, 2016a, pp. 13–16).

Despite the above, orthodox economists continued to omit explicitly the financial system from their models, which, as money, they considered to be a veil for what really matters in the end, the real economy decisions. That was the case of the New Keynesian so-called 'dynamic stochastic general equilibrium' (DSGE) models widely used by central banks. By the 2000s, the outstanding growth of the financial sector, together with better monetary policy, was considered the reason behind the combination of lower volatility of both output and inflation since the mid-1980s, the celebrated Great Moderation (Bernanke, 2004). Some went even further, proclaiming that macroeconomics' 'central problem of depression prevention [had] been solved [...] for many decades' (Lucas, 2003, p. 1).

In the mean time, regulationists and post-Keynesians had been analysing the macro-structural implications of financial liberalisation

since the mid-1990s. They argued that capitalism had entered into a new phase – 'money manager capitalism' (Minsky, 1996), 'patrimonial capitalism' (Aglietta, 1998a) or the 'financial-led accumulation regime' (Boyer, 2000) – with features that posed concerns over its medium-term stability and capacity to generate durable growth, as well as new challenges for workers' well being (Lavoie, 2012; Stockhammer, 2008; Clévenot, 2008). Among others, we may note the squeeze in workers' share in national income, compensated by more reliance on credit and financial wealth, as well as the subordination of the government to financial markets' desires and the principle of a balanced budget. Hence, while orthodox economists congratulated themselves for the Great Moderation, heterodox economists asked themselves 'why recessions [had] not been harsher and more frequent' (Stockhammer, 2008, p. 197). Leaving aside the stabilising contribution of governments through fiscal spending and central banks' interventions, the answer was 'that recessions have not been severe *yet*, but a bad recession is just around the corner' (ibid, p. 198, emphasis in original).

1.2. The Global Financial Crisis

The outbreak of the global financial crisis (GFC) finally gave credit to heterodox economists' claims. We saw conservative leaders calling for 're-founding capitalism', 'putting an end to self-regulation' and 'overhauling the international financial and monetary system' (Sarkozy's discourse on September 25th, 2008, our translation). In the G20 São Paolo's meeting of finance ministers and central bank governors on Novermber 8th-9th, 2008, attendants committed to 'ensure that *all sectors of the financial industry*, as appropriate, are regulated or subjected to oversight' and 'address the issue of pro-cyclicality' (G20, 2008, p. 2, emphasis added). A few days later, on November 15th, the G20 Washington Summit concluded with a Declaration that assessed the 'root causes of the crisis' with a remarkable Minskyan flavour:

> During a period of strong global growth, growing capital flows, and prolonged stability earlier this decade, market participants sought higher yields without an adequate appreciation of the risks and failed to exercise proper due diligence. At the same time, weak underwriting standards,

> unsound risk management practices, increasingly complex and opaque financial products, and consequent excessive leverage combined to create vulnerabilities in the system. Policy-makers, regulators and supervisors, in some advanced countries, did not adequately appreciate and address the risks building up in financial markets, keep pace with financial innovation, or take into account the systemic ramifications of domestic regulatory actions. (G20, 2008b)

Meanwhile, Minsky was on the lips of top-level practitioners, analysts and leading financial journalists, which described the GFC as a 'Minsky moment' (Vercelli, 2009, p. 2). Nevertheless, 'Minsky's work was forgotten as easily as it had briefly been remembered. Within a matter of months, mainstream economists were creating new generations of models with incomplete information, transaction cost and asymmetric information features capable of explaining aspects of the great financial crisis' (Dymski, 2017, p. 96). By 2017, the regulatory reform was officially declared satisfactorily concluded by Mark Carney, by then-governor or the Bank of England and chairman of the Financial Stability Board (FSB) – the international body mandated by the G20 to coordinate the regulatory reform (Elliott, 2017). Nevertheless, many economists expressed their dissatisfaction with the depth and scope of the measures finally taken. That was clearly the case outside the orthodoxy, where advancements in banks' capital requirements and functional separation (Scialom, 2019), and the regulation of repos (Gabor, 2016a) were judged largely insufficient to address the problems. This was also the case among some influential orthodox authors (Gorton, 2019) and regulators who regretted the lack of overarching regulation facing a growing asset management industry, which showed discontent with the lack of macro-prudential regulation on non-banks (De Guindos, 2019; Makhlouf, 2021; Schnabl, 2020; Hauser, 2021).

At the macroeconomic level there were some changes, but not a significant reversal of the structural changes observed since the 1980s. Although the downward trend in workers' share in national income stopped in some countries and even improve slightly in others, it remained far from its level four decades ago, while in others it continued (Hein et al., 2017). Meanwhile, although the ratio of private indebtedness-

to-GDP decreased since 2008 in the US, the UK and those countries of the EU that previously experienced a credit boom, it remains way above its level in the late-1990s. In the meantime, public indebtedness increased considerably. Nevertheless, central banks interventions and a pragmatic shift in the general stance towards public spending around 2013 gave governments a little bit more leeway than otherwise. This change followed a U-turn, with an initial support for counter-cyclical spending, followed by a sharp shift into austerity and, finally, an easing of fiscal restrictions, as exemplified by the IMF (Fiebiger and Lavoie, 2017) and the European authorities. This has been clearer with the suspension of fiscal rules in the EU since the Covid-19 crisis and its eventual comeback in 2024 in an expected more flexible version.

All in all, far from any purported profound overhaul, finance and finance-dominated capitalism emerged from the crisis only slightly reformed. Hence, on one hand, the dominance of the financial system was, indeed, strengthened in certain aspects. First, the regulatory momentum faded, leading to a new normative project promoting the development of 'resilient market-based finance' (FSB, 2014a). Moreover, some of the new regulations were reverted – notably restrictions to proprietary trading in the US – and others were temporarily suspended, eased or delayed at any sign of financial stress. Second, central banks adopted a clear pragmatic commitment to ensure the stability of the whole financial system. They perpetuated the extraordinary interventions deployed to tackle the GFC and the so-called 'unconventional monetary policies' that followed and expanded their balance sheets astonishingly since then. However, this is now conflicting with banks' commitment towards low inflation targets. On the other hand, the lack of profound changes is showing contradictions of the macroeconomic model, which were pointed out by regulationists and post-Keynesians since the late-1990s: its incapacity to generate significant and durable economic growth. As a result, it remains unknown the extent of the consequences that the acceleration of developments we are experiencing as this text is being writing – with the intensification of the clash between US, Russia and China – may entail for finance-dominated capitalism.

1.3. Shadow banking and the GFC

A great deal of the theoretical and regulatory debate that followed the GFC developed around a new term: 'shadow banking'[1]. The first record of its use dates back to the August 30-September 1, 2007 Jackson Hole Economic Symposium – an exclusive international gathering of high-level central bankers, international bodies' officials, economics scholars, financial practitioners and journalists (FRBKC, 2007, p. 485). The event took place just a few weeks after the US and the eurozone interbank markets' sudden stress triggered the alarm in early August 2007, foreshadowing what was yet to come. This was preceded by a series of scattered events in which different banks of both sides of the Atlantic got affected following a domino effect initiated in the US subprime mortgage market. In late June 2007, two hedge funds owned by the US investment bank Bear Stearns failed due to losses in their mortgage-repackaging business. At the end of July, the German bank IKB had to receive financial support from its main shareholder bank, KfW, following the inability of one of its off-balance sheet vehicles used to invest in US mortgage products to roll-over funding. In turn, in early August, the French bank BNP Paribas had to freeze three of its funds – also involved in US mortgage investments – stating that it was unable to calculate the value of their assets due to 'the complete evaporation of market liquidity' (Borio, 2008, p. 7).

Against this backdrop, the participants in the Jackson Hole Symposium engaged in a debate about the causes of the turmoil. A view emerged explaining those events as a contagion similar to that of traditional bank panics. James Hamilton, an econometrician from the University of California with a particular interest in shocks and cycles, stated:

> The concern that I think we should be having about the current situation arises from the same economic principles as a classic bank run and potentially applies to

1 Throughout the thesis, we will use shadow banking between quotation marks when questioning its meaning or about issues related to the process of its conception. No quotation marks will be used when shadow banking refers to an already conceived analytical category, regardless of whether it is clearly or loosely defined, i.e. when its meaning is fixed or at least not being questioned.

> any institution whose assets have a longer maturity than its liabilities.
>
> In the traditional story, the institution we were talking about was a bank, its long-term assets were loans, and its short-term liabilities were deposits. In the current situation, the institution could be a bank or investment fund, the assets could be mortgage-backed
>
> securities or their derivatives, and the short-term credit could be commercial paper. The names and the players may have changed, but the economic principles are exactly the same. How much of a worry this might be depends on the size of specific potential losses for Institution X relative to its net equity and the volume of short-term loans that could potentially be disrupted as a result.
>
> This is not just a theoretical possibility. My understanding is that this is exactly what happened to Germany's IKB Deutsche Industriebank on August 9 to set off the tumult in global short-term capital markets. (FRBKC, 2007, pp. 416–417)

According to Hamilton, the problem arose from the excessive risk-taking of certain entities that knew they could rely on the backstop of the state to face potential losses:

> So here's my key recommendation—any institution that is deemed to be "too big to fail" should be subject to capital controls that assure an adequate net equity cushion. (ibid, p. 419)

Axel Weber, by then president of the Bundesbank, endorsed the run thesis, and elaborated on the fact that, unlike in the past, it was happening in an off-balance sheet system built by banks:

> there is a maturity mismatch and a high degree of leverage. However, this mismatch is off-balance-sheet rather than on the balance sheet of regulated banks. And this is why it is difficult to call it a banking crisis because it concerns off-balance-sheet engagements. (ibid, p. 481)

However, he criticised the idea that the trigger were German banks' bad investments. According to him, this was not a problem of banks' abuse of

the state's backstops, i.e. of poor supervision and regulatory failures, but the result of a self-fulfilling panic among investors:

> I think that "too large to fail" is not the issue this time. Rather, "too many to fail" may be the issue because of the general feature of all these conduits.

It was then that Paul McCulley, Managing Director from the US asset management firm PIMCO, named this off-balance sheet structure as the 'shadow banking system' (SBS):

> The real issue going on in the marketplace right now is a run on your shadow banking system. The Fed is doing an absolutely fantastic job with the official banking system. It is the shadow banking system, which is about $1.3 trillion, funded by commercial paper, that is at hand, both here as well as in Euroland.
>
> [...] the key issue right now, and it is going to come to a head in the next couple of months, is that the shadow banking system has got to be put back on the balance sheet of the real banking system. How that is done and at what price it is done for risk assets is the key downside issue for the real economy. (ibid, p. 485)

A few days later, in his reflections on the symposium, McCulley (2007) elaborated in the concept of SBS, which he defined as 'the whole alphabet soup of levered up non-bank investment conduits, vehicles, and structures' that were involved in the funding of US mortgage boom through securitisation. The problem with these entities was that they lacked the backstops enjoyed by banks to prevent contagious runs. Although banks sponsored these entities, it was assumed that they were refusing to channel the funds obtained from the central bank to support their off-balance sheet entities. Participants at the Jackson Hole Symposium dubbed this issue the 'plumbing problem' (ibid). Despite the term was echoed by the financial press (Jones, 2007; Guha, 2007; Sidel, 2007), it did not gain prominence. Initially, not even McCulley or Weber seem to have continued using it. Both gathered again one year later at Jackson Hole. There, Gary Gorton – who would later become one of the main authors of the shadow banking literature – was invited to present his paper on 'The panic of 2007' (Gorton, 2008). Despite endorsing the

run view of the 2007's turmoil that emerged at the previous year's Symposium, he used only once the term 'shadow banking system' in his more-than-100-pages paper (ibid, p. 132). The term does not appear again in the proceedings of the 2008's Symposium.

One month before, Pozsar (2008) – by then employee of the US rating agency Moody's and who had been working in the evaluation of securitisation products (Thiemann, 2018, p. 25) – put forward the first mapping of the SBS, elaborating on McCulley's (2007) insights. In addition, in the document, Pozsar argued that a large part of the activities happening inside the SBS were 'motivated by regulatory and tax arbitrage', which banks developed 'avoiding the radar of regulators and even investors' (Pozsar, 2008, p. 16). In particular, banks would have used securitisation to move loans out of their balance sheets with the aim of reducing their capital requirements. These loans (to be more precise, the risks associated with them) were either sold to investors – the so-called 'originate-to-distribute model' – or kept in off-balance sheet vehicles that they backstopped mainly through credit lines – as was notably the case of conduits similar to the German IKB's one, which were funding long-term securitisation bonds with short-term commercial paper. Posar (2008) already features what would become the three main competing narratives of the GFC in the shadow banking literature: i) banks' off-balance sheet over-leveraging (Acharya et al., 2010), ii) bad quality credit due to banks' lack of incentives in evaluating borrowers in the originate-to-distribute model (Bord and Santos, 2012), iii) the SBS's vulnerability to panics due its lack of access to the state's safety net (Gorton and Metrick, 2012a). These are Pozsar's (2008, p. 19-20) 'abundantly clear' 'lessons from the crisis':

> First, as the associated write-downs to the tune of close to $450 billion and subsequent rounds of capital raising illustrate, through the originate-to-distribute model the regulated banking system created far more credit and offered far more liquidity guarantees than what their capital bases were able to support. [...]
>
> Second, the originate-to-distribute model and the strong demand for and from CDOs also enabled and encouraged the underwriting of some loans (subprime mortgages and

> leveraged loans) that would never have been made if banks had to hold on to them as whole loans.
>
> Third, the originate-to-distribute model empowered credit markets to grow very large in size and significance relative to regulated banks in the credit intermediation process, but without access to a safety net that was available for regulated banks in times of stress. (ibid, pp. 19-20)

It was not until the 'market turmoil' finally turned into 'a full-blown systemic crisis' (Trichet, 2009) that the term 'shadow banking' would gain prominence. In the months that followed the September's 2008 failure of Lehman Brothers, 'shadow banking' became widespread in the debate on the causes of the crisis. We may find it in the declarations of political leaders (G20, 2009), and the analyses developed by both regulators (Pozsar et al., 2010; Adrian and Shin, 2009) and scholars (Gorton and Metrick, 2012a, 2010; Acharya et al., 2010). Shadow banking became to be considered by many as *the* origin of the crisis (FCIC, 2011, p. 414; Fein, 2013, pp. 9–10; Gorton, 2009; Mishkin, 2011; Guttmann, 2016). Many others did not use the term 'shadow banking', but pointed to its related originate-to-distribute model (FCIC, 2011, pp. xvi–xvii; Liikanen et al., 2012, p. 4). In any case, there was a wide agreement that shadow banking bore the greatest responsibility for the contagion from the US sub-prime mortgage market to the wider US and European financial systems (Bernanke, 2010; FCIC, 2011, p. 255; Liikanen et al., 2012, p. vi). In addition, the SBS was assessed to rival in size the banking system and was held responsible for an important part of the GFC's credit crunch. SBS estimates ranged between $6 trillion (Pozsar, 2008, p. 17; Pozsar et al., 2010, p. 5) and $25 trillion (FSB, 2011a, p. 8) for the US in 2007, against the $10 trillion banking sector[2]. In that way, shadow banking was soon placed at the centre of the regulatory agenda. In November 2010, the G20 leaders requested the recently founded Financial Stability Board (FSB) to develop a series of proposals to 'strengthen the regulation and supervision of the shadow banking system' in collaboration with other international bodies (FSB, 2011b)[3].

2 Adrian and Shin (2009, p. 1) assessed it at $16 trillion, while Singh and Aitken (2010, p. 9) at $10 trillion.

3 The FSB was created in April 2009 to replace the Financial Stability Forum with the aim of promoting and coordinating the regulatory reform at the global level.

Despite the centrality of 'shadow banking' to the regulatory reform and the extensive literature that was published on the topic, no definition consolidation followed. On the contrary, its scope became wider and wider. 'Shadow banking' is thus used to describe a multitude of diverse financial phenomena (Claessens and Ratnovski, 2014), including non-bank lenders, securitisation, repos, banks' off-balance sheet activities, long chains of financial intermediaries, collateralised short-term instruments or, in the case of China, even bond markets (see for example Elliott et al., 2015, p. 8). Eventually, the common feature of all these different constituents boils down to being financial entities and activities whose importance has increased in the last decades[4]. In addition, some academics and regulators soon started to strip the term 'shadow banking' from its pejorative connotation in a plea for the benefits of the financial sector's innovation (Mehrling et al., 2013; FSB, 2014a; Gorton and Metrick, 2010). At last, after the completion of regulatory reform, leading regulators and a large number of orthodox scholars began to abandon its use completely. This makes us suspicious of whether the term was ever used by many as a true analytical category.

1.4. Shadow banking from a historical perspective

Although 'shadow banking' only emerged as a distinct term in September 2007, many of its commonly agreed components were already around for several decades. Following Deloitte (2012, p. 3), '[r]epurchase agreements have been in use since 1917; the first securitization transaction was executed in 1970; and the first MMMF was established in 1971' (see also Pozsar, 2008, p. 13; or Guttmann, 2016, pp. 132-136). Gorton (2009, p. 42) even claimed that 'the shadow banking system has been present for roughly 25 years'. Many of these activities were initially addressed as part of a trend of intensive innovation leading to banks' losing ground against financial markets and other intermediaries, the so-called 'financial disintermediation'. An extensive literature developed on the topic since the early 1970s. In turn, since the mid-1980s a lot was written on securitisation. Nevertheless, the early forerunner of 'shadow

4 Despite the term shadow banking is relatively recent, many of its components are not. As noted by Deloitte (2012, p. 3), '[r]epurchase agreements have been in use since 1917; the first securitization transaction was executed in 1970; and the first MMMF was established in 1971'.

banking' may be found in the term 'parallel banking system', which was used by several authors between the early 1990s and the GFC.

Traditionally, the financial system was conceived as an apparatus made up of two compartments: on one hand, the business of traditional banking in which banks matched short-term savings with long-term loans and, on the other hand, the realm of market finance where long-term savings were channelled to borrowers through long-term securities, whether directly or through non-bank financial intermediaries. However, the transformations initiated already in the 1960s and accelerated in the 1970s made things more complex and the frontier between the two spheres became blurrier. In light of this, between mid-1980s and mid-1990s, some academics started to identify a third analytical category, 'fringe banking' or 'the parallel banking system.' This new category would later consolidate in the aftermath of the GFC, going by the name of 'shadow banking' or 'shadow banking system'.

D'Arista and Schlesinger (1993, p. 2) used the term 'unregulated parallel banking system' to refer to two usual subjects in the shadow banking literature: finance companies and MMFs. Both of them emerged during the 1970s to exploit regulatory advantages. According to these authors, finance companies and MMFs, along with 'multifunctional financial conglomerates' and 'other powerful trends like securitization [...] [broke] down the carefully compartmentalized credit and capital marketplace established in New Deal legislation 60 years ago' (ibid). In the same fashion as shadow banking was said to slice banking functions into several balance sheets (Pozsar, 2008, p. 17), '[t]he parallel system divided [banking] intermediation between two separate entities, each of which dealt directly with the public through only one side of the balance sheet' (D'Arista and Schlesinger, 1993, p. 8). According to them, the system was ultimately backstopped by commercial banks and had 'developed in a manner that ultimately may undermine, not strengthen, U.S. credit markets and the nation's underlying economy' (ibid, p. 4). Consequently, they advocated that the 'financial playing field must be levelled by raising, not lowering, standards of prudential supervision and public obligation', thus, subjecting these entities to bank-like regulation.

Although under a different term, 'fringe finance', Minsky analysed a similar phenomenon to what D'Arista and Schlesinger (1993) called the 'parallel banking system'. Minsky used the term to refer to a set of financial entities in the US, such as finance companies, real estate investment trusts (REITs) and non-member banks, that lacked adequate regulation and '[were taking] on excessive leverage and risk, with commercial banks serving as their lender of last resort' (Shefrin, 2016, p. 109). Minsky (1986, pp. 68–75) illustrates this with the 1974-1975 REITs crisis episode[5]. Alternatively, Minksy also used the term 'nonbank banks' to refer to those financial intermediaries displaying a fragile financial structure (Wray, 2015). The heterodox author's proposal for curbing financial instability problems among these intermediaries was that the Fed's 'domain of control should be extended to cover the entire financial system [, while among i]ts primary responsibilities will be [...] to act as lender of last resort to the financial system' (Minsky, quoted in Kregel, 2010, p. 9).

The terms 'parallel banking system' and 'fringe banks' or 'fringe banking industry' have also been used to describe a different set of non-bank lenders, pawnshops and check cashing centres, which are the object of specific literature (Forrest and Lee, 2003, pp. 200, 203). Following Caskey (1994, p. 1), '[t]hese so-called fringe banks provide credit and payment services primarily to low- and moderate-income households, many of which rarely interact with the formal banking system'. Hence, many of these authors give their blessing to these non-bank lenders, which play a useful role by completing credit markets. On the contrary, Aitken (2006) tends to be more critical, expressing concerns about their fragility and usury practices. He also associated fringe finance with would later become one of the flagship activities of shadow banking: sub-prime mortgage lending (ibid, p. 480).

Finally, we may note that the term 'parallel banking system' was also used by advocates of the financial liberalisation of emerging economies dominated by state-owned banks (Claessens, 1996; Sáez, 2001). These authors used it to describe a private banking system that,

5 REITs relied heavily on short-term commercial paper funding. When house prices fell and interest rose in 1974, their creditors initiated a run. Eventually, the Fed intervened, backstopping REITs indirectly through their respective banks.

they claimed, should be allowed to operate and compete with the public one, for the sake of overcoming the inefficiencies and distortions introduced by the latter. These analyses backed the liberalisation policies of the Washington consensus. According to Sáez (2001, p. 236):

> The banking system in emerging markets is fraught by financial distress caused by mounting bad loans and non-performing assets in the portfolios of state-owned commercial banks. These distortions are often a consequence of distortions occasioned by interventionist policies into the financial system. Financial sector liberalization often entails the dismantling of interest rate ceilings, capital market convertibility, and efficient credit allocation. These reforms do not often tackle a more serious problem in emerging markets, namely state-owned bank insolvency.

Table 1. The 'parallel banking system' in the pre-shadow banking financial literature

References	What is it?	Rationale	Outcome
Minsky (1986)[1], D'Arista and Schlesinger (1993)	Non-banks' credit intermediation backstopped by banks	Regulatory arbitrage	Excessive risk taking
Caskey (1994), Forrest and Lee (2003)	Non-bank lending to sectors excluded by the formal banking system	Socio-economic and regulatory changes leading to low-income households' financial exclusion	Useful provision of services to clients unserviced by banks
Claessens (1996), Sáez (2001)	Private banking sector (vs. state-owned banks)	Financial liberalisation	Overcoming inefficient financial repression

[1] Minsky (1986) does not use the term 'parallel banking system', but 'fringe finance', although to describe the same thing as D'Arista and Schlesinger's (1993) 'parallel banking system'.

The 'parallel banking system' showed already the main features of the later 'shadow banking': i) it was used to describe many of the financial system's structural changes encompassed under 'shadow banking', ii) similarly to the latter, it was used with several different meanings in the literature – we identified three above (table 1), and iii) it was also used as

part of different normative projects, whether to move forward towards a more tightly controlled and stable financial system – as advocated by Minsky and D'Arista and Schlesinger (1993) – or towards a more liberalised and efficient financial sector that maximises the funding possibilities for the economy – as is the case of Caskey (1994), Claessens (1996) or Sáez (2001). Nevertheless, the term still lacked the more explicit normative content of 'shadow banking' and existed during a period when despite financial crises being rather recurrent, they were not followed by a synchronised recession in all major occidental economies.

These different notions of the late-1980s-2000s' 'parallel banking system', together with the remaining forms of 'financial disintermediation' would be encompassed within 'shadow banking' after the GFC. While 'shadow banking' created a remarkable lexical consolidation, the literature thrived with no semantic consolidation on which the academic and regulatory community could broadly agree on.

1.5. Shadow banking and the heterodoxy

In the wake of the GFC, heterodox authors also embraced widely the concept of 'shadow banking', incorporating it into their analytical corpus. Many of these authors argued that shadow banking was a defining feature of finance-dominated capitalism (Hein, 2019, p. 976; Michell, 2017; Tadjeddine, 2021; Caverzasi et al., 2019). While important contributions followed, 'shadow banking' was 'imported' along with its hardwired structural definition problem. Heterodox authors have often noted the literature's struggle in finding a consensual definition of shadow banking, but have tended to consider that the problem stems from different interpretations of the same phenomenon (Guttmann, 2016; Bouguelli, 2019). That is to say, it was assumed that everyone had the same phenomenon in mind. However, this was far from evident: differences in the definitions were not minor in light of the wide variety of phenomena mentioned above that authors put inside the category 'shadow banking'. This definition problem has thus hindered heterodox economists from advancing a consistent research agenda. Moreover, some dimensions of the shadow banking literature have been neglected in some research fields. For example, when it comes to macroeconomics,

heterodox authors have mainly focused on the originate-to-distribute model (Caverzasi et al., 2019; Michell, 2017; Herbillon-Leprince, 2020; Botta et al., 2020). Other issues addressed in the shadow banking literature have been left aside, as in the case of banks' market-based activities or repos beyond securitisation, as well as instability problems arising from non-bank intermediaries.

For heterodox authors, the issues associated with the lack of a consolidated definition were compounded by the problems stemming from adopting a concept that had been fundamentally shaped by orthodoxy. On the one hand, 'shadow banking' was conceived from an orthodox theoretical lens – notably, relying on the loanable funds theory, which considers *any* financial institution as a mere intermediary of savings, denying the special role of banks (Bouguelli, 2019). Heterodox authors have nevertheless done a good job in reinterpreting the different phenomena with which the shadow banking literature deals with in endogenous money theory[6]. Nevertheless, there remains the question of whether it is pertinent to use the term 'banking' to describe activities that do not necessarily involve credit creation (ibid).

On the other hand, heterodox economists have lacked access to the primary data and information from which orthodox economists developed their shadow banking expertise. The former had to rely on seminal orthodox works such as Pozsar et al. (2010) that have decisively shaped the way in which we conceive shadow banking. While, as noted above, heterodox authors have questioned the orthodox interpretation of the facts, they have tended to take the facts identified by orthodox economists as a given. This is something that has often passed unnoticed even to political scholars addressing the very issue of shadow banking expertise (Helgadóttir, 2016). Therefore, heterodox scholars have often reproduced a series of ideas apprehended from orthodox analyses, which are not necessarily true – as, for example, that securitisation was fundamentally short-term funded (Michell, 2017) or that regulators were not aware of banks' shadow banking activities (Guttmann, 2016).

6 This has been the case for the analyses of the originate-to-distribute model (Lavoie, 2014, pp. 257–259), repos (Gabor and Vestergaard, 2016a), universal banks' securities financing operations (Sissoko, 2017) or credit backstops to non-banks (Scialom and Tadjeddine, 2014).

2. The thesis: goal and plan

This thesis seeks to analyse the implications of 'shadow banking' for the analysis of finance-dominated capitalism within heterodox traditions. This research programme is made up of three intermediate goals. The first goal is to identify what shadow banking is. As we have seen, lacking a clear definition, the literature has grown cumbersome. Prior literature reviews have not acknowledged the scale of the problem. If we are to bring some clarity to the subject, the definition problem has to be addressed from a different angle. The second goal is to identify the particular instability dynamics associated with shadow banking and integrate within the heterodox analytical framework for systemic risk. If necessary, new analytical categories have to be created to ensure coherence and avoid reproducing the shadow banking literature's confusion, while bearing in mind that a large part of the orthodox community has already disavowed the use of 'shadow banking'. The third goal is to integrate resulting systemic risk analytical framework, augmented with shadow banking into the macroeconomics of finance-dominated capitalism, and assess their importance for growth patterns. Hence, a methodology has to be chosen.

In line with this, the thesis is logically structured in three parts. Each part elaborates on one of the three intermediate goals, and is made up of two chapters. **The first part – 'What is shadow banking?'** – revisits the shadow banking literature to clarify how shadow banking has been defined and understood so far, and why. **Chapter 1** addresses the definition of shadow banking in the literature using a new 'semantic' approach to classify shadow banking definitions as combinations of different meanings of 'shadow' and 'banking', showing that 'shadow banking' is conceptually prone to polysemy. This approach is applied to classify the fifty most cited publications on the subject and to identify the most used combinations. In turn, we assess each of these shadow banking 'characterisations' quantitatively – estimating their outstanding size – and qualitatively – considering the different relationships with the banking system that they define. Our results show that there are four main characterisations of 'shadow banking' that have different attributes

and demarcate different areas of the financial system, sometimes overlapping, and of significantly different sizes: i) short-term funded banks' off-balance sheet securitisation, ii) the parallel and independent non-bank credit system, iii) maturity transformation beyond traditional banking, notably, through repo markets, and iv) non-bank financial intermediation beyond traditional insurance and pension funds.

Chapter 2 examines whether these different characterisations of 'shadow banking' have been the result of theoretical differences. We consider three alternative hypotheses. First, the issue is conceptual: different theoretical backgrounds led to different choices of combinations of 'shadow' and 'banking'. Second, the issue is analytical: different theories led to different explanations of the GFC, 'shadow banking' being the term used to name the cause of the GFC. Third, the issue is observational: some authors identified the GFC as an anomaly that they could not be explained within their theories, a problem they solved by adding different ad-hoc fixes to their theories – 'shadow banking' being the term used to name the fix. To test these hypotheses we build upon a theoretical taxonomy of the shadow banking literature, examining the match between each characterisation's attributes and the result of its analysis from the different theories. In turn, we trace back the 'genealogy' of the characterisations to find the source publication. Our results support the observation-based hypothesis: the four characterisations emerged from two groups of authors that broke away from the orthodox paradigm to explain the GFC. Each put forward a different 'shadow banking' or 'fix' to the theory to explain financial markets' dysfunctionality: i) maturity transformation by non-banks, or ii) misuse of financial innovations for regulatory arbitrage purposes. Nevertheless, we also find that one of the characterisations was defined by regulators and cannot thus be understood as a theory fix, but as a political project. Since the different theoretical views that we identify do also define different regulatory agendas, we suggest re-framing the 'shadow banking' problem as a political one.

The second part – 'Rethinking shadow banking from a heterodox perspective' – is devoted to reassessing the position of 'shadow banking' within the heterodox research agenda, examining its pertinence and

usefulness as an analytical concept. **Chapter 3** elaborates on chapter 2's conclusion and analyses the hypothesis that 'shadow banking' is a regulatory category within competing regulatory agendas. Our hypothesis is that is the reason behind the recent abandonment of the term coinciding with the finalisation of the post-2008 regulatory reform. If that is to be true, the use of the term as an analytical category would be seriously undermined. Building on prior scattered contributions on the analysis of the political use of 'shadow banking', we identify and present four competing political projects. The first one was put forward by bank regulators, which re-defined 'shadow banking' to point to the non-bank sector with aim of diverting attention from their responsibility for the crisis – they had approved and encouraged banks to develop most of the activities that were associated with shadow banking. When time passed they abandoned any serious attempt to extend prudential regulation to the non-bank sector, re-baptising 'shadow banking' as non-bank finance'. The second one corresponded to the economists building upon the traditional orthodox paradigm towards finance, defending the status quo of micro-prudential market-friendly regulation. The third political project was defended by a group of orthodox authors that identified the GFC as an anomaly. Their agenda advocated for extending the state's safety net to preserve the useful function of non-banks' maturity transformation while preventing market dysfunctionality arising from their exposure to runs. The fourth one, supported by orthodox dissenters and heterodox economists defended an extensive programme of profound regulatory reform to reduce the financial system's complexity and constraint leverage. We conclude that 'shadow banking' needs to be rethought if it is to be used in future research on financial instability.

Finally, **chapter 4** discusses the best way to incorporate into the heterodox theoretical corpus the contributions to the analysis of financial instability made by heterodox authors in the shadow banking literature. For that, we bear in mind our previous results. First, currently, all the main shadow banking definitions have been characterised within an orthodox framework and builds upon a conception of 'banking' that is at odds with the heterodox one – money creation. Second, the use of 'shadow banking' is likely to become marginal in the following years

since it was, above all, attached to political goals confined to the post-2008 regulatory reform. Hence, we can expect the movement towards the replacement of 'shadow banking' with 'non-bank financial intermediation' to continue. In light of this, we discuss the different options for heterodox economists, and we argue in favour of re-appropriating 'shadow banking'. For that, we explore the different ways of integrating the heterodox views on shadow banking as an instability amplifier into the heterodox systemic risk analytical framework. After examination of prior proposals we present ours: i) building upon Scialom and Tadjeddine (2014) and Tadjeddine (2021), we redefine shadow banking as *money creation subject to no social contract* encompassing banks' regulatory arbitrage as well as central banks' large interventions in financial markets, ii) we borrow Hardie and Howarth's (2013) 'market-based banking' to describe direct interactions between banks and markets which result in which money creation and market liquidity instability feed back mutually, iii) we consider non-banks as a single category, considering the problems of distinguishing between risky and non-risky intermediaries in the current liberalised financial system, and iv) we address repos and similar transactions as *amplifiers of market liquidity instability*.

The third part – 'Shadow banking, finance-dominated capitalism and growth regimes: a case study and some methodological contributions' – addresses the macroeconomic implications of the instability sources identified by heterodox authors in the shadow banking literature. We integrate them within the macro literature on 'financialisation' / 'finance-led capitalism' / 'finance-dominated capitalism' and growth regimes developed by French regulationists and post-Keynesians. We expand previous heterodox macroeconomic approaches to shadow banking, which have been so far confined to the originate-to-distribute model, and have privileged SFC modelling (Herbillon-Leprince, 2020, pp. 110–122). We opt for an alternative approach to bring to the forefront institutional aspects: a study case analysis building upon the supermultiplier demand-led growth accounting. This methodology gives more room to the analysis of institutions and the way in which they interact, and has been shown to

lead to novel conclusions regarding the drivers of growth. The case study is the Spanish economy between 1998-2019. The choice has been undoubtedly conditioned by its meaning for the life experience of the author, but also for the attention it has attracted due to its particular features. First, its institutional particularities, notably its financial regulatory framework. Second, the importance that financial developments had for economic growth, as recognised by both orthodox and heterodox authors. Third, it encompasses a double crisis splitting the pre- and post-GFC growth periods. Fourth, during both periods, it has been used by many economists as an example of orthodox policies' success.

Chapter 5 incorporates the new elements from chapter 4's augmented analytical framework of financial instability into financialisation macroeconomics, and uses it to develop an institutional analysis of our study case that will serve to interpret the quantitative results obtained in the chapter. For that, we identify first the connections between the instability amplifiers previously associated with shadow banking and the macro-structural changes affecting the effective demand that have been identified by the finance-dominated capitalism literature – decreasing wage share, households' spending reliance on credit and wealth effects, formation of asset bubbles, and public spending subdue to market finance and fiscal rules[7]. We build upon the previous macro analyses of shadow banking as the originate-to-distribute model (Michell, 2017; Caverzasi et al., 2019; Botta et al., 2020; Herbillon-Leprince, 2020). In turn, we use this framework to address our study case, analysing the links between the prevailing institutional framework and the main macro-structural and the financial instability dynamics affecting them. In that way, we identify how the different forces stemming from financialisation have affected the main components of effective demand.

In turn, **chapter 6** applies the supermultiplier demand-led growth accounting to our case study. We assess the relative importance of the financialisation-related developments identified in chapter 5 in

7 We will not analyse the potential depressive impact of financialisation on investment for the reasons exposed in the chatper.

explaining the pattern of growth of the Spanish economy before and after the GFC. Three periods are considered: the economic boom of 1998-2007, the recession of 2008-2013, and the economic recovery of 2014-2019. We put forward two methodological contributions. First, we differentiate between the part of households' consumption financed out of government wages and transfers from the remainder, to account independently for the effects of changes in public sources of income from private ones. Second, we incorporate two regulationist concepts for the interpretation of the results: the 'mode of regulation' and the 'compatibility of institutional forms'. Building on chapter 5's findings, we compare our results with the prior mainstream and heterodox literature on the Spanish case, and we relate them to the heterodox macroeconomic literature on finance-dominated capitalism. Our main finding is that the main impact of finance on the pattern of growth of the Spanish economy may have come through its effects on public and not private spending, as it has been previously argued. We identify two channels: i) the increase in tax revenue from the credit-fuelled housing bubble in a context of spending constrained by budget stability rules, and ii) the increase in sovereign debt interest rates during the euro area crisis, which paved the way for the enforcement of austerity policies.

Part 1. What is shadow banking?

Chapter 1. Disentangling shadow banking: the polysemy issue and the four 'shadow bankings'

1. Introduction

The shadow banking literature has lexical but not semantic coherence. The diversity of definitions and subjects that are treated under the umbrella term 'shadow banking' is problematic for the development of a meaningful debate. Often, authors allude to and discuss others' views and ideas unaware that they are indeed talking about different things. Similarly troubling is the fact that figures and statistics on the size and importance of shadow banking are frequently cited without paying attention to whether or not they are based on the same definition. The large differences in the estimates we already showed in the introduction – from $6 to $25 for the US in 2007 – have to be mainly attributed to the use of different definitions. To make this clear, we documented the list of entities included within shadow banking by those publications that do provide one. Table 6 in annex I shows the results focusing on those entities most frequently mentioned – a quick overview clearly shows how the list can vary significantly from publication to publication.

In addition, there is no lack of rebranding proposals through which authors seek to highlight those features they consider more important. We can mention the 'parallel banking system' (Gorton, 2010a), the 'market-based banking system' (Adrian and Shin, 2010a), 'structured finance' (Schwarcz, 2011), 'securitized banking' (Gorton and Metrick, 2012a), the 'market-based financial system' (Pozsar, 2013), the 'market-

based credit system' (Mehrling et al., 2013), 'network finance' (Guttmann, 2016), 'wholesale banking' (Gertler et al., 2016) or 'non-bank financial intermediation' (Financial Stability Board, 2019).

Shadow banking definitions have been typically classified as either 'entities-based' or 'institutions-based' – focused on delineating the set of entities that constitute it – or as 'activities-based' or 'functions-based' – which outline shadow banking by describing the functions it involves (see Borst, 2014; Claessens and Ratnovski, 2014; Isslame-Rocher and de la Guéronnière, 2018; Malatesta et al., 2016; Nabilou and Pacces, 2018). However, this taxonomy fails in capturing the primary polysemy problem of shadow banking. Alternatively, we can go back to the basics and describe shadow banking as a compound term. Broadly speaking, it is something that is somewhat similar to a bank – it shares certain features with it (from here *banking*) – but at the same time, different to a bank – since it operates in a different regulatory sphere (hence, *shadow*). The problem lies in the fact that authors can attribute a different meaning to each of these two parts. From this point of view it is easier to address the semantic diversity that underlies the shadow banking literature: every definition boils down to a different combination of meanings of 'shadow' and 'banking'.

In the light of the above, this chapter aims at providing the reader with a structured overview over of the different meanings of the term 'shadow banking'. We depart from an explicit recognition of the polysemy problem elaborating on the composite-term approach introduced above, showing the different meanings attributed to of each of its two parts, as well as the variety of possible combinations (section 2). In turn, we apply this approach on the 50 most cited publications of the shadow banking literature, identifying and presenting the four most used characterisations of shadow banking (section 3). Then, we make use of available quantitative and qualitative evidence to provide meaningful and consistent estimates of the size of these four different 'shadow bankings' (section 4). We conclude with our final remarks (section 5).

2. A semantic approach to the shadow banking literature

As mentioned above, shadow banking definitions have been typically classified between i) those putting the focus on certain types of 'entities' or 'institutions' (i.e., financial firms) that present certain features and, hence, building upon the dichotomy *banks vs. shadow banks*; and ii) those describing 'activities' or 'functions', in which the particular legal form of the participants becomes secondary and the dichotomy is re-framed in terms of *traditional banking v. shadow banking*. Notwithstanding, this classification can often be rather arbitrary since many definitions involve both a criterion based on entities and a criterion based on activities. For example, the FSB (2011a, p. 2) defined shadow banking as 'the system of *credit intermediation* that involves *entities and activities outside the regular banking system*' (emphasis in original). The approach of the FSB can be considered as entity-based since we know that its estimates of shadow banking rely on applying first the entities criterion – excluding banks – and then the activities criterion – selecting those non-banks engaged in credit intermediation. Nevertheless, this cannot be directly inferred from the definition and, still is open to interpretation – the FSB (2013, p. 2) claims that its approach is 'activities-based'. Rather, what we can say about functional approaches is that they open the door for including banks within shadow banking, since they leave aside, at least initially, the *bank v. non-bank* dichotomy. The problems in differentiating entity-based from activity-based definitions has resulted in the inconsistent classification of some publications. For example, the definition used by Pozsar et al. (2010) – one of the most influential pieces of the shadow banking literature (see table 8 in annex III) – has been classified by some as being entity-based (Guttmann, 2016, p. 124; Ban and Gabor, 2016), while others consider it to be activities-based (Malatesta et al., 2016).

Some authors also add a third category of definitions, in which both approaches are combined to come up with a definition that focuses on the structure or system that emerges (Ban and Gabor, 2016; Guttmann, 2016, pp. 124–125; IMF, 2014, chap. 2; Tadjeddine, 2013). However, apart

from few exceptions, the 'systemic-based' category does not add much, since most definitions already combine entities and activities[8]. Moreover, the FSB's aforementioned definition also includes the term 'system'. An alternative category suggested by some is that of definitions based on markets or instruments (Schwarcz, 2011, p. 622; IMF, 2014; Sun and Jia, 2018). Nevertheless, this category does not differentiate substantially from the previous ones, since any instrument or market is typically associated to a certain function and a certain set of entities.

For these reasons, we consider that this taxonomy does not really help in clarifying the variety of shadow banking definitions. Hence, we propose to move forward to our aforementioned alternative framework, based on analysing shadow banking as a composite term, in which each of its two parts can adopt different meanings. If we break down the term, on the one hand, 'banking' seeks to describe *what* does this activity consists in and, on the other hand, 'shadow' defines *where* does this activity happen within the regulatory or legal space. In the shadow banking literature we can identify strong differences in the use of each of these two concepts.

Two meanings have been attributed to 'banking'. On the one hand, it refers to a specific balance-sheet structure – the traditional handbook bank – characterised by a marked maturity mismatch between its assets and its liabilities – also known as 'maturity transformation' – and a high level of leverage – long-term credit is funded with demand deposits using a relatively small capital base. The main particularity of this balance-sheet structure is that it is dependent on the ability to roll constantly over its liabilities and, hence, potentially vulnerable to runs. This is probably the most widely used meaning of 'banking' in the shadow banking literature. Following Ricks (2020): 'Experts define shadow banking in different ways, but pretty much everyone agrees that heavy reliance on short-term debt is a big part of it'.

8 The exceptions are: Guttmann (2016), which considers shadow banking as the organisation of financial entities through the so-called over-the-counter markets, i.d. using customised bilateral contracts, instead of standardised and publicly-traded instruments, and Scialom and Tadjeddine (2014), which define shadow banking as the hybridisation of banking and market finance.

We may note that this meaning of 'banking' can only be operational if it is accompanied with the definition of a 'maturity-mismatch threshold' separating 'banking' from other types of financial intermediation. This is crucial since, excluding brokerage, every form of financial intermediation involves some degree of maturity transformation. As Buiter (2018, p. 9) states:

> Mismatch is another word for financial intermediation. Maturity transformation and liquidity transformation sound better than asset-liability mismatch, but they are the same thing. It's what banks and other financial intermediaries are meant to do.

However, this threshold is rarely defined and 'The term shadow banking is commonly understood to encompass the range of non-bank institutions that *to various extents* provide liquidity services, maturity mismatch or leverage' (Bengtsson, 2013, p. 2, emphasis added). Without this threshold, we can only rank financial entities along a continuous scale of 'bankiness' or a 'maturity transformation spectrum' (Pozsar et al., 2010, p. 61). For example, the FSB and the European Stability Risk Board (ESRB) do not define maturity transformation as an absolute category, but as a degree defined by the ratio of long-term assets to short-term liabilities. However, be it explicitly defined or not, there always exists a de facto threshold and it is a common object of debate. For example, while for Aglietta and Scialom (2010, p. 55), Greenwood and Scharfstein (2013, p. 21) or the ESRB (2018, p. 14) the degree of MMFs' maturity transformation is enough to qualify as 'banking', the European industry holds the opposite (IMMFA, 2014). On the same basis, the broad asset management industry pushes the threshold further up in the scale to escape from being labelled as 'shadow banking' (Novick et al., 2018, p. 7).

The second meaning of 'banking' in the literature refers to any of the activities traditionally run by banks: granting loans and taking deposits. The particularity of both loans and deposits is that they are outside the sphere of the market and their value is not conditioned by market pricing dynamics. Traditionally, there has been no secondary market for loans and bank deposits have a par value with legal tender

guaranteed, up to a certain amount by the state. Following this second meaning, the provision of *any* of these activities constitutes 'banking', in contrast to the first meaning that encompasses both the asset and the liability side at the same time.

The second half of the term – 'shadow' – specifies that this type of 'banking' involves certain regulatory arbitrage: it is performed in a particular legal space where banking regulation and, particularly, capital requirements, do not apply. Regulatory arbitrage can be defined in two ways depending on how do we interpret the spirit of the law. On one hand, in a 'narrow sense', it happens when a financial entity – in this case a bank – legally restructures a certain operation without changing its economic substance with the aim of freeing itself from certain regulatory restrictions and costs. This can happen either i) inside the legal boundaries of the banking group (whether on the balance sheet of the bank entity or through its unconsolidated non-bank subsidiaries) or ii) off-balance sheet, making use of (unconsolidated) bankruptcy-remote vehicles. This is typically the case of securitisation vehicles used by banks to circumvent capital requirements. On the other hand, regulatory arbitrage can be used in a 'broad sense', describing the emergence of new entities or networks of entities conducting activities which are only regulated under the legal form envisaged by law – the one, in which they were traditionally carried, in this case, under the roof of a bank. A typical example are finance companies, independent non-bank lenders which are not subject to less stringent requirements than banks. Alternatively, this can also be case when a group of entities perform altogether the role of a bank but without being subject to a coherent regulatory framework, as in Pozsar's (2014) repo 'collateral intermediation' chains. In either case, none of these two meanings is necessarily associated with a particular normative positioning. We can find both partisans and detractors of both 'narrow' and 'broad' regulatory arbitrage, as we will see in chapter 2.

However, in practice, distinguishing between both meanings may be tricky, since authors do not always explicitly account for the complex structures of large banking groups. This has been especially troublesome among those authors using the 'broad' meaning of regulatory arbitrage. Cetorelli and Peristiani (2012) documented how, in the wake of the GFC,

these authors misclassified a large part of their shadow banking entities. These entities were not only part of banking groups, but maintained active economic relations with their bank parent or sponsor. For this reason it is crucial to clarify whether a bank is defined i) on an individual-legal basis, as any entity holding a bank charter, ii) on a consolidated-accounting basis, as the whole set of entities constituting a banking group, iii) on a regulatory basis, as the whole set of prudentially-consolidated entities – which may differ from the accounting one – or iv) from a broad organisational or economic point of view, as all the activities actually run and controlled by a banking group, including off-balance sheet vehicles and operations.

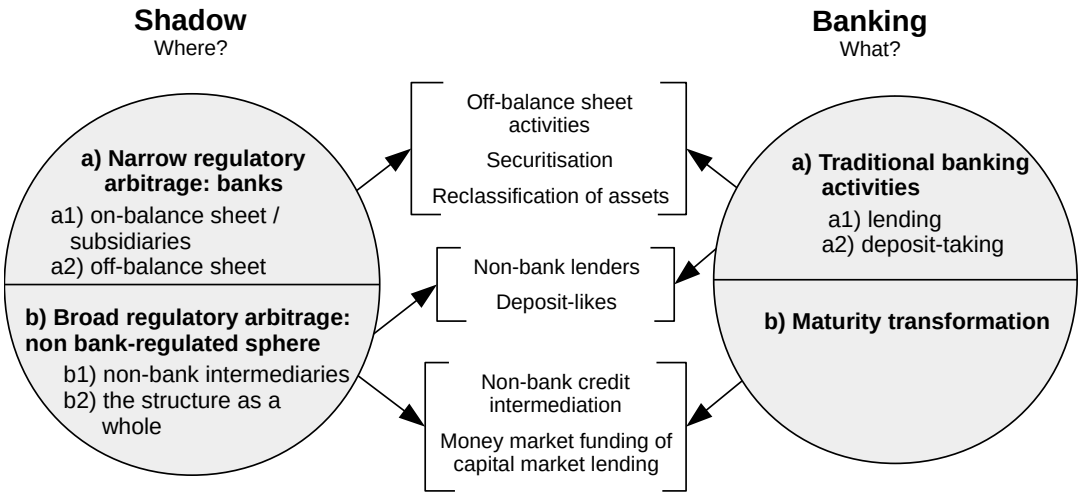
Nonetheless, there exists an even more critical problem steming from the lack of coherence with which the term 'shadow' is used in many publications. Here, examples are shocking. The aforementioned FSB's (2011a, p. 4) definition of shadow banking as 'the system of credit intermediation that involves *entities and activities outside the regular banking system*' (emphasis in original) is immediately followed by the FSB claiming that this definition 'would allow authorities to obtain a broad view on the credit intermediation that is occurring fully or *partly* outside the regular banking system' (emphasis added). Three paragraphs below it states that when the SBS involves 'a chain of credit intermediation', 'one or more of the entities in the chain might *be a bank or a bank-owned entity*' (emphasis added). Again, in FSB (2011b, pp. 1–2), the international body claims that 'banks often comprise part of the shadow banking credit intermediation chain or provide support to shadow banking entities'.

The same can be observed in Adrian and Ashcraft (2016, p. 297): '[p]er definition, credit intermediation activity on the balance sheets of commercial banks *does not constitute shadow banking*', '[h]owever, commercial banks *can be involved in shadow banking* activities in several ways' (emphasis added). Below we can read that '[m]any shadow banking activities are conducted under the auspices of BHCs [bank holding companies]' (ibid, p. 298). One page later, they reassert that there is no dichotomy between banks and shadow banking: 'the financial crisis of 2007-09 has led to a financial system where the *BHCs own a larger share of nonbank subsidiaries that conduct shadow banking activities*' (ibid, p. 299,

emphasis added). However, immediately after they use this dichotomy to claim that, due to re-regulation '[a] broader movement of securitisation-related activity *from BHCs to shadow banking institutions* can be expected over time' (ibid, emphasis added). The last example that we will show comes from the assessment of the euro area shadow banking by done by the ECB's staff. (Bakk-Simon et al., 2012, p. 8; emphasis added) define shadow banking as 'activities [...] that take place *outside the regulated banking system*' among which the repo market is one of its 'key components' (ibid, p. 5). However, amazingly enough, 'most of the repo transactions in the euro area take place *in the interbank markets*' (ibid, p. 17; emphasis added).

All in all, each combination of 'shadow' and 'banking' gives rise to a different characterisation of shadow banking, as depicted by figure 1. We use the term 'characterisation' to describe the broad way in which 'shadow banking' is demarcated. With this term we can make clear that what we are doing is grouping (an unlimited number of) more specific and detailed definitions of the subject. Considering the multiplicity of combinations, it is not surprising how 'shadow banking' has been used to describe such a wide and diverse range of phenomena. For example, shadow banking as banks' off-balance sheet securitisation (e.g., Lysandrou and Nesvetailova, 2015) emerges from the combination of 'banking' as lending and 'shadow' as banks' off-balance sheet regulatory arbitrage; shadow banking as the provision of deposit-likes by non-banks (e.g., Moreira and Savov, 2017) is based on pairing banking as deposit taking and shadow as broad regulatory arbitrage; shadow banking as 'money market funding of capital market lending' (Mehrling et al., 2013) emerges from matching 'banking' as maturity transformation and 'shadow' as a financial structure not regulated as a bank. Some definitions may also encompass several of these combinations, as is the case of the FSB's one as 'non-bank credit intermediation', which comprises every meaning of banking, while using shadow as equivalent of non-bank. Table 7 in Annex II provides a more exhaustive overview of the shadow banking literature through this lens.

Figure 1: Breaking down shadow banking



Source: author's representation.

Still, this taxonomy falls short at fully capturing the polysemy of shadow banking. There are some few definitions for which our framework is not suitable. These definitions tend to build upon an radically different approach focused on risks. For example, Claessens and Ratnovski (2014, p. 4) define shadow banking as '*all financial activities, except traditional banking, which rely on a private or public backstop to operate*' (emphasis in original). Thus, 'banking' is any activity that requires a backstop, while 'shadow' excludes traditional banking. We may also mentioned the IMF (2014, p. 68), which 'introduces a new definition of shadow banking based on nontraditional (noncore) funding—in this "activity" concept, financing of banks and nonbank financial institutions through noncore liabilities constitutes shadow banking, regardless of the entity that carries it out'. Alternatively, Scialom and Tadjeddine (2014, p. 1) and Tadjeddine (2017, p. 2) define shadow banking as 'the hybridisation of banking and market finance', which involves activities that combine features and risks from both forms of finance. Despite these cases, the results from applying our composite-term approach on the fifty most cited publications of the shadow banking literature, which we present below, show that the approach does allow for addressing satisfactorily the bulk of the definitions.

Last but not least, it is important to make clear that the conceptual framework of our semantic approach to classify shadow banking definitions is not theory-neutral at all. The shadow banking literature has

been indeed shaped by views based on an orthodox economics framework. In particular, 'banking' meanings are defined within the boundaries of the loanable funds theory (Bouguelli, 2019). This theory, later reinforced by the functional financial intermediation theory, conceives banks and non-banks as peers, mere intermediaries of savings and, hence, potential substitutes. This is at odds with many heterodox traditions that hold an endogenous view of money, where banks' distinctive feature is their money creation. However, heterodox economists have tended to accept the (orthodox-based) conceptual framework presented above in order to engage in the debate. This issues will be addressed in the following chapters.

3. The four main characterisations of shadow banking

To identify the main characterisations of shadow banking we have focused on the fifty most cited publications within the literature. We have classified these publications following our taxonomy, obtaining four combinations of meanings of 'shadow' and 'banking' that appear more than once. The methodology and the results are detailed in annex III. Hereunder we present these four main shadow banking characterisations.

3.1. First characterisation (SB1)

The first characterisation (SB1) conceives shadow banking as the organisation of short-term wholesale off-balance sheet funding of banks' loans through securitisation. This characterisation combines 'shadow' as banks' narrow regulatory arbitrage and 'banking' as maturity mismatch. We may include here Pozsar et al.'s (2010) '"internal" shadow banking sub-system', Gorton and Metrick's (2010) '[o]ff-balance-sheet banking', Gorton and Metrick's (2012) repo-funded securitisation or 'securitized banking', as well as the definitions used by Acharya and Schnabl (2010), Acharya et al. (2013), Shin (2012), Admati et al. (2013), Arnold (2009), Mehran et al. (2011) or Plantin (2015).

Pozsar et al. (2010, p. 22) state that '[t]he principal drivers of the growth of the shadow banking system have been the transformation of

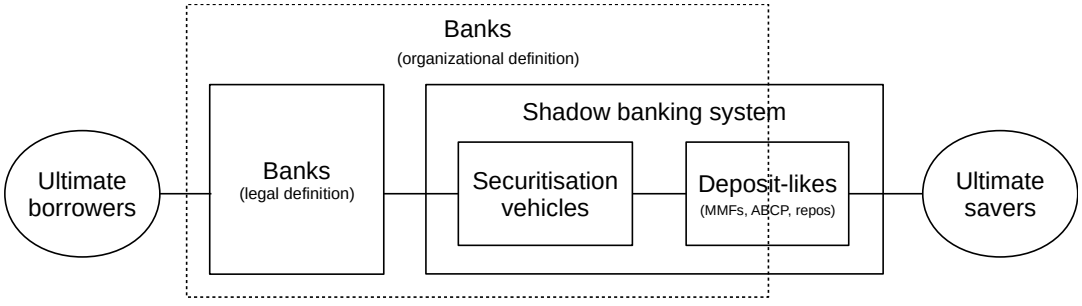
the largest banks since the early-1980s' into 'entities that originate loans in order to warehouse and later securitize and distribute them, or retain securitized loans through off-balance sheet asset management vehicles'. Admati et al. (2013, p. 4) also claims that 'most of the highly leveraged institutions in the shadow banking system were not independent units but were conduits and structured-investment vehicles that had been created and guaranteed by financial institutions in the regulated sector'. Similarly, Plantin (2015, p. 146) cosniders that 'The shadow banking system enabled the refinancing of bank assets with near-monies, such as money market funds shares with a higher leverage than that imposed on traditional banks'. In the same vein, Mehran et al. (2011, p. 22) state that '[m]ost of the assets held in the shadow-banking sector immediately before the crisis were bank-originated loans, transferred to the shadow banks through securitizations'. Likewise, Gorton and Metrick (2010, p. 269) argue that, facing competition, '[s]lowly, traditional banks exited the regulated sector', creating '[t]he shadow banking system of off-balance-sheet lending' or '[o]ff-balance-sheet banking'. Alternatively, Arnold (2009, p. 804) argue that it was 'US accountant setters [who, in the 1980s,] began allowing banks to move securitized loans and related debts off their balance sheets and onto the books of these off-balance sheet entities', which 'enabled the creation of the shadow banking system'.

Hence, the object of study of this characterisation is banks' de-recognition and commodification of loans through securitisation, followed by their processing along a so-called 'securitisation chain' for being ultimately funded by institutional investors through deposit-like instruments – such as repos, MMF shares or asset-backed commercial paper (ABCP). This was probably the most influential shadow banking characterisation immediately after the GFC. It is a backward-looking characterisation since it is mainly used for analysing the financial architecture in place prior to the GFC.

Here, following Gorton (2010, p. 8), the 'shadow banking system is essentially how the traditional, regulated, banking system is funded'. Figure 2 provides a simplified graphical representation of this characterisation. For balance-sheet representations we may refer to Pozsar et al. (2010, p. 27), Bouguelli (2019, p. 7) or Lavoie (2019, p. 118).

Securitisation allows banks to move loans into off-balance sheet vehicles which, in turn, issue debt securities backed by them, the so-called asset-backed securities (ABS). Thus, loans are commodified and placed beyond the scope of regulatory capital requirements. Once securitised, the loans can be restructured and repackaged in new securities throughout a chain of vehicles – collateralised debt obligations (CDOs), backed by ABS, CDO^2 backed by CDOs and so on. Following Pozsar et al. (2010, p. 14): 'Typically, the poorer an underlying loan pool's quality at the beginning of the chain [...], the longer the credit intermediation chain that would be required to "polish" the quality of the underlying loans to the standards of money market mutual funds and similar funds'. All the process is organised by the same banking group, with the help of credit lines from its banking firm and the services of its broker-dealer subsidiaries Pozsar et al. (2012, pp. 15–17). Ultimately, the last vehicle on the right-end of the chain raises short-term funding from institutional investors, whether directly or through the intermediary of a bank-owned or an independent MMF. We may highlight that following this definition, term-funded securitisation falls outside the realm of shadow banking – an ABS bought by an investor using long-term funding, for example a pension fund, is not shadow banking. Since some parts of the intermediation chain of US loans were often run by European banks, such as many ABCP conduits and MMFs (Pozsar et al., 2010; Shin, 2012), following Tooze (2018, chap. 8), we can also refer to this system as the 'transatlantic shadow banking'.

Figure 2: First shadow banking characterisation (SB1)



Source: author's representation.

According to this definition, the relationship between the shadow banking and the banking system is one of symbiosis or, better said,

subordination. The SBS is mainly an off-balance sheet appendix of the regular banking system, to which we may add certain independent entities collaborating with banks, as is the case of those MMFs not sponsored by banks[9]. This SBS is defined by featuring a bank-like maturity mismatch between the asset (ABS) and the liability side (MMF shares, ABCP, repos).

3.2. Second characterisation (SB2)

The second characterisation (SB2) envisages shadow banking as a parallel banking-like system organised by independent non-bank intermediaries which run, individually and/or as a whole, a maturity mismatch structure. Hence, 'shadow' is identified with the 'broad' regulatory arbitrage of non-bank entities engaged in 'banking' without a bank charter, whereas 'banking' is equated with maturity transformation. We may include here Hanson et al. (2011), the '"external" shadow banking sub-system' of Pozsar et al. (2010) or Mehrling et al.'s (2013) view of shadow banking as the 'market-based credit system'.

Pozsar et al. (2010, pp. 33-34) define the '"external" shadow banking sub-system' as the adoption of the aforementioned securitisation credit intermediation by investment bank holding companies and 'a range of independent, specialist non-banks' building 'an interconnected network of financial entities that *operated completely external to banks and the official safety net extended to banks*' (emphasis added). In the same vein, Hanson et al. (2011, pp. 14-15) identify the SBS with '[e]ntities known as "structured investment vehicles" or "conduits," which *in the past* tended to be affiliated with sponsoring commercial banks' (emphasis added) and '[h]edge funds and broker dealer-firms' 'who acquire asset-backed securities and finance them with short-term debt'. Mehrling et al. (2013) have a more abstract and conceptual approach. In practice they hold a 'broad' notion of regulatory arbitrage based on the structure as a whole when claiming that shadow

9 According to Pozsar et al. (2010) and Gorton and Metrick (2010), independent MMFs did compete with banks for deposits before the creation of the bank-led SBS, after which a business relationship emerged between both. Plantin (2015, p. 148) also supports this view claiming: 'I assume that bankers can bypass capital requirements because the regulator cannot observe their transactions with money market funds (MMFs) that also issue money-like liabilities to nonfinancial agents. Banks can use the shadow banking sector to pledge a larger fraction of their portfolios than prudential regulation permits in principle'.

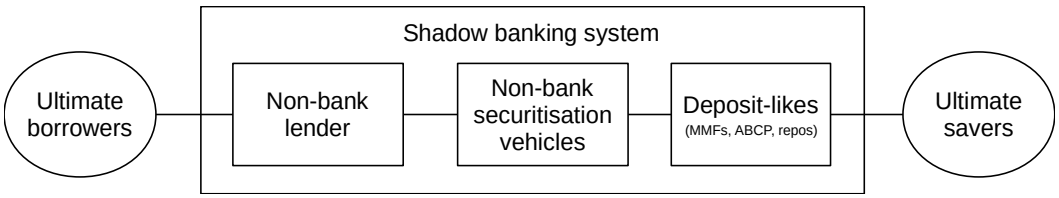
banking may 'sometimes [happen] on the balance sheets of entities called banks and sometimes on other balance sheets' (ibid, p. 2) and that some of its parts 'can be found on the balance sheets of most European universal banks, but also in off-balance sheet conduits of various kinds'. However, they make clear that they conceptualise shadow banking as a truly independent non-bank system (ibid, p. 17).

For these authors, the object of study is the replication of banking functions – the provision of credit, on the asset side, and of a safe short-term saving instrument, on the liability side – by chains of independent specialised non-bank financial entities. This characterisation of shadow banking emerged in parallel to the first one and, despite being less used, it has had a significant influence on the normative debate, as we will see in the next chapters. In particular, SB2 has put forward the nowadays dominant conception of shadow banking as an alternative funding channel for the real economy to the regular banking system.

As figure 3 shows, the structure of SB2 is quite similar to SB1, adopting the shape of a securitisation chain – for a balance-sheet representation we refer to Pozsar et al. (2010, p. 37) or Mehrling et al. (2013, p. 3). What changes is the name of the players, which now are financial entities that are 'completely external' to banking groups (Pozsar et al., 2010, p. 34). Among them, we may mention finance companies originating the loans, which are then warehoused by conduits, independent broker-dealers in charge of underwriting the securities, hedge funds intermediating them and monoline insurers providing credit enhancements (ibid, p. 44). We may note, however, that Hanson et al. (2011) depart slightly from this view since they also include non-banks' intermediation of loans initially originated by banks[10].

10 For that reason, they could be placed between the first and second characterisation. However, we consider them better classified in the second one since loan origination is a secondary concern in their paper and they clearly state that the rest of the securitisation process is entirely run by non-banks. Indeed, they only refer once to banks' origination of securitised loans in their normative discussion, to show how capital requirements apply differently depending on who holds the loans (Hanson et al., 2011, p. 16).

Figure 3: Second shadow banking characterisation (SB2)



Source: author's representation.

Therefore, unlike SB1, SB2 is a competitor for the banking system – both on the asset and the liability side: it provides loans to the real economy and short-term deposit-likes to savers. We may note that this view ultimately implies that there exists perfect substitutability between banks and non-banks. This assumption builds upon the orthodox functional perspective of finance, which holds that banks' functions are susceptible of being replaced by more efficient intermediaries and markets. As claimed by Pozsar et al. (2010, p. 72): '[b]anks and shadow banks perform the same function'.

3.3. Third characterisation (SB3)

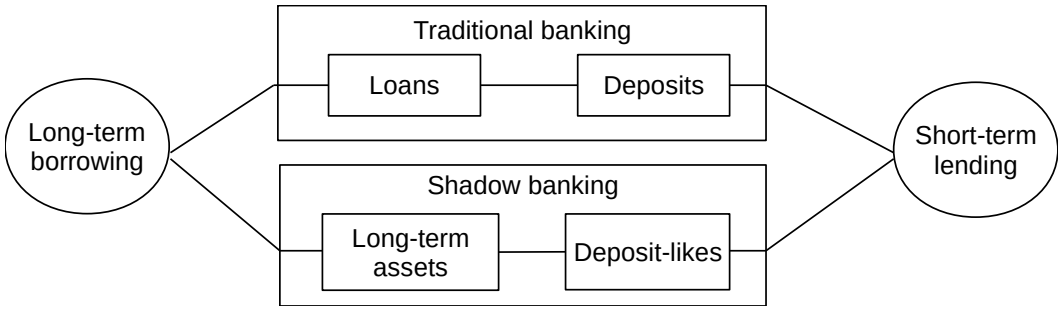
The third characterisation (SB3) identifies shadow banking with maturity-mismatch financial intermediation beyond traditional banking, i.e. different from banks' deposit-funded lending. 'Banking' is thus equated with maturity transformation, while 'shadow' defines the broad regulatory arbitrage of the structure as a whole. Mehrling et al. (2013, p. 2) provide the benchmark for this characterisation defining shadow banking as 'money market funding of capital market lending'[11]. Broadly, the object of study of this characterisation are financial intermediation chains connecting money and capital markets through the intermediation of dealers, typically through repos.

Figure 4 graphically captures the basics of SB3: short-term funding of long-term securities. For balance-sheet representations focused on the repo market we refer to Pozsar and Singh (2011, p. 6), Pozsar, 2014 (p. 56)

11 This definition is broader than the one they actually end up using in the paper, where the authors confine their notion of shadow banking to non-bank entities, which justifies their classification in the second characterisation, as we argued above.

or Gabor (2016, p. 20). Krishnamurthy et al. (2014) use this scheme to describe pre-GFC securitisation chains in which long-term assets were used as collateral for backing short-term claims such as ABCP and reverse repos in the balance sheets of banks' conduits[12]. However, most of the authors have applied it to repo markets, in which, they argue, dealers connect asset managers seeking to increase their returns to asset managers looking for secured money-like alternatives to bank deposits (Adrian and Ashcraft, 2012a; Pozsar, 2015, 2014, 2013; Pozsar and Singh, 2011; Singh and Aitken, 2010). Repos offer the 'risky' asset managers the possibility to lend out their portfolios against cash that they can then reinvest or use to finance leveraged purchases, while, cash managers have their funds collateralised by the formers' securities. Pozsar (2020, p. 1) identifies an alternative and more recent form of money market funding of capital market lending that he dubs 'the new shadow banking system': the carry trade of insurance firms and asset managers from negative interest rate jurisdictions, which finance portfolios of foreign long-term bonds through short-term foreign exchange swap borrowing.

Figure 4: Third shadow banking characterisation (SB3)



Source: author's representation.

It is worth noting that SB3 does not exclude banks by default. Actually, some authors do even locate SB3 inside 'large complex modern banks' (Pozsar and Singh, 2011, fig. 2). Shadow banking may also include certain on-balance sheet activities, as it is notably the case with repos (Gabor, 2013; Krishnamurthy et al., 2014; Pozsar, 2015, p. 8, 2014). Last, but not least, unlike SB1 and SB2, SB3 does not involve ultimate funding for non-financial actors' spending, but for asset managers' financing of

12 As a convention, a repo transaction is dub as *reverse repo* from the point of view of the lender (depositor) and as a *repo* for the borrower (issuer).

their portfolios of (typically already existing) securities. Hence, the eventual contribution of SB3 to the funding of the real economy is, at best, indirect, by enhancing market liquidity. As Pozsar (2014, p. 67) states: '[d]ealers are not real economy lenders'. SB3 involves 'a different class of borrowers' – risk portfolio managers that '*enhance investment returns via financial leverage* versus ultimate borrowers to *enhance their ability to spend via loans*' – 'and a different class of intermediaries' – 'dealers who do *securities financing* versus banks that *finance the economy directly via loans*' (ibid, emphasis added). Similarly, according to Sissoko (2014, p. 4), the post-GFC SBS 'does not fund long-term assets directly, but instead provides wholesale funding for investment banks, and to a lesser degree commercial banks'.

Therefore, contrary to the previous characterisations, SB3 is neither an extension nor a competitor for the banking system, but a transversal structure involving both banks and non-banks. Hence the relationship between SB3 and the banking system can be better characterised by cooperation. In turn, we may note that the coherence of such a structure lies in market relationships, in which collateral is crucial to deal with counterparty risk.

3.4. Fourth characterisation (SB4)

Finally, the fourth characterisation (SB4) envisions shadow banking as specialised market-based forms of non-bank finance which may deserve some special monitoring. 'Banking' here encompasses any of the meanings – the provision of loans, deposits and/or maturity transformation – authors may consider one, two or the three of them. In turn, 'shadow' limits the scope to the universe of non-banks outside prudentially consolidated banking groups. Hence, off-balance sheet vehicles set by banks for regulatory arbitrage purposes are not excluded. Nevertheless, they are not always considered and when this is the case they are not the main part of the object of study. This characterisation may be found in the approach of the FSB, the 'parallel banking system' of Pozsar et al. (2010)[13] and those focused on non-bank lending (Buchak et

13 Pozsar et al.'s (2010) concept of *parallel banking system* is different to the one we used to identify the second characterisation of shadow banking, which corresponds to their 'external shadow banking sub-system'. The latter is based on a notion of coherent system channelling funds from

al., 2018; Fungáčová and Weill, 2015). Therefore, the object of study is the set of innovative non-bank financial entities which provide loans, offer deposit-likes and/or run a bank-like maturity mismatch, potentially reproducing some of the systemic risks attributed to banks.

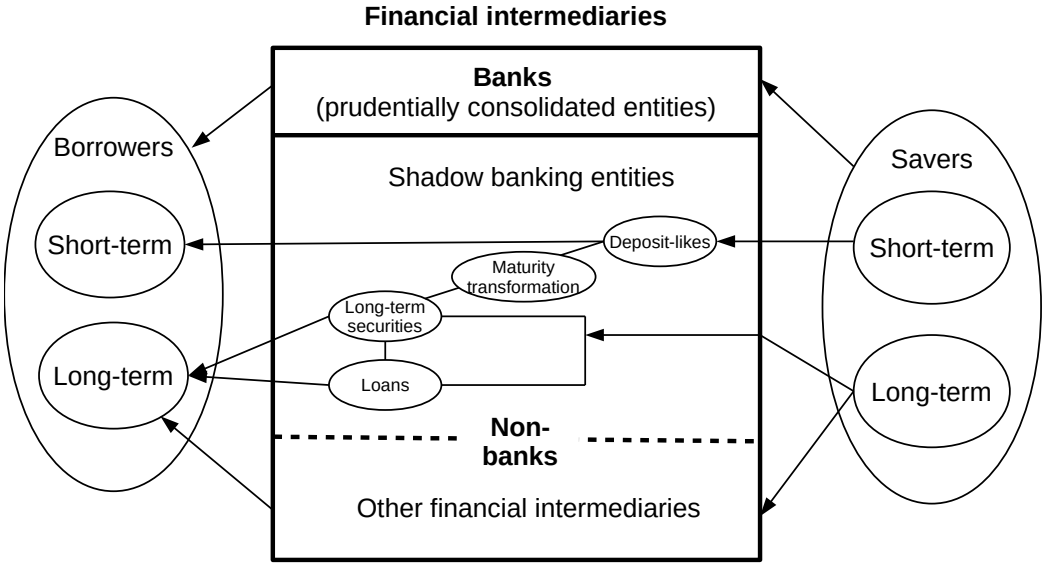
This characterisation is probably the most influential one nowadays and is the one promoted by the FSB – the international body that leads the supervision and regulation of shadow banking and provides the benchmark estimates of the size of the SBS. It has a more practical application than the other three characterisations reviewed above, since it does not require the identification of shadow banking entities as pieces of a larger structure, but based on their individual features. In addition, unlike the former three characterisations, SB4 does not depend exclusively on the definition of the 'maturity-mismatch threshold'. For example, the FSB (2013) designed a framework to identify shadow banking entities on the basis of whether or not they perform any of the following five economic functions (EFs): we can identify EF1 with the provision of deposit-likes; EF2 and EF5, with non-bank lending and capital-market based lending; and EF3 involves running a noticeable maturity mismatch – the remaining EF4, which mostly correspond to the provision of credit enhancements in securitisation is largely negligible (0.3% of global shadow banking in 2021)[14]. In that way, in practice, the FSB confines maturity transformation to repos. Although EF2 is defined as 'loan provision that is dependent on short-term funding', in practice, the funding structure is not used as a relevant criteria. For example, in the FSB's 2020 annual report we can read: 'Finance companies, the entity type most commonly classified into EF2, [...] have moderate maturity transformation in most jurisdictions' (FSB, 2020a, p. 28).

ultimate savers to ultimate borrowers. Meanwhile, the former refers to those entities or 'segments' of the shadow banking system which 'have been driven by gains from specialization', independently of whether they build a coherent system or run their businesses scattered all along the financial system (ibid, p. 68). However, while '[m]ost (but not all) of the candidates [...] can be found in the "external" shadow banking sub-system', they also include some entities run by banking groups, in particular MMFs (ibid).

14 These five functions are: i) investment funds susceptible to runs, ii) non-bank lending depending on short-term funding, iii) securities financing transactions (such as repos and securities lending), iv) facilitation of credit creation (insurers and other providers of credit guarantees) and v) securitisation. National authorities are in charge of assessing whether the non-bank financial entities in their jurisdictions fit at least one of these functions.

Figure 5 provides a simplified graphical representation of SB4. Shadow banking entities either provide deposit-likes, run maturity transformation connecting short-term funding with long-term securities or grant loans. For an alternative schematic representation we may refer to the FSB (2021, p. 6). Regarding the names of the players, Pozsar et al. (2010), analysing the US pre-GFC juncture, identified MMFs providing deposit-likes, limited purpose finance companies – firms investing in long-term ABS funded with medium and short-term paper – and finance companies granting loans. For the FSB (2020), the main entities providing these three functions in 2020 in the jurisdictions included in its report were, respectively: i) MMFs, fixed income funds and mixed funds, ii) broker-dealers, and iii) finance companies and structured finance vehicles. Alternatively, Fungáčová and Weill (2015, p. 197), who focus on non-bank lenders for the case of China, point at 'formal funding channels, such as microfinance institutions and company-to-company lending, but also informal ones, such as underground banks and unregulated pawnshops'.

Figure 5: Fourth shadow banking characterisation (SB4)



Source: author's representation.

Compared to the other characterisations, SB4 involves two distinguishing features. On the one hand, shadow banking entities do compete with and can replace, at least to some extent, banks, similarly to

SB2. On the other hand, contrary to the previous three characterisations, SB4 does not necessarily involve maturity transformation.

Table 2 below summarises our findings in this section. The four characterisations show substantial differences on three areas, which show the lack of coherence of the shadow banking literature. First, they set different boundaries for the SBS. The second and fourth characterisations leave bank entities outside, while the first places shadow banking under the umbrella of large banking groups and the fourth even identifies it inside banks' balance sheets. Second, the nature of shadow banking as an activity may vary, especially in the fourth characterisation, for which shadow banking does not necessarily involve bank-like maturity transformation. Last but not least, the relationship of the SBS with the banking system may take three different forms: i) subordination (first characterisation), ii) competition (second and fourth characterisations) or iii) cooperation (third characterisation).

Table 2. The four characterisations of shadow banking

Characterisation		Shadow	Banking	Relationship with banking system
SB1	Banks' off-balance sheet securitisation	Banks' off-balance sheet	Maturity mismatch	Subordination
SB2	Independent parallel banking system	Non-banks (independent)	Maturity mismatch	Competition
SB3	Repo collateral intermediation	Structure as a whole	Maturity mismatch	Cooperation
SB4	Non-bank financial intermediation	Non-banks (non-prudentially consolidated)	Deposits, loans and maturity mismatch	Competition

4. The four shadow banking characterisations in light of stylised facts

We have seen that the shadow banking literature revolves around four main different characterisations of shadow banking. These four analytical categories define different spaces in the financial system

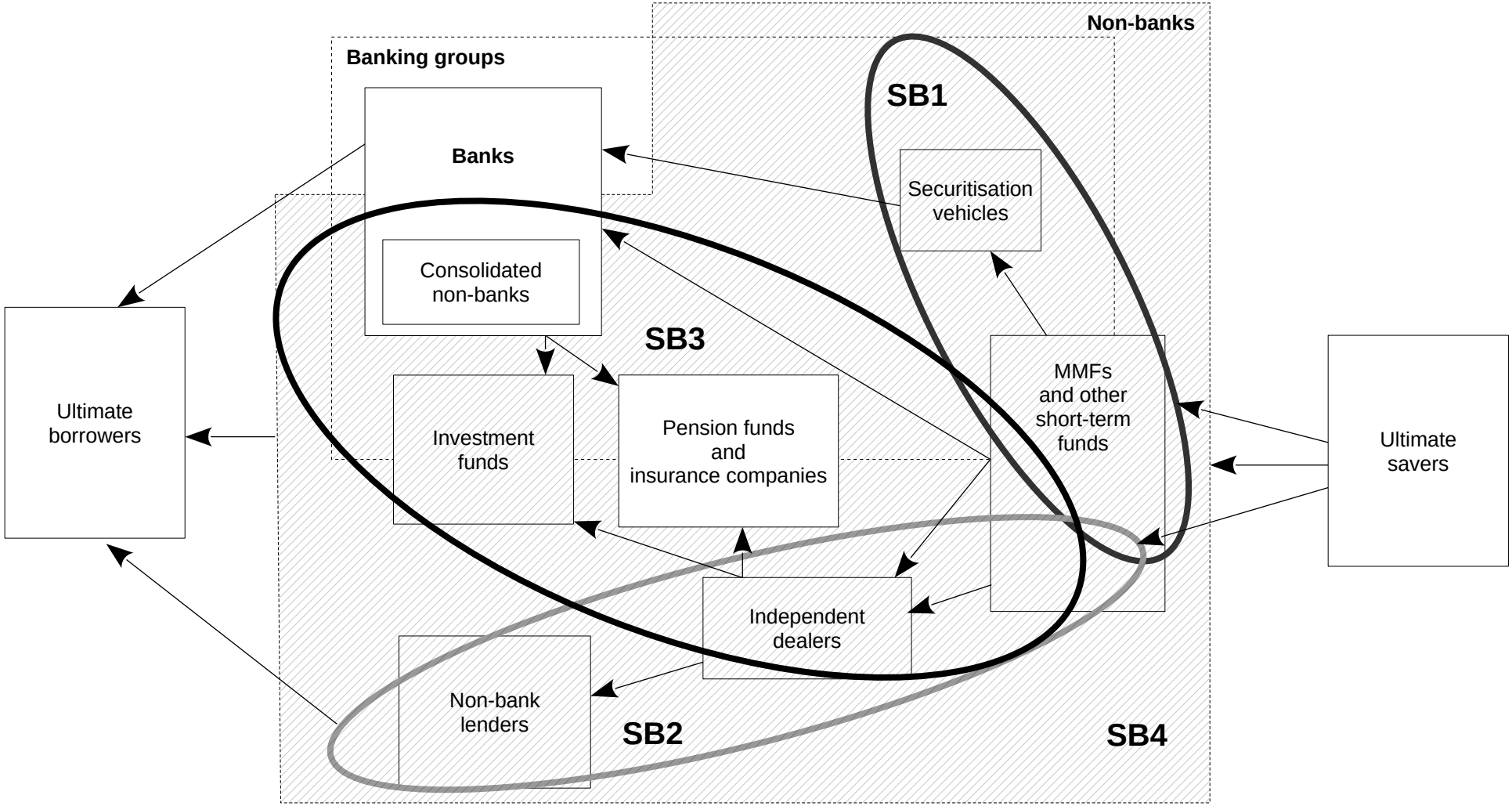
sometimes overlapping, as shown in figure 6. On the top-right corner we can see the first characterisation (SB1), which links short-term savings to bank loans mostly through off-balance sheet vehicles – hence, from an organisational point of view, it is mostly located inside banking groups. The second characterisation (SB2) is at the bottom of the figure, doing the same as SB1 but through independent non-banks. At the centre of the figure we find the third characterisation (SB3), in which repos connect short-term wholesale deposit-likes to long-term asset managers – investment funds, and pension funds and insurance companies – through dealers – be it banks or independent non-banks. Unlike SB1 and SB2, SB3 does not necessarily connect non-financial agents – i.e., ultimate lenders to ultimate borrowers. Finally, the fourth characterisation (SB4) is represented by the shadowed area, which encompasses every non-bank, but those consolidated in banks' balance sheets, and pension funds and insurance companies. This area represents the potential scope of SB4, as defined by the FSB.

Hence, as we noted above, we can clearly appreciate in figure 6 that SB1, SB2 and SB3 emerge from an abstraction – in the sense that they choose certain entities to characterise a coherent system. On the contrary, SB4 relies on a discretionary judgement of whether a non-bank entity should be classified inside shadow banking or not. In addition, the figure shows that the spaces demarcated by each characterisation sometimes overlap. For example, the entities included in SB2 are clear candidates to be encompassed by SB4, which has a potentially broader scope. Some asset managers typically included in SB3, as well as non-bank dealers, can be also part of SB2 and SB4, while some banks' subsidiaries can be eligible for SB1. Finally, we can also note that some unconsolidated bank subsidiaries and vehicles may simultaneously be part of SB1 and SB4.

To better comprehend these four characterisations we conduct below a quantitative and qualitative assessment of the financial space that each of them represents. The quantitative assessment is done through the estimation of their size based on existing estimates and publicly available statistics. As we show below, this is not a straightforward exercise and the results that can be obtained are far from being accurate. Still, this is

necessary to get a more tangible view of the four abstract ‘shadow bankings’. In turn, we complement it with a qualitative assessment, which is necessary to ‘polish’ the quantitative estimates and nuance the conclusions that can be drawn from them. In particular, we will focus on verifying that the whole space encompassed by our estimates is coherent with the particular nature of the relation between the banking and the shadow banking system stipulated in each characterisation.

Figure 6: The four shadow banking characterisations in the financial system space



Source: authors' representation.

4.1. The size of the shadow banking system

Following Ehlers et al. (2018), there are three different approaches to measure the size of the SBS: i) from the point of view of ultimate borrowers, as total ultimate lending, ii) from the side of ultimate creditors, as total ultimate savings, or iii) adopting a 'holistic view', which consists of aggregating the balance sheets of the entities that form the SBS. The three of them involve important drawbacks that result in significant overestimations. The ultimate borrowers perspective does not take into account the liability side and, hence, overestimates the size of any characterisation of shadow banking based on maturity transformation. On the other hand, the ultimate creditors approach may also overestimate the volume of ultimate lending if a significant part of the funds remain in the form of short-term investments. Finally, the holistic approach involves a lot of double counting when there is substantial 'layering' – transactions between shadow banking entities – as it is typically the case[15]. Hence, this approach may provide some insight on the potential build-up of risks, but it does not deliver a realistic picture of the actual final funds deployed for the real economy (Claessens et al., 2012, p. 18).

As a result, any proper estimation of the volume of ultimate lending/ultimate savings/funds intermediated has to somehow combine the ultimate borrowers and the ultimate creditors approach. Tracking the whole 'intermediation chain' – i.e., identifying the whole path that links some particular ultimate savings to its corresponding ultimate borrowers – becomes challenging task due to the complexity of the interrelations (see Gallin, 2013, for an attempt in this direction)[16]. However, we can depart from one of the two sides' estimate and polish it by taking into account some evidence from the other end.

15 The very idea of *credit intermediation chains*, upon which the concept of shadow banking was built, highlights this fact. Shadow banking relies in the notion that what would traditionally happen inside the balance sheet of one single bank, happens now along a chain of financial intermediaries (Pozsar, 2008). The longer the chain, the larger the estimate, but not the ultimate funds deployed by the SBS.

16 We may even go further and question if this is really meaningful. Even if we have perfect knowledge of the interconnections between all the intermediaries' balance sheets, it is technically impossible to determine the path of certain savers' cash money once multiple tracks are open. A saver may deposit her money in a MMF, which will hold multiple different financial assets, many of them issued by other financial entities holding more financial assets.

Below, we present the estimates for the size of the four main 'shadow bankings' we identified in the previous section, using the three measurement approaches, adjusted to take into account overestimation problems when possible. The figures correspond to outstanding volumes at the end-year of 2007 and 2016, so we can compare the picture before and after the GFC[17]. To come up with these estimates we have prioritised, in the following order, the estimations from the literature, publicly available data sources and our estimation combining the former two. We may stress that the availability of accurate public statistics for this type of exercise is a major concern. We have sought to mitigate this problem by combining all possible sources and adopting conservative assumptions, as detailed below. Hence, we believe that, bearing in mind these caveats, the figures presented here are reasonable estimates.

4.1.1. The first and second characterisations

We address SB1 and SB2 together, since estimating their respective sizes involves splitting up overall securitisation into that run by banks and that conducted by non-banks, something that is not always possible. Estimates are displayed in table 3 below. Following the holistic approach, Pozsar et al. (2012) provide an estimation that aggregates SB1 and SB2 for the US. The authors sum up all liabilities recorded in the US flow of funds that are related to securitisation activity (MBS, ABS and other government-sponsored enterprises liabilities) and all short-term money-market transactions that are not backstopped by deposit insurance (repos, commercial paper, and other money market mutual fund liabilities), obtaining an aggregate of $20 trillion for 2007. In turn, they attempt to mitigate double counting by 'netting the money market funding of ABS and MBS' (ibid, p. 9) – although they do not detail how – obtaining a figure close to $17 trillion for 2007 (ibid, figure 1). Staff from the French Treasury reached a similar gross estimate of about $19 trillion aggregating GSEs, GSE-backed mortgage pools, ABS issuers, specialised finance companies, broker-dealers and MMFs (Jaulin and Nefussi, 2013). Replicating Pozsar et al.'s (2012) gross estimation for 2016, we obtain a figure of $15.7 trillion.

17 We stop at 2016 since is the last year for which the AFP liquidity surveys, which we use for the ultimate creditors estimations, are publicly available.

Using the ultimate borrowers approach, the size of SB1 and SB2 can be estimated, respectively, as the amount of bank and non-bank securitised loans. Total US securitised loans stood at $12.5 trillion in 2007[18]. This figure needs to be split into those loans originated by banks and those originated by non-banks. For that we may use Unger's (2016) estimation of the relative weight of banks and non-banks in US loan origination. From his figures, we may conclude that banks accounted for 80% of securitised loans origination against a remaining 20% for non-banks[19], or a total volume of $9.2 trillion and $2.3 trillion, respectively. In Europe, securitisation of loans was much lower, around $1.9 trillion in 2007 and origination seemed to have been even more clearly dominated by banks[20]. Bakk-Simon et al. (2012, p. 14), after examining the data collected by the ECB on euro area securitisation vehicles, conclude that '[l]oans are originated mainly by banks'. However, in the UK, which was the main European issuer of ABS with around one-third of outstanding stock in 2007, the weight of non-banks seems to have been larger, although no estimation is available (Wainwright, 2010)[21]. For that reason, on a transatlantic level, we will only provide a combined estimate of SB1 and SB2, equal to the sum of outstanding securitisation in both areas: $14.4 trillion in 2007 and $11.1 trillion in 2016 ($10.4 trillion in the US and $0.7 trillion in Europe)[22].

Nonetheless, as we noted above, the ultimate borrowers' approach has a major drawback for estimating the size of SB1 and SB2: it

18 The figure is obtained departing from the volume of total securitisation according to SIFMA's data ($11,641 billion). To that we deduct outstanding CDOs to avoid double counting ($145.8 billion), since they were backed by ABS. Then, we add the part of ABCP (not included in SIFMA's data) that was used to fund loans directly and not ABS. For that we exclude from total outstanding ABCP ($1.5 trillion, Lysandrou and Shabani, 2018, p. 2), the balance sheet size of those ABCP conduits investing in ABS (following Thiemann, 2018, chap. 2: hybrid conduits, securities arbitrage conduits and structured investment vehicles), which accounted for 36.3% of the market (ibid, table 2.2, p. 41), that is, $0.5 trillion. Nevertheless, the resulting $1 trillion of ABCP directly funded loans also includes European loans. Hence, we assume that the relative share of US and European loans in ABCP was similar to that in total securitisation, which, according to SIFMA's data, was 92% and 8%, respectively, i.e. $920 billion for the US that we add to the total securitisation estimate.

19 Unger (2016) estimates that 88% of credit was originated by banks. However, this figure also includes non-securitised loans that we subtract.

20 Estimated from SIFMA, deducting CDOs ($270 billion) from total securitisation ($2087 billion) and adding loans directly funded by ABCP ($80 billion, see footnote 18 for estimation).

21 According to the Bank of England's data, in 2007, non-bank or 'specialist lenders' accounted for almost one-third of outstanding mortgage loans, which represented two-thirds of total loans. However, the figures do not differentiate between independent lenders and bank subsidiaries.

22 Estimates for 2016 were obtained from SIFMA's aggregates, deducting outstanding CDOs. Additionally, securitisation retained by banks, obtained from AFME's Securitisation Data Report Q1:2017 (p. 4), has been deducted from the European outstanding value.

encompasses term-funded securitisation, which does not involve maturity transformation and, hence, should not be counted as shadow banking, as noted by Sissoko (2014, p. 4). Any realistic estimate necessarily needs to take into account the funding side to determine which part of total securitisation was short-term funded, something that is not often taken into account, as Stein (2010, p. 43) points out. To the best of our knowledge, only Pozsar et al. (2010, p. 9), Krishnamury et al. (2014, p. 2396) and Gallin (2013) have addressed this issue. Pozsar et al. (2010) provide such an estimate of short-term funded securitisation in the US as a by-product of netting their gross holistic estimation from double counting, around $3 trillion. However, they do not disclose any detail on how they reached that figure. Krishnamurthy et al. (2014, p. 2396) provide a more detailed attempt: they add up ABCP and repos collateralised by ABS, as well as direct ABS holdings held by MMFs and securities lenders, to conclude that, by mid-2007, short-term funding accounted for 41% of long-term US private-label ABS[23]. However, the estimation does not encompass agency MBS, which represented about half of total securitisation[24] and that we may expect to have been mainly term-funded, since they were mostly held as official foreign currency reserves[25]. Finally, Gallin (2013) runs the most elaborated estimation using the US Flow-of-Funds data to try to reconstruct the intermediation chains linking 'short-term funders' (MMFs, unregistered liquidity funds, local government investment pools and cash-collateral reinvestment pools from securities lending programmes) to ABS issuers. According to his results, short-term funding accounted for 16% of total securitisation in 2006 and 19% in 2008. Since Gallin does not provide the estimate for 2007, based on his figures we will consider a 20% share for short-term funding that year.

In turn, if we assume that short-term funding was distributed proportionally between bank- and non-bank-originated loans, by the end

23 ABCP accounted for 23% of outstanding private-label ABS, direct holdings by MMFs and securities lenders, funded through short-term liabilities securitisations, made up to 5% and 10% respectively, while repos from MMFs and securities lenders accounted for the remaining 4%.

24 In 2007, agency MBS represented 48% over total securitisations according to SIFMA's data on US securitisation (total outstanding securitisation minus CDOs).

25 Between 2003 and 2007, up to 56% of the increase in the stock of agency securities was hoarded by current account surplus countries, mainly Asiatic countries (excluding Japan) and Middle East countries, accumulating large foreign exchange reserves (Demarco et al., 2011).

of 2007, US' SB1 would have amounted to $2 trillion – an equivalent to 31% of outstanding loans held on-balance sheet by banks – while for SB2 the figure would be at $0.4 trillion – or 6% of banks' outstanding on-balance sheet loans. At the transatlantic level, combining the two characterisations, the SBS would have added up to $2.9 trillion or 11% of outstanding on-balance sheet loans of the US and the European banking systems. Unfortunately, we lack data to compare such estimates for 2016. Nevertheless, we expect figures to be way lower since we do know that short-term funding sources crumbled during the GFC. Krishnamurthy et al. (2014, p. 2398) document how short-term funding of private-label ABS from ABCP, MMFs, securities lenders and repos contracted dramatically during the GFC. This was especially remarkable for the US ABCP market, which in 2016 amounted to $250 billion, far from the $1.2 trillion of 2007.

Regarding the ultimate creditors' approach we shall focus on the demand for wholesale collateralised alternatives to bank deposits. This demand comes from institutional investors and non-financial companies (Gorton, 2010a, p. 10) or what Pozsar (2013) dubs 'institutional cash pools' (ICPs) by adding official foreign exchange reserves and defining them as centralised holdings of $1 billion or more in short-term instruments[26]. To the best of our knowledge, the only overall estimate of ICPs has been provided by Pozsar (2014, chart 3) at about $5.3 trillion in 2007 and $5.5 trillion in 2013. Most of the remaining available estimations just encompass US non-financial corporations. The largest figure has been obtained by the FSB (2018), at around $2.7 trillion for 2016. However, this estimate does not really correspond to Pozsar's definition of ICPs, since it includes firms with short-term investments of less than $1 billion. If we apply the $1 billion threshold, the figure goes down to $1.4 trillion; for 2007, the estimate is $0.7 trillion[27]. The remaining estimates, which may be found in Pozsar (2013) and Pozsar (2018), are way smaller since they only take into account the top largest firms.

26 The assumption is that beyond that amount diversification between insured bank deposits, limited to $250,000, would become difficult and other alternatives would be preferred. A more practical reason why Pozsar chose that threshold may be that the AFP liquidity surveys, which he uses in his analysis of ICPs, provide information on the composition of large firms' treasuries for two groups: those with short-term holdings below $1 billion and those with holdings above $1 billion. In Pozsar (2015, p. 5), he raises the threshold to $10 billion.

27 We have replicated the estimation using Compustat database.

Nonetheless, all these estimations incur in an important bias: they measure corporate ICPs through the accounting item 'cash and short-term investments', which is a wider category than the notion of deposit-likes used in the literature. The accounting definition encompasses most of the instruments that are typically associated with shadow banking – such as MMFs' shares, repos or ABCP, along which other money market instruments. However, it also includes other items that are not, such as securities up to 90 days to maturity and, especially, longer-term securities to be sold in the short term. Hence, a more accurate estimate for ICPs must be somewhere between the accounting items 'cash' and 'cash and short-term investments'. Taking this into account, the estimate for US non-financial ICPs' is between $0.5-0.7 trillion for 2007 and $0.7-1.4 trillion for 2016. However, these figures still result from an overestimation. They are based on the assumption that all cash holdings of each of these firms are centralised into a single treasury. If that is not the case and they operate with several treasuries, the size of each of them will be obviously lower than the aggregate and more likely to be below the $1 billion threshold that defines ICPs.

Last but not least, we have to adjust these figures to account only for the part of ICPs' funds that is actually invested in shadow banking instruments. Pozsar (2013) addressed this issue using the Association for Financial Professionals' Liquidity Surveys, which provide an estimate of the portfolio composition of the treasuries of large companies[28]. The surveys suggest that, in 2007, the average ICP held around 62% of its portfolio in instruments associated with shadow banking – following Pozsar (2013): repos, ABCP, variable rate demand notes, auction rate securities, ABS and MMF shares. However, things changed drastically in the wake of the GFC and ICPs reallocated substantially their cash into bank deposits, which by 2016 represented more than half of their portfolios, whereas shadow banking instruments fell down to 32%. If we adjust our previous estimates applying these ratios, we obtain a figure of $0.3-0.4 trillion in 2007 and $0.3-0.5 trillion in 2016 – way smaller than the FSB's (2018) estimate of $2.7 trillion.

28 In particular, the results differentiate between those with treasuries of less than $1 billion and those with more.

Table 3. Size of the first and second shadow banking characterisations

	SB1		SB2		SB1 and SB2 combined			
	Ultimate borrowers		Ultimate borrowers		Ultimate borrowers		Ultimate creditors	Holistic
	US, total	US, adjusted[1]	US, total	US, adjusted[1]	US and Europe, total	US and Europe, adjusted	US, adjusted[2]	US[4]
Outstanding (US dollar trillions)								
2007	10.0	2.0	2.5	0.4	14.4	2.9	0.3-0.5	20
2016	-	-	-	-	11.1	-	0.3-0.5	15.7
As percentage of banking system (outstanding on-balance sheet loans or aggregate balance sheet)[3]								
2007	154%	31%	38%	6%	54%	11%	5-7%	133%
2016	-	-	-	-	46%	-	3-6%	71%

[1] Assuming a 20% weight for short-term funding, based on Gallin's (2013) estimation.

[2] Short-term holdings of US non-financial firms with treasuries above $1 billion. Lower estimate is given by 'cash and cash equivalents', while the upper estimate corresponds to the item 'short-term investments'.

[3] Corresponding banking system (US or US and Europe). For the holistic estimate, as percentage of aggregate banking system balance sheet, retrieved from the FSB. For ultimate borrowers and ultimate creditors estimates, as percentage of loans held on-balance sheet. For the US: loans an leases in bank credit, all commercial banks, from the Fed; for Europe: bank loans to domestic non-MFIs for EU countries, from the ECB, and bank lending to non-financial businesses and individuals in the UK, from the Bank of England; converted into US dollars at official spot exchange rate at the end of the year.

[4] Gross estimation through Pozsar et al.'s (2012) approach.

Sources: Pozsar et al. (2012), SIFMA, Unger (2016), Compustat, AFP Liquidity Surveys, Fed, ECB, Bank of England and FSB.

Our findings can be summarised as follows. Banks' securitisation was sizeable before the GFC, particularly in the US, accounting for twice the outstanding volume of loans held on-balance sheet by banks. However, its largest part was not ultimately funded by short-term instruments and, hence, SB1 was way smaller than usually assessed through the holistic approach. In turn, SB2 was considerably smaller than SB1 – around four times – and, again, taking into account the liability side, it was relatively small. In addition, both SB1 and SB2 seem to have contracted considerably since the GFC, although outstanding securitisation remains large in the US – in Europe, non-retained securitisation represents only 5% of bank loans.

4.1.2. Third characterisation

SB3 can be estimated using the holistic approach as the size of repo markets. Unfortunately, we still lack accurate data. In the US, the available

statistics for different market segments overlap – this is the case for tri-party repos and primary dealers' repos. Moreover, the largest segment, the bilateral one, in which entities operate directly between them, remains mostly a blind-spot (Baklanova, 2015; Baklanova et al., 2016; Copeland et al., 2014). Nevertheless, officials from the Federal Reserve have developed an estimation of total repo volume using primary dealers' reported volume of repos, adjusting it to account for the activity of other dealers (Copeland et al., 2014, 2012)[29]. Assuming that primary dealers' share in total repos is similar to that in the tri-party market – for which there is an estimate of 90% in 2012 – total repos can be assumed to be equal to primary dealers' repos multiplied by a factor of 10/9 (Baklanova, 2015, p. 5; Copeland et al., 2012). This results in a figure of $7.4 trillion in 2007 and $5.5 trillion in 2016. An alternative approach consists in measuring the volume of pledgeable collateral of the largest global banks. Singh and Aitken (2010, p. 10) value it at $10 trillion in 2007 and Pozsar and Singh (2011, p. 5) at $5.8 trillion in 2010. However, estimating effective lending requires deducting haircuts, an information that is not available. In Europe, the best available estimate is the one provided by the International Capital Market Association (ICMA) in its biannual Repo Surveys, which seeks to cover the majority of main participants. The results show a total volume of €6.3 trillion in 2007 and €5.6 trillion in 2016 ($9.2 trillion and $5.9 trillion respectively, when converted at end-of-year exchange-rate spot rates).

An ultimate creditors estimation can be attempted by measuring ICPs' investments in repos. The latter may be either direct or indirect, mainly through MMFs. We can use our previous estimates of the size of US non-financial corporations' ICPs and combine them with i) the share of repo direct holdings (according to the AFP liquidity surveys) and ii) the share of repo indirect placements. The latter can be estimated by combining the share of ICPs' investments in MMFs (from the AFP surveys) with the weight of repos in total MMFs' assets. Since the US MMF sector is the world's largest, we will use it as reference for our estimation[30]. Their asset composition can be obtained from the Fed's Flow

29 More recently, in January 2022 the New York Fed has started publishing statistics on primary dealers' transactions in the billateral market (Hempel et al., 2022).

30 Excluding China, US MMFs accounted for 71% of sectors' global assets in 2007 and 61% in 2016.

of Funds. In that way, we get a final estimate of $50-70 billion in 2007 and $59-115 billion in 2016.

Regarding the ultimate borrowers approach, estimations are even more complicated due to the lack of publicly available data. However, in the case of Europe, we know that the repo market is mainly an interbank market (Bakk-Simon et al., 2012; Mancini et al., 2015), so little funding is made available for other borrowers. Beyond this observation, attempts to estimate ultimate repo borrowing have focused on hedge funds. Singh and Aitken (2010, p. 10) assess that, in 2007, the 25 largest hedge funds borrowed around $1 trillion against collateral from prime brokers. Alternatively, Singh (2011, p. 7) estimates hedge funds' borrowing for the same year at $1.6 trillion, to which he adds $1.2 trillion for securities lenders, although the latter figure corresponds to posted collateral and not funds borrowed for which haircuts have to be considered. Pozsar and Singh (2011, p. 7) have also provided an estimate of collateral received by dealers from asset managers: $3.3 trillion at year-end 2007 and $2.4 trillion at year-end 2010, on which haircuts would have to be applied to obtain the volume of effective borrowing.

Table 4. Size of the third shadow banking characterisation

	Ultimate borrowers	Ultimate creditors	Holistic	Holistic
	Hedge funds[1]	US non-financial corporations	US	Europe
Outstanding, US dollar trillions				
2007	1-2.8	0.0-0.0	6.7	9.2
2016	-	0.0-0.1	5.6	5.9
As % of outstanding bond markets (global, US or Europe)[2]				
2007	2-6%		26%	38%
2016	2-4%		11%	24%

[1] Lower estimate from Singh and Aitken (2010). Higher estimate from Singh (2010).

[2] Corresponding bond market, for ultimate borrowers: global. Estimate from SIFMA's Capital Markets Factbook 2022.

Sources: Singh and Aitken (2010), Singh (2010), Compustat, AFP Liquidity Surveys, Fed, SIFMA, ICMA.

Table 4 summarises our results. Contrary to SB1 and SB2, SB3 has remained relatively stable in size. Nevertheless, there are significant difficulties for determining SB3's ultimate lending volume due to lack of publicly available data. Meanwhile, evidence suggests that little funding comes from outside the financial sector and that SB3 is mostly a financial

phenomenon, i.e. from financial entities to financial entities. In addition, a large part of repo markets correspond to inter-bank transactions.

4.1.3. Fourth characterisation

To estimate the size of SB4, the FSB uses the holistic approach in its yearly reports, which, as we mentioned above, constitute the benchmark estimation of the size of shadow banking. The holistic approach is, indeed, the most suitable for this characterisation, which, as noted above, encompasses a collection of more or less scattered financial entities that do not need to constitute a complete intermediation chain between ultimate savers and ultimate borrowers. Following the FSB estimations, global shadow banking grew from $32 trillion in 2007 ($18.8 in the US and $7.0 in Europe) to $43.5 trillion in 2016 ($13.9 in the US and $13.8 in Europe)[31]. However, the FSB does not attempt to address the double-counting problem of the holistic approach[32]. Deloitte (2012) has also used the holistic approach, setting the size of US shadow banking slightly higher than the FSB, at around $20 trillion in 2007[33].

The ultimate borrowers' approach may be found within the FSB's holistic estimation, in particular, on its estimates of 'economic function 2' (non-bank lending) – we may leave aside 'economic function 5' (securitisation) since a great part of it consists of loans originated by banks and, hence, directly, only serves to fund the latter and not the real economy. Globally, non-bank lending amounted to $3.5 trillion in 2007 ($2.2 trillion in the US and $0.2 trillion in Europe) and $3.4 trillion in 2016 ($1.1 trillion in the US and $0.4 trillion in Europe).

Providing an ultimate creditors' estimation for SB4 is not straightforward. Although the FSB (2018, annex 3.2) equates it to ICPs (whose estimation has already been analysed above), the concept of

31 The figures correspond to the narrow measure of shadow banking. Europe includes the UK, France, Luxembourg, Germany, Netherlands, Spain, Italy, Switzerland, Belgium and Ireland. Data can be accessed at: https://data.fsb.org/dashboard/Jurisdiction%20View.

32 The sole measure it provides is on the interconnection of shadow banking entities vis-à-vis banks, insurance companies and pension funds. Moreover, the FSB estimate these interlinkages for the category 'other financial intermediaries', which includes all non-banks excepting insurance companies and pension funds. They constitute the FSB's early 'broad measure' of shadow banking.

33 The range of entities included by Deloitte is narrower than for the FSB. Notably, hedge funds are left aside.

shadow banking held by the international body is not confined to the intermediation of short-term savings. It also encompasses long-term savings ultimately invested in long-term securities and loans (figure 5 above). Hence, a more appropriate estimate would require adding up all households', non-financial firms' and government's claims on those non-bank financial entities considered as part of shadow banking. This is beyond of our scope in this chapter and, moreover, national accounts might not always provide sufficiently disaggregated data.

Table 5. Size of the fourth shadow banking characterisation

	Ultimate borrowers[1]			Ultimate creditors	Holistic[2]		
	Global[3]	US	Europe[4]		Global[3]	US	Europe[4]
Outstanding, US dollar trillion							
2007	3.5	2.2	0.2	-	32.0	18.8	7.0
2016	3.4	1.1	0.4	-	43.5	13.9	13.8
As % of banking system (outstanding on-balance sheet loans or aggregate balance sheet)[5]							
2007	-	33%	1%	-	34%	125%	14%
2016	-	13%	3%	-	30%	64%	27%

1 FSB's Economic Function 2.

[2] FSB's narrow measure of shadow banking.

[3] Jurisdictions included in the FSB's annual reports on shadow banking: US, China, Japan, Canada, Cayman Islands, Australia, South Korea, Hong Kong, Brazil, India, Singapore, Russia, Mexico, Saudi Arabia, South Africa, Indonesia, Chile, Turkey and the European countries (see below).

[4] European jurisdictions included in the FSB's reports: UK, France, Luxembourg, Germany, Netherlands, Spain, Italy, Switzerland, Belgium and Ireland.

5 For ultimate borrowers estimates: as percentage of outstanding loans held on-balance sheet by banks. For holistic estimates: as percentage of outstanding aggregate balance sheet.

Sources: FSB, Fed, Bank of England and ECB.

To sum up, shadow banking understood as SB4 is the largest and the only one that has increased in size since the GFC. However, this was not the case for the US, where SB4 shrunk mainly as a result of the conversion of main investment banks into commercial banks, moving repo activity out of the shadow banking perimeter[34]. For the rest of the world, growth has been led by investment funds (the FSB's 'economic function 1'), especially in China, the Cayman Islands, Ireland and Luxembourg. However, it remains to be determined which part of these

34 According the FSB, economic function 2, which mainly encompasses repos, contracted from $5.9 trillion in 2007 to $2.4 trillion in 2009.

funds is invested in securities issued by non-financial actors and how much corresponds to cross-investments between non-banks. Meanwhile, it is difficult to identify ultimate intermediated savings. In any case, direct non-bank lending is relatively small compared to banks', which suggests that it is not quantitatively important.

4.2. The relationship between the SBS and the banking system

As we noted above, each shadow banking characterisation conceives a different type of relation between the SBS and banks (see table 2, p.42): whether subordination (SB1), competition (SB2 and SB4) or cooperation (SB3). In the case of SB3, cooperation in repo markets seems to be consistent with evidence – banks and non-banks interact and do business with each other. On the asset side, banks provide margin loans to asset managers and, in particular, hedge funds. On the liability side, repo markets provide financial and non-financial firms with deposit substitutes. However, for the remaining characterisations there are several issues that deserve further examination before drawing any conclusion.

Firstly, we noted above that SB1 and SB4 can overlap in banks' non-consolidated subsidiaries and vehicles. In that way, these two characterisations may involve conflicting claims about what happens there. On the one hand, for true competition to happen, these entities have to be able to operate without support from their sponsors – we shall examine this issue. On the other hand, we may question whether, from an organisational point of view, it is reasonable to assume that bank subsidiaries do business in complete independence from their parents, as it is implicitly held in SB4. Since assessing how banking groups are run as organisations is beyond our scope, we will just briefly evaluate the degree of dominance of banking groups in key non-bank sectors.

In addition, SB2 is based on a strong conviction on the substitutability between shadow banking and banking as alternative sources of funding for the real economy. This hypothesis implies that i) shadow banking is a quantitatively significant alternative and ii) it can

run without support of the banking system. While the substitutability hypothesis is not necessarily inherent to SB4, it is quite popular among those using this view of shadow banking, as it is the case of the FSB.

4.2.1. Banks' non-bank subsidiaries

Evidence collected since the GFC has shown that many of the non-prudentially consolidated non-bank subsidiaries and vehicles set by banks were reliant and backstopped by their sponsors. Securitisation credit intermediation chains inside bank holding companies relied on credit lines at almost each step, which allowed them to move the loans and the securities backed by them from one entity to antoher (Herbillon-Leprince, 2020, pp. 76–78; Shoemaker, 2019, p. 53). Moreover, following the Basel Committee on Banking Supervision (BCBS), after the onset of the GFC, 'the majority of the [securitisation] conduits that suffered problems were absorbed by their sponsoring banks', 'the majority of the SIVs that suffered problems were supported by banks', in addition to 'some MMFs [...], including those sponsored by the asset management arms of banks' (BCBS, 2015, pp. 6–7).

ABCP conduits were mostly sponsored and backed by banks, which, according to Acharya et al. (2013) 'had (in large part) insured outside investors in ABCP by providing explicit guarantees to conduits, which required banks to pay off maturing ABCP at par'. As a result, despite the sizeable portfolio losses suffered by these conduits – between 5-15% – only 0.6% of the bank-sponsored ABCP end up defaulting – none of the latter benefited from liquidity or credit guarantees. Regarding MMFs, using data from public sources and confidential SEC records, McCabe (2010) shows that at least 16% of prime MMFs – a segment that represented around 60% of the industry at the onset of the GFC – received support from their sponsoring bank[35]. Bengtsson (2013, p. 9) also collects some anecdotal evidence of European banks backing their MMFs either purchasing troubled assets or covering any difference between their current market value and their actual face value. According to Parlatore Siritto (2015, p. 4): 'Between 2007 and 2011, 78 MMFs (out of a total of 341

35 The author notes that 'the fact that some support can occur without notification of the SEC suggests that the data still may not reflect every instance of support (ibid, p. 5).

MMFs) received sponsor support in 123 instances for a total amount of at least $4.4 billion. In fact, [...] sponsor support has been a common feature throughout the history of the MMF industry even prior to the recent financial crisis'. All in all, this raises serious doubts on whether the perimeter of bank-prudentially consolidated entities provides a pertinent frontier to separate functionally dependent from functionally independent non-banks – as it is held in the SB4.

Meanwhile, banking groups seem to dominate key segments of the non-bank sector – a large part of the entities typically considered as independent non-banks are indeed part of banking groups. For example, McCabe (2010) shows that, as of 31 July 2007, half of US prime MMFs were bank-affiliated. Similarly, according to Cetorelli (2012), 'Bank holding companies in 2011 controlled about 38 percent of the assets of the largest (top twenty) insurance companies, roughly 41 percent of total money market mutual fund assets, and approximately 93 percent of the assets of the largest (top thirty) brokers and dealers'. In the euro area, following Doyle et al. (2016, p. 21), more than half of the largest asset managers were owned by banks or bank holding companies.

4.2.2. The substitutability hypothesis

The substitutability hypothesis relies on two assumptions: i) non-banks account for a significant volume of lending in relation to the banking system – in order to constitute a de facto alternative to the latter – and ii) non-banks can run their business without any support from the banking system, i.e., they are functionally independent. The estimates we provided in the previous section suggest that the first condition does not hold – non-banks still remain a relatively small source of lending. The relative size of non-bank origination in securitisation prior to the GFC was relatively small compared to banks (see ultimate borrowers estimation of SB2 in table 3 above). Those who claim the opposite tend to be misguided by the fact that they are looking at the accumulated ex-post stocks, instead of analysing the flows of initial lending (Lavoie, 2020) – non-banks may end up holding the ABS, but most of the underlying loans have been initially granted by banks. On the aggregate, things do not seem to have changed since the GFC. Non-bank lending continues being

relatively small compared to banks (see table 5 above), although non-banks have become considerably important in certain segments and countries, such as the mortgage markets of the US and the Netherlands (ECB, 2017; Seru, 2019).

Evidence also suggests rejecting the second assumption of the hypothesis. The non-bank intermediaries that constitute the SB2's parallel banking system were, prior to the GFC, highly dependent on banks. On the one hand, this was inescapable taking into account the dominance of banking groups over each of the primary business branches involved in securitisation, as documented by Fed officers for the US[36]. Therefore, it is quite unlikely that any issue backed by non-bank originated loans did not involve, at some point, the intervention of a bank or a bank subsidiary.

On the other hand, bank credit was crucial for the non-bank credit intermediation chains of US mortgages in at least three ways. First, non-banks' credit origination relied initially on banks' warehousing credit lines that were only later replaced by refinancing from other intermediaries (Herbillon-Leprince, 2020, pp. 73–75). The US Congress Financial Crisis Inquiry Report (2011, p. 113) highlights the importance of these credit lines for independent lenders. According to Shoemaker (2019, p. 53), summed up to credit lines for financing 'the costs of mortgages in default', this 'made nonbanks particularly vulnerable as banks either cancelled existing lines of credit or became unwilling or less willing to extend new lines' at the onset of the US subprime crisis. After the GFC, US non-bank lenders seem to continue relying on banks' credit lines for origination (Kim et al., 2018; Shoemaker, 2019), keeping overdrafts for up to one year until the loans are sold (Jiang, 2019). According to Kim et al. (2018), in 2016, around half of the total loan origination had been financed with warehouse lines granted by banks. The second fundamental role of banks was as clearing houses in securities markets and repos, which enabled financing the transactions following origination all along the chain – both for the transfer and warehousing of securities

36 Based on data from 1983 to 2008 on US private-label securitisation, the segment in which independent non-banks operated, Cetorelli and Peristiani (2012) estimate that banks issued 67% of total ABS, acted as servicers in 80% of them, underwrote 72% of the issues and acted as trustee in 84% of the deals (percentages over total volume).

(Herbillon-Leprince, 2020, pp. 79–81). In particular, banks provided intra-day credit that facilitated investment banks to role over repo funding, and took the counterparty risk by placing themselves between both parties of the transaction. Last, but not least, following Pozsar et al. (2012, p. 21), bank holding companies acted as lender of last resort for the parallel banking system, in such a way that 'failure [...] to perform [this function] in times of systemic stress ran the risk of paralyzing and disabling the independent specialists-based intermediation process'.

On a broader level, absolute functional independence of investment funds and other market-based non-bank intermediaries, as defined in SB4 does not hold neither. These intermediaries rely on market liquidity that is ultimately dependent on dealers' capacity to make markets. Large banking groups, both in Europe and in the US, fulfil this role. All the more since, by 2009, the largest US investment banks had either become bank holding companies or banks' subsidiaries – as it was the case for Bear Stearns, Morgan Stanley, Goldman Sachs and Merrill Lynch – or gone bankrupt (Lehman Brothers). An important consequence of this is that problems faced by banks can cause important disruptions on financial markets, affecting, thus non-bank intermediaries participating in them. This seems to be what we observed during the Covid-19 financial turbulences of March 2020, when liquidity dried up for one of the safest and most liquid financial assets: US Treasuries. As Bouguelli (2021) describes, bank dealers, facing too large sale orders from bond holders, stopped making markets[37]. Two constraints seem to justify banks' behaviour. On one side, primary dealers had already accumulated a large stock of treasuries in the previous months, in which the demand for these decreased while supply expanded due to large government deficits. On the other side, the maximum leverage ratio introduced by Basel III makes market-making less profitable since dealers finance their inventories with repos, using little capital upfront. The lesson is clear, without banks acting as market makers, the market liquidity on which non-bank

37 Following Bouguelli (2021), large sales were driven by a run into cash face to the increased uncertainty introduced by the pandemic, in which agents cashed out their liquid assets, as well as to leveraged agents facing margin calls. Although the parallel flight to quality, reallocating portfolios from risky to more safe investments, did increase the demand for Treasuries, it increased more the demand on futures than on the bonds in itself due to the off-balance sheet advantages of the former. This turned into loses the relative value arbitrage strategies of hedge funds, which closed their positions by closing their large leveraged positions on Treasury bonds.

intermediaries rely for their business disappears, unless the central bank takes over dealers' function.

5. Conclusion

A large literature has developed since 2008 around the term 'shadow banking'. Despite the lexical sympathy, its corpus does not share a common object of study. The definitions used by the authors are often rather vague – when provided at all – and the list of entities and activities covered under its umbrella can vary considerably. Overall, the common denominator of this literature is the interest in some major developments of the global financial system that can be traced back to the beginning of the liberalisation process in the 1970s. In this chapter we have sought to make sense of this literature by recognising the 'shadow banking' polysemy problem in all its depth.

Considering the limitations of the traditional entity-based v. activities-based taxonomy of shadow banking definitions to properly account for this semantic problem, we have put forward an alternative semantic approach that focuses on the composite nature of the term. From this point of view, any definition can be understood as a combination of a meaning of 'banking', describing the nature of the activity at hand, and a notion of 'shadow', describing the form of regulatory arbitrage. On the one hand, 'banking', or *what,* may be defined as a) any of the traditional activities of banks (granting loans and collecting deposits) or b) running a maturity-mismatch balance-sheet structure (combining long-term assets with short-term liabilities). On the other hand, 'shadow', or *where,* describes the legal space in which it happens, which can be: a) inside the organisational realm of a bank – whether on-balance sheet, through consolidated subsidiaries, or through off-balance sheet vehicles – or b) beyond banks, either in the balance sheets of non-bank entities or in networks of financial entities (which may include banks) that, as a whole, are not subject to the equivalent bank regulation.

Applying this approach on the 50 most cited publications of the literature, we have identified four main characterisations of shadow

banking: SB1 describes short-term funded banks' off-balance sheet securitisation; SB2 refers to an independent and parallel non-bank credit system; SB3 circumscribe forms of maturity transformation beyond traditional banking, notably, through repos; and SB4 demarcates non-bank financial intermediation beyond insurance companies and pension funds. We showed that they define different spaces of the financial system, which are in parts overlapping, and build upon different assumptions regarding the nature of the relationship between shadow banking and the banking system: subordination (SB1), competition (SB2 and SB4) or cooperation (SB4).

Finally, we have assessed four characterisations from a quantitative point of view – estimating their outstanding sizes – and a qualitative perspective – taking into account their respective assumptions regarding the nature of the relationship between the shadow banking and the banking system. We showed that quantitative estimations depend considerably on the approach used. Our results suggest that the size of SB1 is much smaller than normally thought when only short-term funded securitisation is included. The same applies to SB2, which is in turn smaller than SB1, since non-bank-originated loans accounted for a minor share of total securitisation. In addition, we noted that the actual existence of SB2 is questionable, since non-bank securitisation chains can hardly run without either the support or the services of banking groups. In any case, both SB1 and SB2 seem to have dwindled considerably since the GFC.

Meanwhile, we showed that SB3 is not negligible in size, which has remained relatively stable after the GFC, and builds upon a reasonable assumption of cooperation between banks and non-banks. Nevertheless, we noted that it might mostly embody a purely financial phenomenon, with little direct interaction with non-financial actors. Finally, our quantitative assessment of SB4 showed that i) it is large and has grown since the GFC, boosted by the asset management industry, ii) non-bank lending is not a significant phenomenon, and iii) estimating the volume of ultimate savings that these non-banks intermediate, is far from clear. In turn, its assumption that shadow banking is a competitor for the banking system is questionable in the case of banks' sponsored entities,

which were systematically backstopped by their sponsors during the GFC. In addition, a large part of the non-bank sector is owned by large banking groups. Finally, we noted that the assumption of competition cannot be held in its strong sense, i.e. as perfect substitutability between banks and non-banks, since any form of market finance ultimately relies on banks' market-making activities.

Annex I – Shadow banking entities in the literature

Table 6 below shows the different sets of entities taking part of shadow banking as listed by a selected sample of publications addressing the latter. We have focus on those publications that provide such a list, as it is not often the case, and we have confined the range of entities to those most frequently pointed to make part of the shadow banking realm. The table provides a clear picture of the high level of disparity that characterises the shadow banking literature.

Table 6. Main entities considered as part of shadow banking

	Finance companies	Mortgage brokers	SPVs	Banks	Broker-dealers	MMFs	Hedge funds	SIVs and ABCP	GSEs	Pension funds	Insurance companies	Securities lenders
Gowan (2009)							x	x				
Hume and Sentance (2009)			x		x		x	x				
Gorton and Metrick (2010)		x			x	x						
Merrouche and Nier (2010)			x		x				x			
Pozsar et al. (2010)	x	x	x		x	x						
Ricks (2010)					x	x	x	x				x
Singh and Aitken (2010)					x	x	x			x	x	
Bord and Santos (2011)	x		x		x							
Hanson et al. (2011)					x		x	x				
Levitin (2011)						x	x		x		x	
Schwarcz (2011)	x		x		x	x	x					
Back-Simon et al. (2012)	x		x			x	x	x				
Dallas (2012)	x				x		x			x		
Deloitte (2012)			x			x		x				x
Claessens et al. (2012)			x	x	x	x	x	x				x
Greenwood and Scharfstein (2013)					x	x		x	x			
Cummings and Weiss (2014)	x		x				x	x	x			x
Krishnamurty et al. (2014)					x		x	x				
D0e1Bandt et al. (2017)			x		x		x	x			x	

Annex II – Shadow banking definitions as combinations of ‘banking’ and ‘shadow’

Table 7 below shows an overview of the diversity of characterisations of shadow banking we can find in the literature through the lens of our composite-term approach presented in section 2: shadow banking definitions as combinations of different meanings of ‘banking’ or ‘what’. The table is meant to be read from left to right. The first column shows the different meanings of *banking*: a) one of the two main traditional bank activities: a1) granting loans or a2) issuing deposits; and b) running a maturity-mismatched balance sheet (short-term liabilities funding long-term assets). The second column combines each of them with each of the different ‘shadow’ meanings: a) inside banking organisations, whether: a1) on-balance sheet, a2) off-balance sheet; or b) beyond the scope of banking regulation, either because it is run by: b1) independent non-banks or b2) a structure or system which, as a whole has features that resemble to a bank. Thus, the combination of the first two columns, read horizontally, defines the different combinations. Finally, in the broad third column (when looked from above), we show the different phenomena that can emerge from each particular combination, with literature’s shadow banking definitions in bold. We provide some references of publications for each one. On the left, the broadest definitions are shown (those encompassing more than one ‘shadow’ meaning); the closer we get to the right the narrower its scope and the more specific they get. In turn, since some definitions may also encompass several meanings of ‘banking’, they will appear more than once in each corresponding row.

Table 7 A structured conceptual overview of the different characterisations of shadow banking

<table>
<tr><th>Banking</th><th colspan="2">Shadow</th><th colspan="4">Shadow banking characterisation</th></tr>
<tr><td rowspan="4">a1) loans</td><td rowspan="2">a) banks</td><td>a1) on-balance sheet</td><td rowspan="3">Lending not regulated under current banking regulation
Elliott et al. (2015), Ehlers et al. (2018)</td><td colspan="3">Banks' on-balance sheet regulatory arbitrage (Ehlers et al., 2018)</td></tr>
<tr><td>a2) off-balance sheet vehicles</td><td rowspan="2">Banks' off-balance sheet lending and non-bank lenders
Li (2014)</td><td rowspan="2">Of which: securitisation (including term-funded)</td><td>Banks' on-balance sheet securitisation</td></tr>
<tr><td colspan="2">b1) non-banks</td><td>Banks' off-balance sheet securitisation
Pozsar (2008), Calmès and Théoret (2010), FSB's (2013) EF5, Lysandrou and Nesvetailova (2015)</td></tr>
<tr><td></td><td colspan="2"></td><td>Other non-bank lending</td><td>Non-bank lending
FSB's EF2, Buchak et al. (2018), Allen et al. (2019)</td></tr>
<tr><td>a2) deposits</td><td colspan="2">b1) non-banks</td><td colspan="4">Non-banks' deposit-likes (MMFs, CP, ABCP…)
FSB's (2013) EF1, Elliott et al. (2015), DeAngelo and Stulz (2013), Chernenko and Sunderam (2014), Bergtsson (2013)</td></tr>
<tr><td rowspan="4">b) maturity mismatch</td><td rowspan="2">a) banks</td><td>a1) on-balance sheet</td><td rowspan="2">Short-term funding of bond portfolios
Mehrling et al (2013), Gabor and Ban (2016)</td><td colspan="3">Banks non-deposits-based maturity mismatch</td></tr>
<tr><td>a2) off-balance sheet</td><td>Shadow banks: ABCP conduits, finance companies
Pozsar et al. (2010), Adrian and Shin (2009, 2010), Ricks (2010), Adrian and Ashcraft (2012)</td><td>Bank-sponsored shadow banks
Acharya et al. (2013), Gennaoli et al (2013)</td><td rowspan="2">Repos and equivalents outside banks' balance sheets
FSB's (2013) EF3</td></tr>
<tr><td colspan="2">b) non-banks</td><td>Standalone shadow banks</td></tr>
<tr><td colspan="2">c) system</td><td>A market-based machine running (as a whole) maturity mismatch</td><td colspan="2">Off-balance sheet wholesale short-term funding of banks through securitisation
Pozsar et al.'s (2010) internal shadow banking subsystem, Gorton (2010), Gorton and Metrick (2010, 2012), Lysandrou and Nesvetailova (2015), Michell (2017)
The non-bank parallel banking system
Pozsar et al.'s (2010) external shadow banking subsystem, Mehrling et al. (2013)</td><td>Repo intermediation of short-term savings to fund long-term portfolios
Pozsar (2013), Pozsar (2014,15)</td></tr>
</table>

Annex III - Identification and classification of the most cited publications

To identify the most cited papers we have opted for the Google Scholar (GS) database. Despite its drawbacks, GS is better suited for our purpose than other alternatives such as Microsoft Academic or Web or Science. In particular, it provides a better coverage for working papers and reports, which have a great importance in the shadow banking literature. On the downside, we may note that GS may include in its results citations from non-relevant sources such as presentations, as well as duplicated items (Bornmann et al., 2016). The latter results from the fact that GS uses a wide variety of sources which may display certain entries such as the name of the authors or the title of the publication in different ways. Thus, the same publication may appear as several different items that have to be combined manually.

We run the research request entering 'shadow banking' as keyword criterion[38]. For that, we make use of the open source software Publish or Perish, which allows for exporting the research results as spreadsheets, facilitating their following treatment. To rank the publications we privilege citation counts over the GS ranking, since its algorithm is not disclosed and remains unknown. Then, we proceed to clean duplicates and treat the results. In particular, we remove books as well as those items that either i) do not include the term 'shadow banking' or 'shadow bank' in the title or as keywords or ii) contain these terms less than five times (excluding references and footnotes). The final ranking with the fifty most cited publications is shown below in table 8.

Finally, we scrutinize these publications to determine how shadow banking is conceptualised by the authors according to the framework described in section 2. We obtain four combinations of *shadow* and *banking* that happen more than once, which we identify as the four main characterisations of shadow banking as described in section 3 and summarised in table 2. Thus, 14 publications use the first characterisation, 2 the second characterisation, 4 the third characterisation, 4 the fourth characterisation, while 28 do not provide or do not use a clear definition and, therefore, are defined as unclassified.

38 The search was run on November 25, 2021.

Table 8. The fifty most cited publications on shadow banking

Rank	Author(s)	Number of cites	Shadow [1]	Banking [2]	Characterisation
1	Gorton and Metrick (2012)	2584	a2	b	1
2	Hanson et al. (2011)	1355	b1	b	2
3	Pozsar et al. (2010)	1256	a2 / b1 / b1	b / b / a1,a2,b	1 / 2 / 4
4	Acharya et al. (2013)	1178	a2	b	1
5	Stein (2012)	966	-	-	-
6	Adrian and Shin (2010a)	903	-	-	-
7	Admati et al. (2010)	842	-	-	1
8	Shin (2012)	732	a2	b	1
9	Gorton and Metrick (2010)	725	a2	b	1
10	Buchak et al. (2018)	670	b1	a1	4
11	Gennaioli et al. (2013)	596	a2	b	1
12	Mishkin (2011)	553	-	-	-
13	Greenwood and Scharfstein (2013)	528	-	-	-
14	Adrian and Shin (2010b)	507	-	-	-
15	Gertler and Kiyotaki (2015)	500	-	-	-
16	Acharya et al. (2009)	497	-	-	-
17	Acharya and Schnabl (2010)	472	a2	b	1
18	Krishnamurthy et al. (2014)	466	b2	b	3
19	Blundell-Wignall and Atkinson (2010)	455	-	-	-
20	Gowan (2009)	429	b2	b	3
21	Arnold (2009)	425	a2	b	1
22	Gorton (2009)	403	a2	b	1
23	Adrian and Shin (2009)	392	-	-	-
24	Blackburn (2008)	380	-	-	-
25	Dallas (2011)	375	b2	b	3
26	Mehran et al. (2011)	369	a2	b	1
27	Claessens and Kodres (2014)	323	-	-	-
28	Gorton, Lewellen and Metrick (2012)	321	a2	b	1
29	Fungáčová and Weill (2015)	311	b1	a1	4
30	Gorton and Winton (2017)	304	a2	b	1
31	Pozsar (2013)	298	b2	b	3
32	Adrian and Ashcraft (2016)	288	-	-	-
33	DeAngelo and Stulz (2015)	286	b1	-	-
34	Moreira and Savov	286	-	a1	-
35	Hanson et al. (2015)	277	b2	b	-
36	Adrian and Liang (2016)	275	-	-	-
37	FSB (2013)	269	b1	a1, a2, b	4
38	Plantin (2015)	266	a2	b	1
39	Jordà et al. (2011)	248	-	a1	-
40	Levitin (2010)	242	-	-	-
41	Cummins and Weiss (2014)	242	-	-	-
42	Hume and Sentance (2009)	235	-	-	-
43	Claessens et al. (2012)	231	-	-	-
44	Adrian and Ashcraft (2012)	224	-	-	-
45	Nier and Merrouche (2010)	220	-	-	-
46	Avgouleas (2009)	218	-	-	-
47	Aitken and Singh (2010)	209	-	-	-
48	Gorton and Metrick (2012b)	204	-	-	-
49	Sunderam (2015)	203	a2	a2	-
50	McCulley (2009)	196	-	-	-

[1] Following the codes used in figure 1, *a1* stands for regulatory arbitrage performed by banks on-balance sheet, *a2* for banks' off-balance sheet regulatory arbitrage, *b1* for broad regulatory arbitrage performed by non-banks, while b2 for broad regulatory arbitrage conducted by the structure as a whole (see section 2).

[2] Following the codes used in figure 1, *a1* stands for collecting deposits, *a2* for granting loans and *b* for running maturity mismatch.

Chapter 2. ‘Shadow banking’ through the lens of theory

1. Introduction

The preceding chapter revealed the main challenge presented by the shadow banking literature: there is not one single common object of study but at least four. In turn, our analysis focused on showing that these four shadow banking characterisations do not emerge from different definitions of the same thing or ‘variations on a theme’ – the difference between them are not minor. On the one hand, they vary substantially in scope and size. On the other hand, they have different attributes,which concern the nature of its structure – whether ‘maturity-mismatched’ (SB1, SB2 and SB3) or not (SB4) – and the nature of its relationship with the banking system – whether this is a subordinated (SB1), cooperative (SB3) or competitive one (SB2 and SB4).

In this chapter we seek to make sense of this finding by assessing whether the emergence of these four different forms of characterising ‘shadow banking’ can be explained by the use of different theoretical approaches. That is to say, whether or not different objects were created by different theories. We can think of three different possibilities why this could have happened. The first one is that the characterisation problem is a concept-based issue: once the term was put forward, different theories led authors to choose different combinations of ‘shadow’ and ‘banking’ – as described in chapter 1. The second hypothesis is that the characterisation problem is analysis-based: it stems from the emergence of different solutions provided by different theories’ analyses of a common problem: explaining the GFC – “shadow banking” would thus be a term for what they see as the cause of the GFC. We know that this was the first usage of ‘shadow banking’ by McCulley at the Jackson Hole Symposium in 2007. Building upon different theoretical backgrounds, other analyses followed and led to different solutions, thus, defining new ‘shadow bankings’/causes of the GFC. The third hypothesis goes a little

bit further and presupposes that the characterisation problem is observation-based: authors have observed an anomaly that they could not explain within their theory – the GFC. 'Shadow banking' would have thus been the solution envisaged by authors to this theoretical problem – an ad-hoc theory 'fix' that they added to their corpus.

Either way, if the answer to the shadow banking characterisation is to be found in theory, then we must expect a clear relation between the aforementioned attributes that define each characterisation and the results of theoretical analysis. If a characterisation has been defined by a particular theory, the characterisations' attributes have to be among the results obtained through that theory. On the contrary, if a characterisation has not been defined by a certain theory, then the attributes are not necessary to reach the results of that theory. Finally, if more than one theoretical approach can be associated to a single characterisation, then we will trace it back inthe literature. Reproducing the 'genealogy' we should be able to identify the publication that would be the hypothetical inception of that characterisation.

To the best of our knowledge, only Bouguelli (2019) has provided a truly theoretical classification of the shadow banking literature – the other literature reviews are Adrian and Ashcraft (2012b, 2016) and Nath and Chowdhury (2021). None of these reviews has recognised the existence of profoundly different characterisations of shadow banking though. Bouguelli (2019, pp. 1-2) has nevertheless suggested that the 'paradox' that '[s]hadow banking has been the subject of an extensive literature', while 'there is still no generally accepted definition of "shadow banking"' may be related to a theoretical issue. In particular, he points to the fact that shadow banking was initially based on a 'metaphor' that 'implicitly relies on a specific conception of banking according to which banks are mere intermediaries of loanable funds' (ibid, p. 2), as we already noted in chapter 1. Therefore, the key to the problem would lie in monetary theory. However, this can only explain different interpretations of the same characterisation. As we saw in chapter 1, the differences of the characterisations do not stem from monetary theory – they are all build upon an orthodox approach – but from different definitions of 'banking' *within* the orthodox conception of banks as mere intermediaries, in turn

compounded by different understandings of 'shadow'. Bringing this to the forefront means that, if we are to explain the shadow banking 'paradox' – the characterisation problem – through theory, then we need a wider theoretical framework.

For that purpose, building upon Lavoie (2014), we design a theoretical taxonomy that defines an orthodox and a heterodox approach by a different set of presuppositions regarding certain areas. In particular, we consider i) monetary theory, ii) the expansion of financial products and iii) the nature of financial risks as the three areas. Hence, we associate the absolute orthodox category with views that consider banks as mere financial intermediaries (area i), the extension of markets as an enhancement of capital allocation (area ii), and financial risks as a fundamentally microeconomic problem (area iii). In contrast to that, we will define the absolute heterodox category as those views that analyse banks through the lens of endogenous money theory (area i), the extension of markets as a potential source of instability (area ii), and financial risks as being fundamentally of macroeconomic nature (area iii). By using these three criteria we allow for identifying miscellaneous approaches that do not fully adhere to all three presuppositions of either the orthodox or the heterodox tradition, which are thus be placed between both. As we will see, these miscellaneous approaches constitute a large part of the literature and are a crucial key to understand it.

The remainder of the chapter is organised as follows. Section 2 elaborates on the theoretical taxonomy. Section 3 introduces the four theoretical stances identified in the shadow banking literature and presents their different interpretations for each of the four shadow banking characterisations, providing a first assessment of our three hypotheses. Section 4 assesses the only hypothesis that was not rejected – shadow banking is a theory fix to the observation of an anomaly. Finally, section 5 concludes.

2. A theory-based taxonomy for the shadow banking literature

Bouguelli's (2019) prior theoretical taxonomy of the literature is based on monetary theory, differentiating between the 'mainstream view' and the 'post-Keynesian view' of shadow banking. On the one hand, the mainstream view builds upon the analysis of banks as mere financial intermediaries of funds, which allows depicting shadow banking as a system providing the same functions as banks: credit intermediation and the provision of deposits or 'deposit-likes'. On the other hand, the heterodox view is based on the understanding of banks as unique entities that create the form of money used by the rest of the economy. Hence, from the latter point of view, the mainstream analogy between banks and shadow banking is misleading. Following Bouguelli, these two theoretical approaches to shadow banking lead to two different interpretations of the GFC and two different regulatory solutions. The mainstream view argues that the problem was linked to liquidity – there was a run on the SBS. Hence, these authors advocate backstopping the system to prevent future panics. On the contrary, the post-Keynesian view claims that the problem was about solvency – the originate-to-distribute model led banks to short-sighted massive loan origination and reduced the financial system's capital buffers. Therefore, post-Keyensians stand up for outlawing this model to go back to traditional relationship lending.

While, in broad terms, we agree with Bouguelli's analysis, we identify two drawbacks that are worth noting. First, if we assume the existence of the four shadow banking characterisations we identified in chapter 1, then Bouguelli reviews publications that deal with SB1 and SB2, but when it comes to the conclusions he also encompasses SB4. Therefore, it remains to be determined whether the results may change significantly when we explicitly account for the four shadow banking characterisations. Second, the shadow banking literature features a higher degree of theoretical heterogeneity. We argue that it is pertinent to widen the theoretical taxonomy to allow for capturing a higher degree of it. For example, Hanson et al. (2011), Acharya et al. (2013) and Stein (2012), which we identified in chapter 1 (annex III) as, respectively, the second,

fourth and fifth top-cited publications of shadow banking literature, build upon the 'mainstream view' of banks, but reach the same conclusion as post-Keynesians – solvency was the problem, not liquidity.

In light of the above, we enlarge our theoretical taxonomy of the shadow banking with two additional criteria regarding monetary theory: the stance towards the expansion of financial products, and the assessment of the nature of the main financial risks. Our taxonomy builds upon Lavoie, 2022 (pp. 11–32), who differentiates the orthodox and the heterodox research programmes based on their different presuppositions on five areas. Our three criteria can be directly related to three of these five areas. First, monetary theory is related to what Lavoie (2022, p. 12) calls the 'economic core': orthodox economics builds upon the notion of scarcity – the fundamental economic problem is that of allocation of limited resources – while heterodox economics grounds in abundance – the problem is the use of idle resources. In monetary theory this translates to the opposing assumptions of a stock of exogenous money vs. an unlimited flow of endogenous money. Second, the approach towards the extension of markets is linked to Lavoie's (2022) 'political core': orthodox economics believe unfettered markets' ability to enhance stability and welfare, while heterodox economics are sceptical towards it. Hence, applied to the expansion of market forces through new financial products, the orthodox presupposition is that they contribute to reduce market imperfections leading to better capital allocation, enhancing both efficiency and stability. Meanwhile, the heterodox presupposition is that new financial products can, above all, contribute to increasing instability. Third, the approach to financial risks can be related to the difference between both schools' method. On the one hand, orthodox tradition privileges 'atomicism' by focusing on individual agents' behaviour, which results in a micro conception of financial risk. On the contrary, heterodox economists prioritise 'holism', the macroeconomic level that emerges from the results of collective behaviour, which leads them to concern about (macro) systemic risk.

Lavoie (2022) defines two additional criteria – epistemology and rationality – that we leave aside for the following reasons. On the one hand, we are not interested in the means through which authors build

their interpretations of shadow banking, only in their theoretical underpinnings. On the other hand, the issue of rationality and uncertainty appears in the issues revolving the extension of markets and the nature of risks, and does not add any relevant information to our classification of the shadow banking literature. Our taxonomy is summarised in table 9. We categorise orthodox and heterodox views of shadow banking by their adherence to a specific set of three presuppositions that we described above. In turn, those views that agree with two out of the three presuppositions of tradition, while aligning with the opposite tradition in the third presupposition, are placed in between. The latter represent the aforementioned miscellaneous, which are rather frequent in the shadow banking literature, as we will see in the next section. Below, we elaborate on the orthodox and heterodox presuppositions on our three areas.

Table 9. Our theory-based taxonomy for the shadow banking literature

Approach	Monetary theory	Extension of financial products	Nature of risks
Orthodox	Financial intermediation	More efficient capital allocation	Micro
Heterodox	Endogenous money	Source of leverage	Macro

2.1. Monetary theory

As Bouguelli (2019) shows, the choice in the monetary theory used to analyse shadow banking can determine the conclusions drawn and the regulatory recommendations that follow from them. The orthodox and the heterodox view of banks underpin rather different understandings of the functioning of both the financial system and the economy at the macro level, which are important to understand the shadow banking literature.

Orthodox monetary theory builds upon the presupposition that there is no fundamental difference between banks and other financial intermediaries: both collect and reallocate savings by issuing liabilities and buying assets (Gurley and Shaw, 1956). This view of banks, known as the ‘loanable funds approach’, the ‘financial intermediation theory’ or

Tobin's 'new view' (Lavoie, 2019, p. 13), became dominant in the 1960s (Werner, 2014)[39]. Banks and non-banks have been since then typically treated as substitutes, up to the point that the terms 'banks' and 'financial intermediaries' are commonly used interchangeably (Cetorelli et al., 2012). In the wake of the GFC, this theory has been challenged and rejected by many central bankers (McLeay et al., 2014; Jakab and Kumhof, 2015) and recognised by commercial banks (Cliffe and Brosens, 2018; Quignon, 2019), which have sympathised, up to some extent with the heterodox endogenous money theory. However, the financial intermediation theory is still dominant in academia and among many central banks and institutions (Mankiw, 2017, p. 331; Blanchard, 2017, p. 96).

Meanwhile, the heterodox monetary theory enjoyed a wide recognition among scholars and practitioners in the early 20th century (Sissoko, 2015), and has been defended by heterodox economists, notably post-Keynesians and French regulationists, since the 1970s. We refer here to the common elements of endogenous money as defended by these two schools. This theory conceives banks as unique financial entities since they do not simply intermediate funds as other entities do, but create money in their act of lending (Lavoie, 1984; Aglietta, 1997, chap. 6). Following this view, the state has delegated its monopoly over money issuance to banks, creating a public-private partnership crystallised in bank charters (Lavoie, 2014, p. 188; Aglietta, 1992). In this context, sights deposits are the main form of money, since 'only the bank liabilities can be generally used to discharge a contract' and only banks have the backing of the central banks to ensure convertibility of their liabilities into legal tender (Davidson, 2002, p. 116).

These two theories lead to different conclusions regarding the functioning of the economy as a system. In the financial intermediation theory, the financial system is just an interface connecting savers and borrowers. Therefore, the most relevant problem consists in matching the needs of these two groups of agents in the most efficient way – banks, non-banks and financial markets provide alternative pipelines for

39 Before, it was assumed that banks were special in their capacity to create credit. The credit creation theory prevailed between the late 19th century and the 1920s, while the fractional reserve theory became influential since the 1930s (Werner, 2014).

reallocating savings. It follows that it is logically possible for both non-banks and markets to supersede banks, provided that they find a more efficient solution to match savers and borrowers. For example, New Keynesians have defended the idea that banks are special due to the due to their information advantages on borrowers that they extract from operating the payments system and relationship lending (Lavoie, 2019, p. 13). However, after observing the innovations related to the production and distribution of information of the 1980s, many of these authors reconsidered their stance and asserted that non-banks and financial markets are to some extent substitutes for banks (Rochon, 1999, pp. 252–254). Other orthodox economists go further and claim perfect substitutability between the two. For example, Greenspan (1999) regards financial markets as 'backup forms of intermediation' or, simply, as a 'spare tire' in case problems arise in the banking system, implying perfect substitutability between both[40]. According to the US Federal Reserve's ex-chairman, standardised instruments can replace bank loans in the presence of the right institutional environment promoting an appropriate 'financial infrastructure': proper accounting standards and private-property protection, contracts-enforcement and bankruptcy laws.

On the contrary, within the heterodox monetary theory framework, the economy relies on a hierarchical monetary system in which the central bank stands on the apex, followed by banks and, then, the remaining agents. This pyramid symbolises that money emanates from the top to the bottom in the sense that access to it at each layer depends upon the decisions taken in the one above. Most important is the fact that when banks lend, they expand the aggregate spending power at the bottom of the hierarchy, instead of transferring it from one agent to another. This is essential for the economy since it makes production possible by enabling firms to advance payment of production factors, since sales can only happen logically after production (Davidson, 1978, pp. 320–321; Aglietta, 1997, chap. 6). Banks' capacity to expand aggregate purchasing power also has implications for the functioning of the financial system. On the one hand, banks constitute the ultimate source of liquidity or 'lender of last resort' for non-banks (Aglietta and Valla, 2017,

40 Rochon (1999, p. 236) also notices that perfect substitutability between banking and market-based finance is implicit in the monetarist literature.

p. 139). On the other hand, market liquidity also relies on banks, which do not only finance investors but, most importantly, enable dealers' market-making function, without which there would be no liquidity at all. Dealers smoothen market price volatility by accumulating inventories of securities, which means that they need to advance payments in the same way as non-financial firms do. Banks provide this financing through credit creation, either by acting as lenders of last resort for non-bank dealers (Davidson, 1978, pp. 320, 324; Kregel, 2010, p. 5; Minsky, 2016, p. 172) or, as it is more common nowadays, making markets directly (Scialom, 2013, pp. 8–9). Since banks' money creation capacity emerges from their privileged position in the money hierarchy, it follows that superseding banks' role demands a radical institutional change affecting this hierarchy – a conclusion that contrasts sharply with the orthodox one. We may also note that since money is not a scarce resource, the relevant question is no longer of a technical nature – how to improve financial intermediation efficiency – but of a political one – determining what should be financed.

2.2. The expansion of financial products

The second element of our taxonomy concerns the expansion of financial products. The orthodox and heterodox approaches hold opposing presuppositions as to whether market forces are able to deliver efficient capital allocation or, on the contrary, they can wreak havoc. This issue is key in the shadow banking literature, which deals with the structural transformations resulting from the expansion of the use of financial assets and instruments, whether they are new or played a relatively marginal role in the past. This is the case for securitisation, repos or non-bank forms of lending.

The orthodox approach is based on the presupposition that market forces are the best possible way to achieve the most efficient allocation of resources, which builds upon the Arrow-Debreu ideal of a competitive economy. Since it is assumed that the real economy features certain market imperfections – transaction costs, information asymmetries and incomplete markets – there is room for private agents to create solutions that reduce these frictions, increasing the efficiency of savings allocation

(Levine, 1997). This idea is behind the logic of traditional financial intermediation theory that envisages financial intermediaries as agents that lower transaction costs (Gurley and Shaw, 1960; Diamond, 1991; Benston and Smith Jr., 1976; Fama, 1980), reduce information asymmetries (Leland and Pyle, 1977; Diamond, 1984) or complete markets by providing missing products (Diamond and Dybvig, 1983; Gorton and Pennacchi, 1990; Stiglitz, 1985). The same argument backed the development of financial derivatives since the 1980s, on the basis that they allowed for incorporating more information about future expectations into prices (Awrey, 2016). In the mid-1990s, the 'functional perspective' – which plays an important role in the shadow banking literature – provided an adapted version of the same presupposition to explain the changing institutional structure of the financial system that followed financial liberalisation (Bodie and Merton, 1995; Allen and Santomero, 1998). According to this view, there is a set of stable functions that the financial system performs, but the institutions providing them change and adapt. Hence, following Merton (1995, p. 26), the 'dynamic product-development interaction between intermediaries and markets can be interpreted as part of a "financial-innovation spiral" pushing the financial system toward an idealized target of full efficiency'.

Opposing these ideas, the heterodox paradigm is grounded in the presupposition that any important development in the financial system has to be assessed with extreme caution. The problem lies in the fact that these changes tend to undermine the existent regulatory framework, fostering the build-up of risks through increasing leverage and, eventually, leading to unintended consequences. In this vein, Minsky (2016, p. xvii) and Minsky and Campbell (1988, p. 6) have argued that financial innovations can make the economy more susceptible to undergo a financial crisis for they are tools for increasing profits through risk-taking. Similarly, Galbraith (1994) claims that it is leverage what allows for higher profits that can be mistaken as a sign of genius. In Galbraith's words: 'The world of finance hails the invention of the wheel over and over again, often in a slightly more unstable version. All financial innovation involves, in one form or another, the creation of debt secured in greater or lesser adequacy by real assets' (ibid, p. 19). For that reason,

as Lavoie (2012, p. 232) claims, 'Decisions by self-interested financial actors, freed of regulations, led to a financial disaster that has consequences detrimental to the well-being of society as a whole'. Thus, although heterodox authors acknowledged that regulation may certainly discourage some desirable financing, its benefits for preventing harmful innovations from developing are considered to be greater (Lavoie, 2014, p. 256). In the same way, risks are not neglected within the orthodox paradigm. However, it is typically assumed that new financial instruments such as hedging derivatives do not increase aggregate risk, but can redistribute it more efficiently (Carter, 1989, pp. 784–785; Montani Martins, 2019, pp. 90–98).

2.3. The nature of financial risk

The third and final element of our taxonomy concerns the nature attributed to financial risks. On the one hand, the orthodox paradigm presupposes that risks are mainly of microeconomic nature and arise from market imperfections that prevent individual agents from taking the optimal decision. On the other hand, the heterodox paradigm builds upon the presupposition that relevant risks are of a macroeconomic nature: they emerge from agents' coordination problems that lead to collectively inefficient outcomes. The issue is central in the shadow banking literature, since, as we may recall, it emerged out of an attempt to identify the sources of the risks triggering the GFC. In turn, the type of risk determines the type of solution: the orthodox approach favours microprudential regulation aiming at fostering market discipline, while the heterodox leads to macroprudential regulation focused on constraining systemic risk.

Microeconomic risks emerge fundamentally from moral hazard problems arising from information asymmetries between lenders and borrowers, or creditors and intermediaries – the so-called agency problem – an issue of incomplete contracts. These market imperfections are expected to result in conflicts of interests between the two parties: borrowers and intermediaries will tend to incur in excessive risk-taking, since they can increase their returns against limited liability, at the expense of their creditors. This theoretical framework has been used to

explain bubbles and financial crises characterised by over-lending (Allen, 2005; Mishkin, 1999). Nevertheless, there is a certain degree of consensus among authors from the orthodox tradition that there is one form of macro risk affecting banks, which stems from their particular balance sheet structure[41]. The problem lies in the fact that banks cannot meet redemptions when these are unexpectedly large – their assets are mainly made up of long-term and illiquid loans that cannot be liquidated, since there is no properly developed secondary market for the latter (Gorton, 1994). Hence, banks are potentially vulnerable to panicking depositors running to withdraw their funds before others do – whether as a result of self-fulfilling prophecies (Diamond and Dybvig, 1983) or a shock affecting a large number of depositors (Wallace, 1988), for example, an economic downturn (Allen, 2005). This can result in contagion to other banks and markets, a risk of macroeconomic nature (ibid). The orthodox approach informed the banks' micro-prudential capital regulation established in the 1970s, which was rationalised as a measure to offset banks' moral hazard arising from deposit guarantee schemes (Harnay and Scialom, 2016).

Meanwhile, what is the exception within the orthodox paradigm, is the rule within the heterodox tradition: risks arise fundamentally from the problem of coordination of agents' actions facing a radically uncertain future. In this environment, 'What seems reasonable for a single individual [...] leads to unintended consequences or even to irrational collective behaviour when all individuals act in a similar way' (Lavoie, 2022, p. 18). This view opposes the orthodox approach in which 'the risks faced by economic agents are assumed to be idiosyncratic and diversifiable' (Aglietta, 1991, p. 3, our translation). The macro-based approach has been especially privileged by *régulationists* and post-Keynesians. The former have prominently developed their research around the notion of 'systemic risk' (Aglietta, 1991). Aglietta (1998, p. 44) our translation), defines systemic risk as 'the emergence of abnormal equilibria, i.e. socially inefficient, in which the economic system gets subdued to individuals' rational behaviour not leading to spontaneous

41 Partisans of 'free banking' or 'laissez faire finance' do not recognize the case of a market failure in banks' maturity transformation, arguing that banks are able to reassure depositors and prevent runs through sound practices, while in case of a run on a bad bank, good banks will be able to severe themselves from the contagion by differentiating from bad banks (Dowd, 1996).

market adjustments which could pull it out of its unfavourable macroeconomic state'. Under radical uncertainty 'individual rationality is expressed with strategic decisions, with expectations upon expectations of others with mimetism' (Aglietta, 1996, p. 555). As a result, agents' decisions result in 'strategic interactions' (Aglietta, 1991, p. 62, our translation) or 'strategic complementarities' out of which 'multiple inefficient equilibriums may emerge' (Aglietta, 1993, p. 449, our translation). Post-Keynesians have also analysed these types of problems. Their contributions may be synthesised, as suggested by Lavoie (2014, pp. 17, 19–22), around the notion of 'macroeconomic paradoxes' or 'fallacies of composition' that stresses the fact that rational individual actions can end up producing the opposite outcome to the one intended. This idea can also be traced back to the works of Minsky on financial instability. After the GFC, this macro approach has gained momentum, but is still far from being universally accepted.

3. The theoretical approaches to shadow banking

Applying this theoretical taxonomy to the shadow banking literature we can present the following main results, which we summarise in table 10. We identify four different theoretical stances: a 'pure' orthodox one, a 'pure' heterodox one, and two 'miscellaneous' ones, placed in between and representing a substantial part of the shadow banking literature. At first sight, we find no particular relation between these four theoretical approaches and the four shadow banking characterisations identified in chapter 1, as the right side of the table shows. We will go back to this issue below after introducing the four theoretical approaches.

Table 10. Theoretical approaches in the shadow banking literature

	Monetary theory	Expansion of financial products	Nature of risks	Characterisations			
				SB1	SB2	SB3	SB4
Traditional orthodoxy	Orthodox	Orthodox	Orthodox	x			x
New orthodoxy	Orthodox	Orthodox	Heterodox: maturity mismatch	x	x	x	
Orthodox dissent	Orthodox	Heterodox	Heterodox: leverage	x	x		x
Heterodox	Heterodox	Heterodox	Heterodox: instability amplifiers	x		x	

The orthodox approach to shadow banking is grounded in the three orthodox presuppositions: it adheres the financial intermediation view of banks, it holds that the expansion of financial products is conducting the economy towards the efficiency ideal, and it addresses risks as micro-economic problems, notably emerging from agency problems. Meanwhile, the heterodox approach builds upon the three heterodox presuppositions: banks are unique due to their capacity to create money; the expansion of market forces through new financial products is, above all, destabilising; and the relevant risks associated with shadow banking are of a macro nature. In particular, these heterodox analyses tend to qualify shadow banking as a source of leverage and amplification of inherent financial instability forces – whether credit creation or market liquidity volatility.

In between these two extremes, we find two approaches. The first one is closer to the 'pure' orthodoxy, assuming the orthodox presuppositions regarding banks and market forces. In particular, it addresses the subject from a functional perspective, describing shadow banking as an evolutionary adaptation of traditional financial intermediation to the new economic environment. However, when it comes to risks, it adheres the heterodox presupposition. In particular, this view considers that runs are not unique to banks, they can also affect non-banks running similar maturity mismatches. When this happens, the

entity concerned has to liquidate some assets, putting downward pressure on prices, which can force more fire sales spreading through a downward price spiral. As a result of these collective interactions, financial markets can become dysfunctional. This is, hence, a result that emerges from the collective behaviour of market participants that constitutes a market failure similar to that of banks' maturity transformation. Since this approach only breaks away from the orthodox paradigm by extending the maturity-mismatch problem to non-banks, for simplicity, we will refer to it as the 'new orthodoxy'. In turn, we will dub the 'pure' orthodox approach as the 'traditional orthodoxy'. This terminology does not imply any type of replacement or incompatibility between both, but simply points out the introduction of a systemic risk case into the orthodox theoretical corpus.

The second 'miscellaneous' approach is, however, closer to the heterodox paradigm. It sticks to the orthodox view of banks, but it adheres the other two heterodox presuppositions. On the one hand, it conceives shadow banking as, primarily, a destabilising source of leverage and not of efficiency gains. In particular, these authors describe shadow banking as a regulatory arbitrage phenomenon, whether in a 'narrow' or a 'broad' sense, using chapter 1's terminology (section 2). On the other hand, they adopt a macro view of risks, based on the negative externalities of risk-taking by shadow banking entities. Therefore, this approach involves a more significant depart from the 'traditional orthodoxy' than the 'new orthodoxy'. However, it still maintains a significant orthodox core: in addition to adhering to the orthodox monetary theory, these authors also believe in capacity of new forms of finance, such as securitisation, to deliver efficient outcomes, provided that they are not used against regulation. For these reasons, we may consider this approach to shadow banking as the 'orthodox dissent'.

We may now consider these results to make a first assessment of the three hypotheses we put forward in the introduction. As the right side of table 10 shows, the first hypothesis – theories defined the choice of combinations of 'shadow' and 'banking' – has to be rejected. We can find every theoretical approach in at least two of the four shadow banking characterisations. This means that every theory can be associated with at

least two different meanings of ‘shadow’ or ‘banking’. However, we find two regularities. First, the new orthodoxy is always related to characterisations based on ‘banking’ as maturity transformation, regardless of the meaning attributed to ‘shadow’ (SB1, SB2 and SB3). This can be directly related to the new orthodoxy’s analysis of shadow banking as a bank-like run problem. Second, the heterodox approach does not address those characterisations that exclude banks (SB2 and SB4). This can be associated to its adherence to the endogenous money theory, which argues against abstracting from the money creation role played by banks.

The second hypothesis – theories led to different interpretations of the GFC in which ‘shadow banking’ was used as a term for the ‘cause of the crisis’ – also has to be rejected. While each theoretical approach leads to a different explanation of the GFC – whether agency problems, a run on non-banks, an issue of regulatory arbitrage, or excessive financial liberalisation – this interpretations are transversal to the characterisations. Nevertheless, we identify again a certain consistency within the new orthodoxy approach, which we can only find in those shadow banking characterisations whose attribute – maturity mismatch – can be directly related to the conclusion drawn from the theoretical approach – it was a run.

Therefore, we are left with one last hypothesis – ‘shadow banking’ as a theory ‘fix’ to an anomaly: the GFC. We can see that, so far, our results show no evidence against this hypothesis. If the hypothesis is to be true, then the authorship of each characterisation has to be attributed to either of the two approaches that represent a depart from their core paradigm: what we called the ‘new orthodoxy’ and the ‘orthodox dissent’. This is something plausible since these two approaches together encompass the four shadow banking characterisations – the new orthodoxy would be responsible for SB3, and the orthodox dissent for SB4. Meanwhile, we would still have to determine which of the two theoretical strands defined SB1 and SB2, since they have been addressed by both approaches.

Below we elaborate on the results summarised in table 10 above. We present the different interpretations of the four shadow banking characterisations that had been produced from the four theoretical approaches. We will pay special attention to the relation between the attributes of the characterisation and the results of the theory in order to advance in determining the validity of our hypothesis of 'shadow banking' as a theory 'fix'.

3.1. First characterisation: short-term funded off-balance sheet securitisation

As we saw in chapter 1, the first shadow banking characterisation (SB1) envisages shadow banking mainly as an extension of the banking system through off-balance sheet securitisation that is ultimately funded by wholesale deposit-likes. SB1 can therefore be identified by its maturity-mismatched structure between the asset and the liability side, and by its relation of subordination to the banking system. As table 11 shows, the four theoretical approaches can be identified in the interpretations of SB1 in the literature, which we present below.

Table 11. Views on SB1 (banks' off-balance sheet securitisation)

View	Publications	Monetary theory	Expansion of financial products	Nature of risks
Orthodox	Bord and Santos (2012), Keys et al. (2010)	Orthodox	Orthodox	Orthodox
New orthodoxy	Gorton and Metrick (2010, 2012)	Orthodox	Orthodox	Heterodox
Orthodox dissent	Acharya et al. (2010, 2013), Pozsar et al. (2010), Stein (2010), Thiemann (2018)	Orthodox	Heterodox	Heterodox
Post-Keynesian	Tymnoigne (2009), Lavoie (2012, 2019), Bouguelli (2019)	Heterodox	Heterodox	Heterodox

3.1.1. The orthodox view of SB1

A first group of authors argues that problems in shadow banking resulted from information asymmetry problems between loan originators and investors in the originate-to-distribute model (Bord and Santos, 2012; Keys et al., 2010)[42]. This view is clearly grounded in the orthodox tradition. First, their proponents build upon orthodox financial intermediation theories – they consider that the business of banks and non-banks is reducing information asymmetries between savers and borrowers (Bord and Santos, 2012, p. 2; Keys et al., 2010, p. 308). Second, these authors do not identify any potential problem of leverage associated with securitisation, and argue that its main features, 'such as improving risk sharing and reducing banks' cost of capital' are beneficial (Keys et al., 2010, p. 308). Third, these authors approach securitisation from a micro perspective, identifying a problem of misaligned incentives arising from agency problems.

Following this interpretation, the fact that securitisation allows banks to transfer loans' risks to investors would have eroded banks' incentives to properly screen loan applications and monitor borrowers. Hence, debtors' adverse selection and moral hazard problems increased, resulting in riskier loans. Despite their lower quality, investors bought these loans because they were packed in opaque and complex securities that concealed the true underlying risks (Bord and Santos, 2012, pp. 2–3). All in all, underwriting standards deteriorated fostering the subprime lending that end up resulting in sizeable defaults. This view has been further developed within a specific literature on the analysis of the originate-to-distribute model through the lens of orthodox financial intermediation theory (Purnanandam, 2010; Albertazzi et al., 2011; Berndt and Gupta, 2009; Chemla and Hennessy, 2014). Hence, the regulatory proposals that emerge from these analyses aim at enhancing transparency through disclosure requirements, and realigning originators' incentives by imposing a minimum risk retention condition over securitised pools of loan – the so called 'skin-in-the-game' rules.

42 Keys et al. (2010) do not use the term 'shadow banking', but they refer to SB1 as the 'originate-to-distribute chain'.

We can thus observe that there is no relation between the SB1's attributes and the conclusions of its analysis through the orthodox approach. The same results could be obtained irregardless of who is the lender – it could be a non-bank – and the maturity-mismatch structure of SB1 – ultimate short-term finding is irrelevant.

3.1.2. The new orthodoxy view of SB1

A second group of authors rejects the idea that securitisation had a negative impact on credit quality (Gorton and Metrick, 2012a, 2010). For that reason, Acharya et al. (2010, p. 294) dubbed it the 'good securitisation view'. This interpretation has been especially influential – we may highlight that Gorton and Metrick (2012a) is the most-cited publication in the shadow banking literature. Gorton and Metrick build upon an orthodox view of banking: both in traditional banking and in SB1, deposits are, in a first step collected from savers, and, in a second step, lent to borrowers (ibid, p. 426).

In addition these authors build upon an orthodox functionalist perspective. Gorton and Metrick celebrate securitisation as a successful innovation that improves the financial system's efficiency. First, securitised loans serve as input for the production of wholesale deposit substitutes, collateralising short-term instruments (Gorton, 2009). These are better suited to institutional investors and large non-financial firms for whom 'there is no safe banking account because deposit insurance is limited' (Gorton, 2010a, p. 10). This point has been key in the shadow banking literature for justifying the economic value of shadow banking. Second, and related to the former, securitisation allowed for creating different risk tranches from the same pool of loans, providing better tailored products to investors. This 'customization' enhanced capital allocation (Gorton and Metrick, 2010, p. 275). Third, these authors claim that securitisation does not worsen, but reduces banking agency problems by enhancing transparency. According to them, this stems from the fact that securitisation allows for taking loans out of banks' opaque balance sheets and putting them into marketable securities, which investors can assess more easily (ibid)[43]. Meanwhile, borrowers' adverse selection and

43 This point is also shared by Pozsar et al. (2010, p. 15).

moral hazard are kept at bay thanks to standard market practices ensuring that screening and monitoring are properly run[44].

Thus, regarding the subprime market they consider that 'there is clearly a problem, but it is not adverse selection' (Gorton and Metrick, 2010, p. 275). In addition, they point to the fact that losses in the subprime market could not explain the GFC since they were relatively small to the size of global financial markets (Gorton and Metrick, 2012b, p. 130). Last but not least, they considered that securitisation did actually decrease risks, allowing banks to react to increasing competition from non-banks by increasing returns through lower funding costs instead of higher risk taking (Gorton and Metrick, 2010; Gorton, 2009). By setting bankruptcy-remote vehicles, banks are able to issue securities backed by a defined portfolio of loans instead of all their assets. This would help banks to restore their charter value, which would discourage risk taking[45].

Explaining the GFC in that way, Gorton and Metrick move beyond the orthodox micro-based boundaries, putting forward an alternative macro-based thesis: there was a contagious panic on the maturity-mismatched SB1[46]. While bank runs have been kept in check thanks to deposit insurance schemes, the new shadow banking wholesale 'deposit-likes' developed beyond their reach. That is the case of repos collateralised by ABS, which constitute the essence of Gorton and Metrick's (2012a) view of shadow banking as 'securitized banking'. Unlike traditional runs, which spread due to banks' inability to cash out illiquid loans to redeem depositors (Gorton, 1994), in the SBS, contagion operates through market mechanisms triggered by distressed sales, also known as 'fire sales'. Before describing this process it is important to bear in mind the basics of repos. Repos may be easily understood as margin loans in which the borrower sells a security (collateral) committing to repurchase it at a higher price at an agreed future date, featuring i) an implicit interest rate emerging from the difference between the initial and final

44 According Gorton and Metrick (2010), before the GFC, eligibility criteria for loans to be securitised was clearly defined, so there was no room for banks' picking the lowest quality ones, while originators did typically retain the equity tranches to signal investors about the quality of the loans, so they had a stake in monitoring borrowers.

45 Despite their using the charter value theory they are keen to the *new approach* to competition, since they hold that the latter plays out through costs and not through risk-taking.

46 As Gorton and Metrick (2010, p. 289) state: '[w]e do not see any pure private sector solutions to ensure the safety of the banking system, and so the role of regulators will remain essential'.

price, ii) an initial margin or 'haircut' on the value of the collateral based on its quality, which determines how much money can be borrowed against it, and iii) a system of daily risk management operated through 'margin calls' in which the initial margin is adjusted following fluctuations in the market value of the collateral.

In that way, the contagion mechanism, initially modelled by Brunnermeier and Pedersen (2008), operates as follows: concerns about the quality of a repo collateral causes the money lender ('depositor') to raise the haircut on collateral asked from the money borrower ('shadow bank') (money), which amounts to a partial withdrawal of funds from the shadow bank. The borrower is then forced to deleverage by liquidating assets to meet redemptions. This may set in motion a vicious 'liquidity spiral': asset sales push prices down, leading to margin calls and higher haircuts for other borrowers, followed by new rounds of distressed sales. This can 'allow contagion from one asset class to the broader market' (Gorton and Metrick, 2012b, p. 143), which may end up generating a 'systemic event', in which there is a generalised failure of the financial system (Gorton and Metrick, 2012a; Gorton, 2009). These conclusions imply a slight but significant departure from the traditional orthodox view of efficient financial markets: in the presence of financial intermediaries running maturity mismatches, markets may be unstable. When liquidity spirals are set, market pricing may not work as predicted: 'The low price reflects [a] distressed, forced, sale, not the underlying fundamentals' (Gorton, 2010a, p. 10). In line with their analysis, Gorton and Metrick (2010) advocate backstopping SB1 by extending the state's safety net to ABS investors and MMFs. These entities would be in turn subject to bank-like capital requirements, in the form of minimum repo haircuts, to offset moral hazard.

Therefore, as we noted above, there is a direct relation between the SB1's attributes and the conclusions drawn from its analysis through the new orthodox approach. The results – the problem was a run on non-banks – depend on the attribute of SB1 as a maturity-mismatched structure. Nevertheless, in the analysis of Gorton and Metrick whether the SB1 entities were controlled by banks or not is secondary.

3.1.3. The orthodox dissent view of SB1

We find a third group of authors that do adopt a heterodox macro-based approach to risk, but, in addition hold a more critical stance toward the orthodox presupposition on the benefits of unfettered markets. These authors put forward an alternative interpretation of the GFC as a problem of banks' excessive risk taking resulting from their securitisation-based regulatory arbitrage activities (Acharya et al., 2013b, 2010b; Admati et al., 2013; Pozsar et al., 2010; Stein, 2010; Thiemann, 2018). Still, these authors stick to the orthodox view of banks as intermediaries of funds. This can be appreciated in Acharya et al.'s (2010, p. 277) description of SB1: 'With securitization, the original idea of banking is altered. Banks are now intermediaries between borrowers and *investors* (rather than just depositors)' (emphasis in original). Similarly, Stein, 2010 (p. 48) considers that both banks and non-banks grant credit in the same way. Likewise, Thiemann (2018) relies on the orthodox conception of banks as providers of 'credit intermediation'.

Contrary to the former two, this view is critical of the development of securitisation for having provided banks with a tool to reduce their regulatory capital burden by moving risk exposures to off-balance sheet vehicles. Hence, contrary to the idea of the originate-to-distribute model, 'banks decided to originate *and* hold securitized assets' (Acharya and Schnabl, 2010, p. 68). Following Thiemann (2018, p. 26), securitisation, 'initially hailed as the mechanism to distribute risk more evenly in the financial system, [...] in practice concentrated risk in the banking system'. This was achieved in two different ways: either by holding risk exposure to loans in the form of ABS, subject to lower capital requirements[47], or in off-balance sheet vehicles that banks' backstopped with credit lines. The latter was especially important in the case of ABCP conduits, which issued short-term notes against ABS. These entities were chiefly sponsored by banks, which fully absorbed their losses when problems arose (Acharya et al., 2013b). According to Thiemann (2018, p. 29), ABCP conduits 'could not exist without liquidity facility of their banking sponsor, as any short-term incapacity to refinance through short-term paper would mean an immediate closure of the SPE'. On a broader level, Admati et al. (2013, p.

47 A triple-A RMBS carried a risk weight of 20%, while mortgage loans had a risk weight of 50%.

57) claim that 'With practically no equity of their own, the shadow banking institutions involved in the recent crisis would have been unable to obtain any finance at all if it had not been for commitments made by sponsoring banks in the regulated system'. Nevertheless, it is worth noting that the critique of these authors does not target securitisation in itself, but the lack of supervision to avoid banks abusing from it. Acharya et al. (2010, p. 294) are quite clear on this: 'We do not contest the view that securitization can in principle be economically beneficial. Indeed, it seemed to have worked remarkably well until the most recent crisis erupted.' (Stein, 2010, p. 44) makes a similar remark: 'This improved risk-sharing represents a real economic efficiency and lowers the ultimate cost of making the loans. Moreover, as noted above, the pooling and tranching process, if done properly, makes the senior tranches of abs relatively easy to evaluate, even for nonspecialized investors that do not have much ability to judge the credit quality of the individual loans that underlie these securities.'

While micro-based risk are important in the analyses of these authors, they also give a prominent role to systemic risk. Hence, they adhere with the heterodox presupposition on this matter. Its micro-based argument relies on the hypothesis that banks abused the state's safety net designed to prevent runs. Within this interpretation, capital requirements are the price banks pay for the state's backstops, which serve to offset moral hazard problems. When banks used securitisation to circumvent capital requirements, these guarantees became underpriced, fostering moral hazard and excessive risk-taking through credit origination (Acharya et al., 2010). These authors complement this problem with a truly heterodox issue of systemic risk. However, they argue against Gorton and Metrick's interpretation of the GFC as a run on SB1 – the run would have played a secondary role[48]. Acharya et al. (2010, p. 308) claim that 'the "liquidity problems" witnessed in this crisis, while clearly a symptom of some market segmentation and market-to-market treatment in regulatory capital buffers of banks, they ultimately were connected to at least some solvency problems'. Similarly, Thiemann

48 Indeed, it can be argued that, since ABCP conduits and, to some extent, MMFs, were largely backstopped by banks, investors had no significant reason to worry about their ability to get their money back unless the investments of these entities went bad.

(2018, p. 31) states that 'beginning problems of credit deterioration, which did not yet trigger the fire sale, would lead to a refusal of investors to buy ABCP from this conduit, essentially forcing the bank to step in'. Bengtsson (2013, p. 5) also notes that, beyond exposure to runs, 'the MMFs' gradual creep toward riskier assets' has been often overlooked. Last but not least, Stein (2010, p. 47) claims that the disruption in the funding sources of the SBS did not come from the short-term instruments, but from the refusal of investors to purchase new (long-term) ABS.

In that way, their notion of systemic risk lies in the asset side. Acharya et al.'s (2010, 2013) view of systemic risk builds upon Acharya (2001). The core of the argument is that prudential regulation is micro-based and, hence, does not take into account externalities arising from individual failures. This 'gives rise to a *systemic risk-shifting* incentive where all banks undertake correlated investments, thereby increasing economy-wide aggregate' (ibid, p. 1, emphasis in original). In that vein, Acharya et al. (2013, p. 520) make clear that this macro issue is the key problem, '[t]he presence of explicit or implicit government guarantees in aggregate risk states would serve only to strengthen this incentive'. Thus, following Acharya et al. (2010), banks reaped higher profits by 'manufacturing tail risk' (uninsurable systemic risk) by creating a mortgage credit boom that increased the correlation of banks' credit risk. Pozsar et al. (2010, pp. 70-71) build upon a similar idea, noting that regulatory arbitrage enabled 'inadequately priced liquidity puts [...] primarily written by banks', since '[t]ail risk insurance for both credit and liquidity risk will generally be underpriced' for 'private sector balance sheets will always fail at internalizing systemic risk'. Meanwhile, Thiemann (2018) claims that SB1 was the result of competitive pressures that led certain banks to contend with international competition by enhancing their profits through off-balance sheet risk-taking. Hence, excessive risk-taking would have resulted from the collective behaviour of banks. Similarly, Admati et al. (2013, pp. 58-59) argue that it would have been better for national interests and, in particular, tax payers, if some banks had been less successful in international competition over certain activities. All in all, these authors advocate for a substantial

revision of the regulatory framework: significantly increasing capital requirements and extending them to non-bank intermediaries (Acharya et al., 2010, p. 312; Stein, 2010, p. 49), implementing a Glass-Steagall-like functional separation of banks (Acharya et al., 2010, p. 313) or a profound reform of regulatory and supervisory practices to prevent banks' regulatory arbitrage (Thiemann, 2018, pp. 237–238).

To conclude, we may note that there is certain relation between the attributes of SB1 and the results of the orthodox dissent analysis. On the one hand, the fact that banks control the bulk of SB1 is crucial for the regulatory arbitrage thesis of these authors. On the other hand, while their main point is that the problem was banks' over-leveraging, this was achieved through off-balance sheet vehicles that held long-term ABS against short-term ABCP. Hence, the second attribute of SB1 is also relevant for the explanation. Therefore, we will examine in the next whether the conception of SB1 can be attributed to this orthodox dissent view or the new orthodoxy approach.

3.1.4.The heterodox post-Keynesian view of SB1

The last interpretation of SB1 corresponds to the post-Keynesian analyses of the originate-to-distribute model identified by Bouguelli (2019). This view represents a pure heterodox approach within our taxonomy: it relies on endogenous money theory, it is critical of the extension of new financial markets and builds upon a systemic view of risk. Building upon endogenous money theory, these authors have been critical of the characterisations of shadow banking as an alternative to the banking system (ibid). This theoretical approach has led post-Keynesians to pay more attention to the role played by banking credit at every step of securitisation (Herbillon-Leprince, 2020). Hence, they have tended to reject any notion of a truly independent parallel banking system as represented by SB2. This conclusion has proven to be rather consistent with the evidence found by central bank officials on the dominance of banks over every function involved in securitisation, which we presented in the previous chapter (Unger, 2016; Cetorelli and Peristiani, 2012).

Post-Keynesians have also been rather critical of securitisation, arguing that it brought no benefit to the economy. First, it distorted banks' incentives, making them more eager to expand credit, since they could replace a staggered stream of interest rate income with immediate upfront fees and with no recourse to additional capital (Lavoie, 2012). Second, banks also enhanced their return-on-equity by increasing their leverage, retaining some of the RMBS triple-A tranches, subject to lower capital requirements than the underlying loans (Lavoie, 2012, p. 230). Finally, post-Keynesians criticise the benefits of risk sharing because securitisation resulted in an increase in the overall leverage of the financial system, since loans were moved out of banks' balance sheet into non-bank investors subject to no capital requirements (Bouguelli, 2019).

On the nature of risks, post-Keynesians do recognise the presence of the type of agency micro-based problems pointed by orthodox authors. Davidson (2002, p. 116) had already noted that complexity and opacity can help banks transferring risks and can lead to looser screening and monitoring of borrowers. However, they reject the idea that these information asymmetries were the main cause of the origination of loans of poor quality. Instead, they build upon Minsky's financial instability hypothesis to claim that the calm period of the Great Moderation resulted in a progressive and increasingly generalised risk-taking (Tymoigne and Wray, 2013, chap. 3; Wray, 2016, pp. 15–16). This was especially symptomatic among banks, which were the ultimate enablers of the credit boom. In that way, post-Keynesian authors stress that the US credit problems were systemic, and not confined to the subprime mortgage sector – banks loosened credit standards at every level of borrowers' creditworthiness (Tymoigne, 2009; Tymoigne and Wray, 2013, p. 124).

In that way, they relate the GFC to credit quality: 'the liquidity crises were manifestations of deeper solvency problems' (Bouguelli, 2019, p. 19). Securitisation facilitated contagion once credit risk materialised due to the increase in 'financial layering', the number of intermediaries between ultimate borrowers and savers, which made financial entities' cash flows critically interdependent (ibid, p. 17). In addition, the scope of the shock was amplified by the fact that the unbundling of the loans' risks resulted in many actors relying on credit risk guarantees provided by

entities that made no provisions to fulfil their contractual obligations. This was the case of the US insurer AIG, which made a good deal selling insurance against sub-prime RMBS losses. However, once that borrowers' defaults started, AIG was unable to meet its commitments towards its clients. The result was that credit risk spread through the financial system in the form of counterparty risk (Wray, 2016, p. 189). In turn, these insurance instruments were also subject to Minskyan risk-mispricing, which further amplified the fragility of the financial system (Lavoie, 2012, p. 226). Therefore, post-Keynesian authors advocate for a radical revisitation of the regulatory framework, with the enforcement of bold macroprudential measures affecting banks – such as functional separation of activities, a ban on securitisation, and quantitative credit controls (Bouguelli, 2019, pp. 19–20) – and non-banks (Wray, 2015, p. 189).

3.2. Second characterisation: the parallel banking system

The second shadow banking characterisation (SB2) consists of a parallel banking system fully run by non-banks, and built around securitisation. As we noted in chapter 1, this system is defined by featuring a maturity-mismatched structure similar to SB1, but being a competitor to the banking system. There are two different views of SB2 in the literature, which correspond to the 'new orthodoxy' and the 'orthodox dissent' approaches.

Table 12. Views on SB2 (the parallel banking system)

View	Publications	Monetary theory	Approach to financial products	Nature of risks
New orthodoxy	Pozsar et al. (2010), Mehrling et al. (2013)	Orthodox	Orthodox	Heterodox
Orthodox dissent	Hanson et al. (2011)	Orthodox	Heterodox	Heterodox

3.2.1. The new orthodoxy view of SB2

Pozsar et al. (2010) and Mehrling et al. (2013) view of SB3 – which they dub, respectively, the 'external shadow banking subsystem' and the 'market-based credit system' – rely on the 'new orthodoxy' approach. As noted by Bouguelli (2019, pp. 5–6) these authors build upon an orthodox credit intermediation view of banking – at least, when it comes to the analysis of shadow banking – which is critical to depict SB2 as an alternative to the banking system.

Their take on the expansion of new financial products is also orthodox and based on the 'functional perspective'. Thus, they describe SB2 as an innovative reshuffling of the traditional bank model of financial intermediation that aims at catering to the new needs of both savers and borrowers. In that way, they claim that SB2 can deliver higher efficiency by i) servicing borrowers that are excluded by banks (Pozsar et al., 2010, p. 52), ii) lowering costs through specialisation and economies of scale (ibid) and iii) completing markets by providing collateralised deposit-substitutes for savers, and enlarging the diversity of risk-tailored products available to investors (Mehrling et al., 2013). The latter is done through derivatives, which allow for unbundling and selling separately the different risks inherent to any debt security – interest-rate risk, default risk and exchange-rate risk. For these reasons, Mehrling et al. (2013, p. 2) claim that 'shadow banking is not some troubling excrescence on the healthy body of traditional banking. Rather, it is the centrally important channel of credit for our times, which needs to be understood on its own terms'.

Nevertheless, we have to note that these authors also express some scepticism about their favourable assessment of SB2. On one hand, Pozsar et al. (2010, pp. 69, 75) express concerns about how much of the comparative advantages of these non-bank specialists are mere regulatory advantages, that would not survive to the regulatory reform they defend. On the other hand, Mehrling et al. (2013, p. 17) admit that this 'new system has yet to show its ability to stand on its own, since [so far] it has grown up largely as a parasitical growth on the old system'. They stress the fact that the dealers at the centre of their SBS are actually banks

or bank subsidiaries enjoying state backstops. Indeed, they acknowledge that their simple model of shadow banking is more of a theoretical artefact than an actual description of reality (Mehrling et al., 2013, p. 4).

Last but not least, Pozsar et al. (2010) and Mehrling et al. (2013) hold a heterodox macro approach in what concerns the nature of SB2's risks. This is similar to Gorton and Metrick's conclusion on SB1: there is a problem of financial fragility arising from maturity transformation by non-banks. The interweaving of (short-term) money markets and (long-term) capital markets on which SB2 relies can result in the type of liquidity spirals we described above. Therefore, under this circumstances, markets can be dysfunctional, showing price volatility 'even if there is no change in actual fundamentals' (Mehrling et al., 2013, p. 13). Consequently, the policy recommendations of these authors are similar to those of SB1 new orthodoxy's view: the system has to backstopped by extending the state's safety net. Pozsar et al. (2013, p. 13) praise the Federal Reserve's intervention during the GFC to backstop certain shadow banking entities (dealers and MMFs) and markets (ABS and ABCP), which, as they argue, 'were an explicit recognition of the need to channel emergency funds into [the] shadow banking [system]'. Alternatively, Mehrling et al. (2013) argue in favour of the central bank committing to backstop market liquidity, assuming the role of 'dealer of last resort'.

Hence, similarly to Gorton and Metrick's (2010, 2012) analysis of SB1, we can observe that the new orthodoxy results for SB2 bear a direct relation to the latter's maturity-mismatch attribute. In turn, the fact that SB2 is located outside banks, justifies its lack of backstops to prevent runs. Therefore the new orthodox approach emerges as a clear candidate for the authorship of SB2, if our hypothesis of 'shadow banking' as a theory fix is to be true.

3.2.2. The orthodox dissent view of SB2

Hanson et al. (2011) represent the orthodox dissent view of SB2. Their analysis is also grounded in orthodox monetary theory[49]. However,

49 This can be more clearly appreciated in Hanson et al. (2015), another publication on shadow banking co-authored by two of the three writers of Hanson et al. (2011) in which they elaborate more on banking theory. In this paper they make more explicit their orthodox background and claim that 'both types of intermediaries [banks and shadow banks] create safe money-like

they hold a rather different view on securitisation: they consider it to be an inconvenient innovation, since it allows non-banks to run banking business without being subject to pertinent regulation (ibid, p. 16). As a result, instead of enhancing capital allocation, securitisation leads to a more fragile financial system by facilitating the build-up of leverage.

Finally, Hanson et al. (2011) also build upon a heterodox approach towards risk. Despite of considering that, at the end, the problem is one of maturity transformation, it emerges from rather different reasons than those put forward by the above-described new orthodoxy view. They argue that the lack of minimum capital requirements in non-bank credit intermediation aggravates the inherent failure of financial intermediaries to internalise negative externalities. In particular, Hanson et al. (2011, pp. 6-7, 20) claim that, pushed by competition, financial intermediaries tend to increase their leverage whenever short-term debt is cheaper than equity. It follows that this short-term funding structure makes non-bank intermediaries prone to triggering fire sales and liquidity spirals, in the same fashion that we described above for SB1. To prevent this from happening again, Hanson et al. (2011, p. 13-14, 25) argue in favour of implementing macroprudential regulations that enforce minimum capital requirements on the whole financial system.

Therefore, we can make the same observations as for the orthodox dissent analysis of SB1. On the one hand the SB2's nature as a non-bank system is required to justify the problem of over-leveraging: non-banks are not subject to prudential regulation. On the other hand, while the problem is about leverage, it crystallises in the form of maturity-mismatch fragility. Therefore, along with the new orthodoxy, the orthodox dissent approach is also a candidate for the authorship of SB2. We will determine which one came first in section 4.

3.3. Third characterisation: maturity transformation beyond traditional banking

The third shadow banking characterisation (SB3) encompasses any form of financial intermediation involving a maturity-mismatched

claims'.

structure different from traditional banking (loans funded by deposits). In that way, banks can directly be part of SB3 through any other activity. As we noted in chapter 1, SB3 has been mostly used to describe the type of intermediation happening in repo markets between ultimate lenders and ultimate borrowers. In that way, SB3 is defined by featuring a maturity mismatch between its two ends, and by maintaining a relationship of cooperation with the traditional banking system. As table 13 shows, two theoretical approaches have taken an interest in SB3: the new orthodoxy and the heterodox.

Table 13. Views on SB3 (maturity transformation beyond traditional banking as collateral-based finance)

View	Publications	Monetary theory	Expansion of financial products	Nature of risks
New orthodoxy	Pozsar and Singh (2011), Pozsar (2014, 2015)	Orthodox	Orthodox	Heterodox
Heterodox	Gabor and Vestergaard (2016a), Sissoko (2014, 2016, 2017)	Heterodox	Heterodox	Heterodox

3.3.1. The new orthodoxy view of SB3

We identify several analyses of SB3 that we associate with the new orthodoxy approach (Pozsar and Singh, 2011; Pozsar, 2014, 2015): They are close to the orthodox paradigm, but depart from it when it comes to assessing the nature of the risks. We can notice their sympathy for orthodox monetary theory in several of their statements. Following Pozsar and Singh, 2011 (p. 3): 'Financial intermediation can happen through the banking system, non-bank financial institutions, and capital markets. Short-term savings are generally considered to be intermediated by banks, which engage in maturity transformation as they make long-term loans.' Similarly, according to Pozsar, 2014 (p. 11): 'Borrowing short and lending long(er) on net is the essence of any form of banking and the source of intermediaries' interest margin, or carry.' Although these authors do stress the centrality of banks in the global financial system,

they tend to use abstract function-based categories that go beyond a pure legal distinction of entities. These categories sometimes blurry the boundaries of banks: 'traditional banks' refer to deposit-funding lending, 'broker-dealers' refer to market-making activities irrespective of who carries them, and 'levered bond portfolios' and 'cash pools' can encompass any asset manager, irregardless of whether it is a bank subsidiary or an independent entity.

Their approach to SB3 is, indeed, grounded in a 'functionalist perspective' on financial intermediation, which considers that, in an ever changing environment, there is always room for improving efficiency by re-adapting financial intermediation business. In particular, Pozsar and Singh (2011) and Pozsar (2014, 2015) focus on the liability side of SB3, elaborating on Gorton and Metrick's (2010, 2012) analysis of SB1 – as we saw in chapter 1 both characterisations overlap in the liability side. SB3 thus is the solution to the new cash-management needs of large institutional investors. The latter's short-term cash holdings have outgrown the guarantee ceiling of bank deposits. Having identified this problem, SB3 develops as series of collateralised 'shadow moneys' – such as ABCP, MMF shares or repos – that provide them with a safer alternative (Pozsar, 2013). In turn, these authors seek to provide a more comprehensive explanation of SB3 that encompasses also the asset side: the holders of long-term securities that provide the collateral for the production of shadow money. For that, they look at underlying structural changes that may explain the simultaneous growth of SB3's savers and borrowers. Pozsar and Singh (2011) argue that the main driver of SB3 is the expansion of the asset management industry, which they consider to be behind both ends of the chain. Asset managers are subject to mandates that require them to meet certain target returns. A common strategy for them to earn some extra income is to lend out their long-term securities portfolios. These operations are typically done against cash collateral, which asset managers place, together with their operational treasury held for daily liquidity needs, in shadow money instruments offering higher returns and safety than uninsured bank deposits. In turn, according to Pozsar (2014), this would have been exacerbated by the environment of low-economic growth, which would push asset managers towards more

risky strategies – such as shortening borrowed securities and repo-financed leveraged bond purchases.

Pozsar (2015) closes the circle by attributing secular stagnation to the depressing effects on effective demand caused by the hoarding of financial wealth by the creditors at the other side of the SBS. He assesses that this has resulted from three key macroeconomic imbalances leading to an income distribution more favourable to agents with higher saving (or lower spending) propensities: i) the increase in individual income inequality has meant more funds being placed in financial assets by rich individuals instead of being spent by the poorer, ii) the increase in functional income inequality has benefited capitalists at the expense of workers, with a similar result and iii) at the international level, the increase in current account imbalances has resulted in income being parked by surplus countries, notably China, in the form of official reserves. In addition to these three trends, Pozsar claims that the shift towards private social provisioning has also contributed to the growth of the asset management industry and, hence, to more savings being placed in the financial system, and to less spending and more demand for funds to run leveraged return-boosting strategies.

Finally, on their approach towards risk, these authors adopt a heterodox standpoint, similar to that of the new orthodox views of SB1 and SB2. Therefore, they argue that the main concern about shadow moneys is that they rely on collateral price stability, i.e. market liquidity, which cannot be taken for granted in the presence of intermediaries running maturity-mismatch balance sheets. For Pozsar (2014, 2015), the weak link has to be found in dealer banks – as argued by Mehrling et al. (2013) for SB2 – on which market liquidity ultimately relies: their business is based on repo short-term funding, which exposes them to runs. Pozsar (2014, p. 30) adds that these runs may occur with a higher frequency than in the case of traditional bank panics, since SB3 is 'funded by a relatively low number of well informed, very large and uninsured institutional cash pools is bound to be much less stable than one funded by a very large number of uninformed, small and insured depositors'. Consequently, the policy recommendations of these authors are in the line with those of the new orthodox views of SB1 and SB2: the central bank

must backstop market liquidity becoming the dealer of last resort (Pozsar, 2014, p. 24, 2015, p. 26).

Therefore, we can appreciate that, similar to Gorton and Metrick's (2010, 2012) new orthodox view of SB1, here, the maturity-mismatch attributes of SB3 is crucial for the results of the interpretation. Meanwhile, the identity of the of the players – the definition of 'shadow' – is secondary for the results.

3.3.2. The heterodox view of SB3

The heterodox view of SB3 has been put forward by Gabor and Vestergaard (2016a) and Sissoko (2014, 2016, 2017). These authors build upon endogenous money theory, putting banks at the centre of their analysis. Gabor and Vestergaard (2016a, p. 20) do, however, depart slightly from the traditional distinction between banks and non-banks, claiming that repo liabilities, which can be issued by any financial entity, 'are endogenous in the Post-Keynesian sense'. They argue that repo-deposit (i.e., reverse-repos) issuers (i.e., cash borrowers), provided that they own a base asset, can easily increase their leverage with the only limit being their risk appetite[50].

While this opened a debate among post-Keynesians on whether or not the traditional distinction between banks and non-banks was still relevant – see Nersisyan and Dantas (2018, 2017) for arguments in favour and Michell (2017) and Bouguelli (2018) for arguments against – the ultimate differences are not that significant. On the one side, those that challenge the traditional split between banks and non-banks, recognise the hierarchical supremacy of the former over the latter. Nersisyan and Dantas (2017, p. 16), elaborate on Minsky to claim that: 'Because [non-banks] effectively lever over the liabilities issued by traditional banks, they can only continue to operate to the extent that traditional commercial banks are willing to act as their "lenders of last resort" by continuing to "accept" their liabilities when "alternative financing channels become either expensive or unusable"'. Moreover, (Gabor and

50 This asset – typically a government bond, considered as safer and less volatile than other private securities – can be used as collateral to borrow money in a repo, which can finance the purchase of a security, which can be, in turn, be used as collateral in a new repo transaction, and so on.

Vestergaard, 2016a, p. 15) hold that in repo markets dominated by banks 'banks' *special* role in money creation extends into shadows' (emphasis added). On the other side, the capacity of non-banks to increase the volume of credit and enhance liquidity has been acknowledged or clarified (Lavoie, 2019).

In their analysis of SB3, Gabor, Vestergaard and Sissoko also build upon the heterodox presupposition when when assessing the increasing role of repos in modern financial systems: they analyse the subject from the point of view of risk, in particular, focusing on the use of repos as an instrument for leveraging. The new orthodox 'functionalist' approaches to repos described above have also noted this role of repos. However, they consider leverage as the solution to a need for long-term funding – as banks do – and put the focus on its function as efficient deposit-like for savers. On the contrary, for Gabor and Vestergaard, 2016a (p. 10), this is the essence of repos: 'The incentives to issue repos are incentives to economize on bank deposits and bank reserves'. Repo 'deposits' (reverse repos) allow their issuers to leverage by postponing final settlement: the issuer may finance the purchase of a security by offering the seller a repo, instead of settling the transaction upfront with proper money (central bank reserves for banks, and bank deposits for non-banks). Meanwhile, Sissoko (2017) establishes a parallelism between nowadays repos and margin loans in the 1920s, warning about the dangers of financial asset bubbles inflated by universal banks' credit creation. She even goes further, suggesting that repos are margin loans in disguise, created to circumvent the Glass-Steagall Act restrictions by legally restructuring a leveraged securities-financing operation as a sale-repurchase contract (ibid, p. 95). In addition, these authors note that the use of collateral in repos can foster lending since they allow for replacing the costly examination of borrowers typical for unsecured transactions with the 'readily observable market prices of collateral' (Gabor and Vestergaard, 2016a, p. 13). For this reason, Sissoko (2014) considers that fewer incentives to screen and monitor borrowers may lead to an increase in credit risk[51].

51 Scialom and Tadjeddine (2014, p. 12) make a similar point, claiming that repos increase not only adverse selection but borrowers' moral hazard.

Regarding risks, these authors follow a macro approach, which is slightly different to the new orthodoxy's one. Gabor, Vestergaard and Sissoko do argue that the main issue is collateral liquidity. However, they build upon a Keynesian conception of financial markets. From this perspective, market liquidity is *inherently* unstable, and repo maturity mismatches (or, better said, repo-financed leverage) *amplifies* liquidity instability. Following Sissoko (2016, p. 15): '[t]he problem with markets is that they provide liquidity in normal times, but this source of liquidity evaporates when prices are expected to fall. Both leverage and the prevalence of investment pools increase the frequency of liquidity events on markets'. Moreover, the problem of leverage, is exacerbated by repos' accounting and risk management techniques, which increase the speed and scope of market expansions and contractions through liquidity spirals (Gabor, 2016b, 2013). The problem lies in the fact that these risk management techniques – mark-to-market accounting of collateral, initial haircuts and margin calls – also rely on market prices. If the price of the collateral goes up during the duration of a repo, the collateral is adjusted to reflect that change. As a result, the borrower receives the corresponding amount in the form of either assets or cash, which she can then reinvest – and the opposite applies if the price goes down. Hence, a procyclical dynamic emerges in which borrowing and market prices mutually reinforce each other. For that reason, in times of stress, repos become a drain instead of a source of liquidity for capital markets (Sissoko, 2020). Therefore, these authors advocate for the enforcement of strict collateral rules and high minimum haircuts aiming at constraining leverage (Gabor, 2016b, p. 25; Sissoko, 2020, p. 26).

To conclude, we can observe that the results of the heterodox analysis rely to some extent on the features of SB3. On the one hand, the presence of banks is required for the destabilising money creation dynamics in repos. On the other hand, the maturity mismatch inherent to the design of repos serves to explain their amplifying effect on market liquidity instability. Nevertheless, the key is leverage, and not the full structure of SB3 is necessary to explain the problem. Indeed, as we show in the next section these heterodox authors build upon an already designed SB3.

3.4. Fourth characterisation: non-bank financial intermediation

Finally, as we saw in chapter 1, the fourth shadow banking characterisation (SB4) encompasses any non-bank entity that lends, provides deposit-likes or runs maturity transformation. Therefore, unlike the other three characterisations, SB4 is not necessarily defined by asset-liability maturity mismatches. Meanwhile, SB4 is considered to maintain a relationship of competition with the banking system. As table 14 shows, SB4 has been approached in the literature from two theoretical stances: the orthodox dissent and the orthodoxy. However, we may note that the FSB is behind these two different analyses. Other publications on SB4 are fundamentally descriptive and we cannot identify a clear theoretical background. This is the case for Fungáčová and Weill (2015), who address alternative funding channels to the banking system in China, or Buchak et al. (2018), who analyse fin-tech lenders in the US. Therefore, the conception of SB4 has to be attributed to the early or orthodox dissent view of the FSB.

Table 14. Views on SB4 (non-bank financial intermediation)

View	Publications	Monetary theory	Expansion of financial products	Nature of risks
The orthodox dissent or FSB's early view	FSB (2011-2014)	Orthodox	Heterodox	Heterodox
The orthodox or FSB's late view	Pozsar et al. (2010), FSB (2014 onwards), Allen et al. (2019)	Orthodox	Orthodox	Orthodox

3.4.1.The orthodox dissent or FSB's early view of SB4

As noted by several authors (Engelen, 2017; Gabor, 2018; Gabor and Vestergaard, 2016b), the FSB has modified its stance towards shadow banking from its initial clamp-down approach to a more lenient position. These authors point out the formalisation of this change through the replacement of the FSB's initial motto 'strengthening oversight and regulation of shadow banking' with 'transforming shadow banking into

resilient market-based finance' in its November 2014's Progress Report (FSB, 2014a). We take this moment as a reference to differentiate between two views of the FSB that we associated to two phases – the early and the late one. Nevertheless, we recognise that this was not a sudden shift, we may already identify more orthodox assessments in the early view, and there were many elements of transition between both phases (Engelen, 2017, pp. 45–47). Regardless of this, the shift concerned the FSB's approach towards the expansion of financial products and the nature of financial risks. Meanwhile, the FSB's view of banking was always grounded in orthodox financial intermediation theory, claiming that 'the shadow banking system may provide market participants and corporates with an alternative source of funding and liquidity' to the banking system (FSB, 2011b, p. 1). This approach has thus underpinned the FSB's view of shadow banking as – paraphrasing Greenspan (1999) – a 'backup' source of funding, which became more important in the FSB's second period.

It is debatable whether or not the FSB changed its stance towards the prospects of new financial products in order to deliver better capital allocation. The international body already advanced all its claims regarding the potential efficiency gains of shadow banking in its first reports, which are the following. First, shadow banking can 'provide efficient credit in the economy as some non-bank entities may have specialised expertise that enables them to provide certain functions in the credit intermediation chain more cost-efficiently' (FSB, 2011b, p. 1). Second, securitisation can be more cost-efficient than traditional lending, while contributing to complete markets: it 'is a useful funding technique for financial institutions, and an efficient means to diversify risk' (FSB, 2011a, p. 21). Third, repos can 'support price discovery and secondary market liquidity', hence, smoothening markets functioning (FSB, 2012a, p. 2). Despite of its interest in eventual gains, we can appreciate in the FSB's early reports that they were not the priority issue, as would later be the case. On the contrary, shadow banking emerges, first of all, as both a 'systemic risk concern' and a 'regulatory arbitrage concern' (FSB, 2011b).

In that way, in its early years, the FSB held a harsh stance towards SB4, which it considered to be a troubling manifestation of regulatory arbitrage that had to be curbed. This was, indeed, the mandate it received

from the G-20 in November 2010 (FSB, 2011b, p. 1; G20, 2010, p. 10). It is worth noting that the FSB used 'regulatory arbitrage' - using chapter 1's terminology - both in its its 'narrow' sense (banks' regulatory arbitrage) and in its 'broad' sense (independent non-banks running bank-like activities without being subject to banking regulation). Moreover, it conceived SB4 as a source of systemic risk due to negative externalities arising from individual entities' actions. Both issues can also be clearly appreciated in the FSB's first report on shadow banking:

> If parts of the shadow banking system are able to operate without internalising the true cost of its risks and thus gain a funding advantage relative to banks where regulation aims to achieve such an internalisation, this is likely to create opportunities for arbitrage that might undermine bank regulation and lead to a build-up of additional leverage and risks in the system. Moreover, banks themselves may use shadow banking entities to increase leverage and find ways to circumvent their regulatory capital or liquidity requirements. FSB (2011a, p. 5)

Thus, the FSB had a clear focus on systemic risk during this period. In its first report on shadow banking, it expressed concerns regarding the following areas. First, non-banks running maturity and liquidity transformation 'can create "modern bank-runs" if undertaken on a sufficiently large scale' (FSB, 2011b, p. 4). Second, leverage can 'amplify procyclicality' '[t]hrough the utilisation of non-deposit sources of collateralised funding such as repo and cash collateral reinvestment from securities lending, or because of flawed credit risk transfer through securitisation' (ibid). Third, the interconnection between the banking system and SB4 'can exacerbate the procyclical build-up of leverage and thus heighten the risks of asset price bubbles' and 'amplify market reactions when liquidity is scarce in the financial markets' (ibid). This can result from i) the fact that 'banks often [compose] part of the shadow banking chain or [provide] (explicit or implicit) support to the shadow banking entities to enable maturity/liquidity transformation'; ii) banks' investment in shadow banking products; and iii) common risk exposures to certain markets 'through asset holdings and derivative positions even where there is no clear direct connection' (ibid).

Hence, we may note that it was during this early period that the FSB pushed forward it most ambitious reform: a framework for the implementation of generalised minimum haircuts applying to any participant and asset class in repo markets, the equivalent of a minimum capital requirement (FSB, 2012a).

3.4.2. The orthodox or FSB's late view of SB4

While the FSB's early concerns on regulatory arbitrage bear a clear resemblance with those of orthodox dissenters, the underpinnings of the FSB's late view of SB4 can be traced back to Pozsar et al.'s (2010) concept of '"parallel" banking system' – which is different from the one we used to identify SB2[52]. Pozsar et al. (2010) use it to describe 'the "long-term viable" set of shadow banks that were driven not by regulatory arbitrage, but by gains from specialization and comparative advantage over traditional banks' (ibid, p. 45). This idea already made part of the FSB's approach towards shadow banking since the beginning – we mentioned above the potential efficiency gains identified by the FSB. However, as we argued, the FSB's intial focus was on regulatory arbitrage and systemic risk concerns, efficiency gains were brought to the forefront only later.

The FSB's aforementioned replacement of its original motto 'strengthening oversight and regulation of shadow banking' with 'transforming shadow banking into resilient market-based finance' was accompanied by other revealing changes. The same report identified a new desirable property of shadow banking, which would be from then on incorporated in its reports: shadow banking 'provides healthy competition for banks' (FSB, 2018, p. 1, 2017a, p. 1, 2014a, p. 1). The FSB introduced a second more subtle, although also significant, change from 2015 onwards: The initial caveat accompanying its assessment that shadow banking, '*appropriately conducted*, provides a valuable alternative to bank funding that supports real economic activity' (FSB, 2012b, p. 1, 2014a, p. 1, 2013, p. ii; emphasis added) was removed (FSB, 2015, p. 1, 2017b, p. 1). Thus, although the FSB did continue mentioning that shadow banking can pose risks, the focus of attention was reverted: the potential benefits, and not the potential risks, became the main issue at stake.

52 See footnote 13 in chapter 1 (p. 39).

We may even claim that the FSB changed from a role of regulator to a role of promoter, building upon the idea of shadow banking as an alternative funding channel for the real economy. This was rather explicit for the case of securitisation. In line with other bodies – notably the European Commission (2015), the FSB announced: 'The resumption of sound securitisation is a goal of the wider financial reform programme' (FSB, 2015, p. 9). This role of financial markets promoter can also be observed in the case of repos in emerging markets, which the FSB encouraged to liberalise to improve market liquidity (Gabor, 2018, p. 16). Finally, the semantic formalisation of the policy shift was completed when the FSB (2019) removed its traditional disclaimer footnote it had included in its reports since FSB (2013). This statement justified the use of the term 'shadow banking' for being the most popular, despite noting its lack of accuracy due to the unfounded pejorative connotations. In exchange, the FSB re-baptised 'shadow banking' as 'non-bank financial intermediation'[53].

The FSB's approach towards risk also changed substantially from a heterodox focus on systemic risk towards an orthodox micro-based analysis. A key element in this shift was the design of the five economic functions approach that we described in the previous chapter (FSB, 2013)[54], which provides a guideline for national authorities to identify shadow banking entities among the universe of non-banks. This new framework, which started being used in the FSB's 2015 Annual Report on shadow banking, narrowed down considerably the scope of potential risks emerging from SB4, which we addressed above: the ultimate cause of risk was exclusively attributed to maturity transformation and its vulnerability to runs. This is explicit in the definition of economic functions 1-3 (FSB, 2021b, pp. 25–26, 2013, pp. 6–9), while it is also the main concern in function 5 (FSB, 2013, p. 10, 2012b, p. 10) – function 4 is

53 This footnote used to state: 'Some authorities and market participants prefer to use other terms such as "market-based finance" instead of "shadow banking". The use of the term "shadow banking" is not intended to cast a pejorative tone on this system of credit intermediation. However, the FSB uses the term "shadow banking" as this is the most commonly employed and, in particular, has been used in earlier G20 communications'.

54 We described them in chapter 1 section 3.1.4. As a reminder these are: 1) investment funds susceptible to runs, 2) non-bank lending relying on short-term funding, 3) securities financing relying on short-term funding (repos), 4) insurances and guarantees of financial products and 5) securitisation.

negligible since it has always represented less than 1% of total shadow banking[55].

However, the identification of maturity transformation relied on a series of indicators measuring the relative degree maturity mismatch, but without defining any threshold (FSB, 2013, p. 24) – we may refer to our discussion in chapter 1 (section 2) on how any 'banking' based on maturity transformation without any notion of a threshold becomes inoperable. The result was an all-encompassing approach in which many entities showed moderate degrees of maturity transformation, what ended up diluting any notion of systemic risk. This can be appreciated in the FSB Annual Reports. The number of times that 'systemic risk' was mentioned in the 2015 report – the first one using the five-economic-functions framework – decreased considerably and, from 2016 onwards, became marginal, disappearing completely from the 2020 and 2021 reports[56].

The FSB had already established the principle of 'proportionality': 'Regulatory measures should be proportionate to the risks shadow banking poses to the financial system' (FSB, 2011a, p. 18) to avoid 'inhibiting sustainable non-bank financing models that do not pose such risks' (FSB, 2012b, p. 1). However, inside the FSB's new project of promoting 'market-based finance', the principle of proportionality adopted a new meaning. Thus, as we will see in the next chapter in more detail, the final recommendations of the FSB included little advances to address systemic risk and its most ambitious reform – the minimum haircuts framework for repos – was substantially watered-down (Gabor, 2016b, pp. 25–26). Hence, what was left was addressing micro-founded risks by enhancing disclosure, which 'will help market participants to better monitor the entities, absorb any news/developments in a timely manner, and make informed decisions, hence avoiding sudden loss of confidence that may lead to runs' (FSB, 2013, p. 13).

55 According to the FSB's narrow measure of global shadow banking. Data can be accessed at: https://data.fsb.org/dashboard/Time%20Series%20View.

56 While 'systemic risk' appeared with an average frequency of 26 times in the 2012-2014 reports, between 2015-2021 it was only used an average of 3 times.

A similar view to that of the late FSB may be found in Allen et al. (2019) approach towards a particular form of non-bank lending in China: entrusted loans[57]. These authors also build upon an orthodox credit intermediation view of shadow banking – Franklin Allen is one of the main contributors to orthodox financial intermediation theory in the late 1990s-2000s. Similarly, they also hold a positive view on the development of unfettered markets, and focus on a micro-based view of risks. While the FSB considered repo regulations of emerging countries, especially China, as inefficient financial repression, Allen et al. (2019) hold a similar assessment on credit regulations. Following the latter, 'shadow banking arises as a reaction to imperfections and distortions in financial markets' that can be appreciated in the fact that '[t]he official financial system in China (consisting of banks, and stock and bond markets) [...] is still not accessible to most private firms, especially small and medium-size firms' (p. 19). Regulations are, thus, responsible for 'the restricted access to the banking system for the more productive private sector' (ibid, p. 26).

Through entrusted loans, non-financial firms supplement their business revenue by granting loans to the unserviced sector, enhancing capital allocation. In addition, Allen et al. (2019) argue that these non-bank lenders have a comparative advantage: despite of lacking 'the general expertise of monitoring borrowing firms, they tend to lend to firms they are familiar with, that is, those in the same industry or in geographical proximity', which 'should largely reduce information asymmetry problems and make monitoring easier' (ibid., p. 24). In this way, they provide efficient risk pricing, which is in turn reinforced by market competition, contrary to the distorted official loan rate, which 'does not properly reflect the true demand and supply of capital' (ibid., p. 19). On the other hand, however, since these lenders are large and sound non-financial firms, much better capitalised than banks, and since these loans represent a rather marginal part of their business, they pose no risk, but increase financial stability. While Allen et al. (2019) do envisage systemic risk, they consider it in a narrow manner – as concentration of exposure to a certain sector – which they consider to be solved by the

57 Entrusted loans are loans made between non-financial corporations using a bank as servicing agent. These firms are often affiliates or business partners, but they can also have no prior relation.

higher capitalisation of these non-financial lenders compared to banks. Moreover, as they state: 'Our study examines the asset side of entrusted loans and the financial structure of the lending firms and, thus, provides a *micro-foundation* for the discussion of the riskiness of the sector' (ibid, p. 19, emphasis added).

4. 'Shadow banking' as a theory 'fix' to a theoretical problem

In the previous section we determined that if the problem of the multiplicity of shadow banking characterisations shall be explained by the use of different theories, then the most plausible reason has to be that 'shadow banking' emerged as a theory 'fix' for a theoretical problem: explaining the GFC within the orthodox paradigm. Therefore, this would concern what we dub the 'new orthodoxy' and the 'orthodox dissent'. Following this reasoning, these two streams of authors would have identified an anomaly – the GFC – that they could not explain within the orthodox paradigm. Hence, they would have introduced the concept of 'shadow banking' as the solution to the problem. In the case of the new orthodox authors, the solutions consist of the fact that non-banks running maturity mismatch can render markets dysfunctional. In the case of the orthodox dissenters, the solution was that regulatory arbitrage undermined prudential regulation fostering leverage.

We have seen that the attributes given to the different shadow banking characterisations bear considerable resemblance with the solutions of these two groups of authors to the aforementioned theoretical problem. Meanwhile, we saw that this is not the case for the traditional orthodox and heterodox analyses, which can do without most of the attributes defining the characterisations. Moreover, authors from both approaches did not identify the GFC as an anomaly, since they explained it within the presuppositions of their theory. For the 'traditional orthodoxy' the problem was bad credit origination due to information asymmetries in the originate-to-distribute model. In turn, for heterodox authors, the GFC was the expected result of financial liberalisation and risk-taking cycles.

Therefore, our final step consists in examining the 'genealogy' of the publications in order to identify the origin of each of the four characterisations. This will allow us, first, to determine whether it was the new orthodox or the orthodox dissent authors who defined first SB1 and SB2, and, second, to confirm the authorship of each characterisation.

SB1 can be attributed to the new orthodoxy approach, in particular to McCuley's intervention at the Jackson Hole's 2007 Symposium, which was the first time the term 'shadow banking' was used. Thus, shadow banking was characterised as an off-balance sheet structure of bank-sponsored vehicles featuring a bank-like maturity mismatch, being, hence, vulnerable to runs. This was the explanation given by some authors of the mid-2007 turmoil in RMBS, ABCP and interbank markets, which was considered not to bear any relation with changes in the underlying fundamentals of the securities. Later, this view was further developed by Gorton and Metrick (2009) in the first draft of their 'Securitized banking and the run on repo', whose final 2012 version is the most cited paper of the shadow banking literature. Meanwhile, the 'orthodox dissent' interpretation of SB1, which can be traced back to Acharya and Richardson (2009) and Acharya and Schnabl (2009), emerged shortly later. The aim of these two publications was to challenge the new orthodoxy's run interpretation, arguing that the problem was one of banks' excessive risk-taking through regulatory arbitrage. Acharya and Schnabl elaborated on this thesis in their 2010 first version of their 'Securitisation without risk transfer', the fourth most cited publication of the literature (Acharya et al., 2013b). Since the core of this authors' hypothesis relied on maturity-mismatched ABCP conduits, the characterisation's attributes perfectly matched their main results. Indeed, we can find some publications in which both the new orthodoxy and the orthodox dissent interpretations are present (Pozsar, 2008). However, we may stress that the short-term funding is not a crucial point of the orthodox dissent view of SB1, contrary to the new orthodox one. On the contrary, SB1 was alien to the traditional orthodoxy interpretation, based on agency problems in the originate-to-distribute model, which did not rely upon the short-term nature of the liability side. Similarly, the

heterodox interpretation could do without SB1, since it built upon Minsky's insights on financial instability.

We find that SB2 was also put forward by the new orthodoxy. In particular, we can attribute it to Pozsar et al. (2010), who dubbed it the 'external shadow banking subsystem'. Thus, for these authors it constituted one segment of the overall SBS, which was made up of independent non-banks. Hence, they placed it just besides SB1. In that way the interpretation was similar to SB1: the mess was caused by a run made possible by the maturity-mismatched structure of SB2. Since the fact that a large part of SB1 was controlled and that banks did not affect the new orthodoxy's conclusions on SB1, the same model could easily be reproduced for independent non-banks. Meanwhile, the orthodox dissent view of SB2 was put forward by Hanson et al. (2011), which we identified as the second most cited publication of the literature – although shadow banking is not the main focus of the paper. Their concept of shadow banking is based on Stein's (2010) presentation of the above-mentioned early versions of Gorton and Metrick's (2012a) and Acharya et al.'s (2013) seminal analyses of SB1. We found neither orthodox nor heterodox interpretations of SB2. In the case of the former, the agency problem diagnosis of securitisation can be easily extended to SB2 – again, with no relation to maturity mismatches – while for heterodox authors SB2 had no relevance since non-banks played a relatively small role in loan origination.

We also find that SB3 was firstly framed by the new orthodoxy: the first reference can be attributed to Pozsar and Singh (2011). However, a fully developed analysis has to be found in Pozsar (2014), who built on previous new orthodoxy's work (Mehrling et al., 2013; Claessens et al., 2012, p. 15). SB3 has to be thus understood as the result of a new revisitation of SB1, this time building on the higher level of abstraction provided by Mehrling et al.'s (2013, p. 2) definition of shadow banking as 'money market funding of capital market lending'. This definition, hence, synthesises the essence of the new orthodox approach. In that way, the same results can be reproduced in SB3: 'the 2007-08 crisis was sparked by institutional runs' (Pozsar, 2014, p. 67). Therefore, 'From a policy perspective, the fundamental problem at hand is a financial ecosystem

that has outgrown the safety net that was put around it many years ago' (ibid). The first publications on SB3 from the alternative theoretical approach, the heterodox one (Sissoko, 2014; Gabor, 2016b), build upon these 'new orthodox' publications.

Finally, the SB4 characterisation has a different theoretical origin than the former three: the orthodox dissent approach of the FSB's early view. The FSB's made their own particular characterisation of shadow banking in which they cast a shadow over almost the whole non-bank sector, leaving aside just pension funds, insurance companies and public financial institutions. The FSB (2011a, p. 2) defined shadow banking in a rather loose way as 'entities and activities structured outside the regular banking system that perform bank-like functions' or 'non-bank credit intermediation'. With no clear definition of what 'bank-like functions' or 'credit intermediation' means, this definition can encompass any financial intermediary. The FSB's early view on regulatory arbitrage clearly draws upon the contributions of orthodox dissent authors on regulatory arbitrage. Meanwhile, the new orthodox emphasis on maturity mismatches and runs also permeates the FSB's reports. Indeed, Tucker (2010), who according to Engelen (2017) put 'shadow banking' in the regulatory agenda, borrowed the new orthodox view of Gorton. However, the FSB put forward a genuinely new characterisation. We can also find certain signs of evidence for the influence of Pozsar et al.'s (2010) new orthodox characterisation of shadow banking – in the FSB's first sketch of the SBS (FSB, 2011b, p. 9), in its use of the concept 'intermediation chains', as well as in a few direct references (FSB, 2012c, p. 14, 2013, p. 10).

Nevertheless, unlike the previous characterisations, we cannot claim that the FSB's SB4 emerges from the identification of an anomaly not fitting in its theoretical framework. First, the FSB is an international body of regulators. Second, it was established right after the GFC, in April 2009 by the G20 with the mandate to coordinate the post-2008 regulatory reform. Hence, when the FSB demarcated shadow banking as SB4, it was defining 'the regulatory perimeter' (FSB, 2013, p. 13), not doing a mere analysis of a problem. Last, but not least, the theoretical background of the FSB later leaned towards a traditional orthodox approach, while sticking with the same characterisation of shadow banking. However, it

would later rebrand it as ‘non-bank financial intermediation’. Hence, SB4 might better be understood as a regulatory category within a particular political project. This would explain why the FSB dropped the term ‘shadow banking’ in its 2018’s annual report on the subject, shortly after having declared that the regulatory reform was concluded (Carney, 2018). This characterisation of shadow banking has later been used by scholars, mostly in descriptive analyses of country cases (Acharya et al., 2013a) and non-bank forms of lending (Buchak et al., 2018; Fungáčová and Weill, 2015).

Therefore, we can see that the emergence of three out of the four main shadow banking characterisations (SB1, SB2 and SB3) can be linked to the confrontation of orthodox economics with an unexpected phenomenon – the GFC. These three characterisations share the common attribute of being structures defined by a bank-like maturity mismatch. This stems from the fact that they were conceived by what we called the ‘new orthodoxy’: those authors who interpreted the financial disarray as the result of a run on a system of entities performing a bank-like function (collecting deposits to grant credit) without the backstops that protect banks from depositors’ runs. Facing this anomaly, these authors ‘fixed’ the theory by extending the market failure related to banks to entities showing similar features, building upon the ‘functional perspective’. In that way, SB1, SB2 and SB3 are different versions of the same thing, what Mehrling et al.’s (2013, p. 2) synthesised as ‘money market funding of capital market lending’.

In turn, authors building upon different theoretical frameworks, either put forward their own theoretical overhaul to explain the anomaly (the orthodox dissent explained the GFC as the result of excessive risk-taking facilitated by regulatory arbitrage), or identified no anomaly, as was the case for the traditional orthodoxy and the heterodoxy – nevertheless, the latter described shadow banking as an amplifier of inherent financial instability dynamics. This happened despite of the size of these three new orthodox characterisations being relatively small, as we showed in chapter 1,. In contrast to that, SB4 first emerged as a regulatory category in the wake of the GFC, which was soon incorporated by the literature. This fourth characterisation seems to have contributed

to increase the complexity of the 'shadow banking' definition issue and hampered even more any attempt of consolidation. Hence, we wonder whether 'shadow banking' polysemy can be better understood as a problem of political roots: the dispute between the normative projects of the new orthodoxy, the orthodox dissent represented in the FSB's early view, and the traditional orthodoxy supported by the FSB's late view.

5. Conclusions

In this chapter we have sought to assess whether the characterisation problem of shadow banking identified in chapter 1 can be explained by the use of different theories. We have examined three alternative hypotheses. First, different theories led to different conceptual combinations of 'shadow' and 'banking'. Second, different theories led to different analyses of the GFC, with 'shadow banking' being used as a term for 'cause of the GFC'. Third, some authors identified the GFC as an anomaly and put forward a 'fix' to theory, which they dub 'shadow banking'. To assess these three hypotheses we have examined whether the particular attributes that define each characterisation can be matched with the results of the theoretical analyses. We considered a match between the results of a theoretical approach and the attributes of a characterisation as a sign that that theory may have 'created' that characterisation. To verify this we looked at the 'genealogy' of the publications to identify the origin of each characterisation.

Building upon Lavoie (2014) we have defined a theoretical taxonomy that distinguishes orthodox and heterodox approaches as combinations of different presuppositions on certain issues: i) monetary theory, ii) the outcome of the expansion of financial products, and iii) the relevant nature of financial risks. Hence, we described a 'pure' orthodox approach as that one that presupposes that banks are mere financial intermediaries, the expansion of financial products leads to efficiency gains, and that financial risks are of a micro nature. On the contrary, we described a 'pure' heterodox approach as that one that presupposes that banks are special entities that create money, the expansion of financial products is a source of leverage, and the relevant risks are of a macro

nature. This taxonomy allowed us to identify four approaches in the shadow banking literature, two of them based on a certain mix of orthodox and heterodox presuppositions. On the one hand, the 'new orthodoxy' that breaks with the 'traditional orthodoxy' identifying a systemic risk in non-bank maturity transformation, which can result in dysfunctional financial markets. On the other hand, the 'orthodox dissent' comes closer to the pure heterodox by presupposing that new financial forms can be a dangerous source of leverage if they enable regulatory arbitrage. In turn, they hold a notion of systemic risk based on leverage and not on maturity transformation.

In turn, this theoretical review of the literature led us to reject the first and second hypotheses. Meanwhile, we find support for the third one, with the 'new orthodox' and the 'orthodox dissent' approaches emerging as candidates for the authorship of the four shadow banking characterisation. Finally, we build upon a 'genealogy' of 'shadow banking' to determine the original publications defining each characterisation. Our results showed that three out of four shadow banking characterisation were defined by 'new orthodox' authors, representing different versions of the same thing, a maturity-mismatched structure vulnerable to runs - 'money market funding of capital market lending' (Mehrling et al., 2013). Finally, the fourth characterisation – as potentially risky non-bank finance beyond traditional intermediaries (pension funds and insurance companies) – emerged as a regulatory category defined by the FSB in its early years of sympathy with the 'orthodox dissent'.. These four characterisations were later reinterpreted through the lens of other theories, which consolidated them over alternative ones.

Since the two theoretical roots of the shadow banking characterisations – the 'new orthodoxy' and the FSB's early 'orthodox dissent' approach – embodied different regulatory agendas, we wonder whether 'shadow banking' can be better understood as a regulatory category shaped by competing regulatory projects. Hence, the characterisation problem of 'shadow banking' might have to be reinterpreted as a problem of political nature. If that is the case, the use

of ‘shadow banking’ as an analytical category can become even more misleading in the future.

Part 2. Rethinking ‘shadow banking’ from a heterodox perspective

In part 1, we have critically reviewed the shadow banking literature with the aim of shedding light on the ‘shadow banking’ definition problem. In chapter 1, we identified four main characterisations of ‘shadow banking’ that demarcate different areas of the financial system, partly overlapping, and with different attributes. In turn, in chapter 2, we argued that these characterisations emerged either as a theory fix to explain an anomaly by a certain group of orthodox economists – whom we called the ‘new orthodoxy’ – or as a ‘regulatory perimeter’, i.e. that what needs to be regulated, defined by the international community of regulators through the FSB. Considering that also the new orthodoxy attached a particular political project to its characterisation of ‘shadow banking’, we claimed that ‘shadow banking’ has to be understood, to some extent, as the product of a political clash between two competing projects for the post-2008 regulatory reform.

This observation has important implications for the research agenda on the subject. If ‘shadow banking’ is also a ‘regulatory perimeter’ used for expressing competing political demands, it follows that, once any of them is fulfilled, the term becomes obsolete for this purpose. On the one hand, the group that has succeeded in pushing forward its regulatory agenda will write ‘shadow banking’ off. On the other hand, the vanquished will have to weigh whether or not it is worth contesting the result. Therefore, it might be the case that only those who did not make any political use of the term ‘shadow banking’ will remain in the debate. Heterodox economists are in this group, but it is not clear who else.

Therefore, in part 2, we seek assess the prospects of ‘shadow banking’ within the heterodox research agenda. In chapter 3 we elaborate

on the use of ‘shadow banking’ as the definition of a ‘regulatory perimeter’ by different groups with competing agendas for the post-GFC regulatory reform. For that, we present the political projects of the two competing ‘shadow banking’ regulatory perimeters – the new orthodox’ and the regulators’ one – and we compare them with the remaining ones – the traditional orthodoxy’s, and the heterodox and orthodox dissenters’ one. In turn, in chapter 4, we elaborate on the best strategy for the heterodox shadow banking research and regulatory agenda to cope with the completion of the post-2008 regulatory reform and the vanishing of the term ‘shadow banking’ going along with it.

Chapter 3. ‘Shadow banking’ at the crossroad of the post-2008 competing political projects

1. Introduction

In chapter 2 we noted that each theoretical stream within the shadow banking literature can be associated with a different regulatory project: i) the ‘traditional orthodox’ one builds upon the enhancement of disclosures and transparency, ii) the ‘new orthodoxy’ one pushes for the extension of the state’s backstops to shadow banking entities and markets, while iii) the ‘orthodox dissent’ and the heterodox ones advocate for intrusive regulations to hamper the build-up of leverage in the financial system. Meanwhile, we saw that the FSB’s project evolved from an ambitious programme of reforms, which we identified close to the orthodox dissent, into a more conservative one, aligning with the traditional orthodoxy. As noted above, the new orthodoxy’s and the FSB’s regulatory perimeters are defined by their respective characterisations of shadow banking. The regulatory perimeter of the new orthodoxy’s project is SB1, SB2 and SB3, while the regulatory perimeter of the FSB’s project is SB4. Meanwhile, the regulatory perimeters defined by the traditional orthodoxy, and the heterodox and orthodox dissenters differ from every of the four shadow banking characterisations.

Several authors have previously noticed the use of ‘shadow banking’ for political purposes. However, the scope of their conclusions has been limited by their lack of awareness of the existence of four different ‘shadow bankings’, and not just one, as well as three competing orthodox political projects, and not just one. This has been the case for Kessler and Wilhelm (2013) and Helgadóttir (2016). Both noted the political stake within the orthodox interpretations of shadow banking. However, both assumed that there was a single orthodox interpretation linked to a single regulatory project. For Kessler and Wilhelm (2013) this

was what we called the 'traditional orthodoxy', whereas, for Helgadóttir (2013), it was the 'new orthodoxy'. Alternatively, Bouguelli (2019) showed the radically opposed projects emerging from what we dub the 'new orthodoxy' and the heterodox post-Keynesian approach. However, this analysis misses an 'orthodox dissent' view defending a regulatory project rather close to the heterodox one, and overlooks the existence of SB4, on which the FSB bases its analysis

Meanwhile, other authors have focused on the regulators' political use of shadow banking. Engelen (2017) and Gabor (2018) have associated the shift in the FSB's political project – from an 'orthodox dissent' into a 'traditional orthodox' approach in our terminology – with the changes in its language – notably, the replacement of 'shadow banking' by 'market-based' or 'non-bank finance'. Finally, Fein (2013, p. 201) has argued that bank regulators used a particular characterisation of shadow banking – which we called SB4 – to lay the blame for the GFC on entities that were beyond their jurisdiction.

Building upon the contributions of these authors and our findings in chapter 2, we elaborate on the competing political projects for post-GFC regulatory reform. Section 2 presents the international regulators' one. Section 3 introduces the traditional orthodoxy's one. Section 4 describes the new orthodoxy's one. Section 5 details the heterodox and orthodox dissent's one. Finally, section 6 concludes. The chapter is accompanied by an annex that offers a transversal summary of the regulatory proposals put forward by each political projects by area of regulatory action, which can be used at any moment for facilitating comparisons.

2. The regulators' project: from casting a shadow to promoting the non-bank sector

2.1. SB4 and the 'shadow banking deception'

According to Fein (2013), banking regulators took advantage of the initial vagueness of the term 'shadow banking' to put forward their own political project by defining SB4 as a regulatory perimeter containing any

non-bank intermediary apart from pension funds and insurance companies. Thus, as Fein notices: 'Under the definitions adopted by banking regulators, nearly the entire universe of financial firms not regulated by them is a shadow bank' (ibid, p. 3). Throughout her publication, Fein mostly refers to the Federal Reserve, but she also mentions the FSB and the ESRB. According to her, the regulators' political project had two goals. The first one was to avoid any blame. Regulators sought 'to explain how the crisis arose outside the regulated banking system beyond their powers of perception' (ibid, p. 2) 'as if they had nothing to do with it' (ibid, p. 20). In that way, they concealed the fact that 'prior to the crisis, [they] approved and touted the benefits of activities they now label as shadow banking and paved the way for banking organizations to become leaders in the shadow banking system' (ibid, p. 4). This is what Fein calls 'the shadow banking deception'. The second goal of regulators would have been to use SB4 'as a pretext for exerting regulatory influence and control over nonbank financial entities outside the regulated banking system that had nothing to do with causing the financial crisis' (ibid, p. 2).

Fein's provocative claims, especially the first one, challenge a large part of the shadow banking literature. The idea that regulators 'were not aware of these developments' (Gorton, 2010a, p. 14) or that shadow banking 'activities and entities are meant to operate beyond the reach of regulators' (Guttmann, 2016, p. 127), is quite widespread. This is even the case among those that emphasised banks' active involvement in shadow banking activities, as both Gorton and Guttmann did. However, there is ample evidence that many regulators *promoted and facilitated* banks' regulatory arbitrage (Plantin, 2015; Calomiris and Mason, 2004; Admati et al., 2013; Thiemann, 2018; Fein, 2013). According to Turner (2017, p. 30), regulators did so with the aim of maximising the supply of credit to boost economic growth. Meanwhile, Thiemann (2018) argues that regulators aimed at boosting the profits of their national banking industry facing heightened international competition.

There is a revealing anecdote that connects this issue to the very 'birth' of 'shadow banking' at the Jackson Hole 2007 Symposium – referred to in the introduction of this thesis. The intervention in which

McCaulley used the name ‘shadow banking’ for the first time aimed at showing his support to other participants who had interpreted the early-GFC turmoil as a run, to whom he addressed: 'I really don’t need to do anything except say “amen”' (FRBKC, 2007, p. 485). Professor James Hamilton had previously argued that the August 2007’s problems in global interbank markets were the result of a run triggered by the severe losses of the German bank IKB from its ABCP conduits’ investment in subprime mortgages, as it was revealed by the financial media (ibid, p. 417). Axel Weber, by then the president of the Bundesbank, felt accused by Hamilton’s statement – the Bundesbank was responsible for an important part of the on-site supervision of German banks (Thiemann, 2018, p. 176) – and intervened:

> it was mentioned before by James Hamilton that we had some banking problems occur in Germany. Let me stress this was a symptom coming from U.S. subprime problems. It was not a sign of genuine banking problems originating in Germany. (FRBKC, 2007, p. 481)

In what seems to be an attempt to show the audience his control over the situation, he ended up providing a detailed description of the German banks’ off-balance sheet activities, which leaves no doubts about the Bundesbank’s awareness of them. We may show a short excerpt of it:

> During the Asian crisis, we saw a strong maturity mismatch combined with a currency mismatch in banks’ balance sheets. Currently, we are not seeing major currency mismatches, but there is a maturity mismatch and a high degree of leverage. However, this mismatch is off-balance-sheet rather than on the balance sheet of regulated banks. And this is why it is difficult to call it a banking crisis because it concerns off-balance-sheet engagements. The institutions most affected currently are conduits and structured investment vehicles, which raise funds by issuing short-term commercial papers. Their ability to roll these short-term commercial papers is, at the moment, impaired by the events in the subprime segment of the U.S. housing market. The link to banks exists indirectly through backup credit lines. (ibid)

In light of the above, it is rather insightful that, when the FSB came to deal with shadow banking for the first time, it gave another twist to the

issue by defining shadow banking as 'the system of *credit intermediation* that involves *entities and activities outside the regular banking system*' (emphasis from the original) or, in short, 'non-bank credit intermediation' (FSB, 2011b, p. 2). The definition put forward by the FSB was rather tricky, especially if we take into account that in the very same page of this report, it stated that 'banks often comprise part of the shadow banking credit intermediation chain'. This is not an isolated case, in chapter 1 (section 2) we documented several examples of the very same incoherence among regulators. Indeed, regulators seem to have deliberately used unnecessarily confusing language to induce the association of 'shadow banking' with entities different than banks, while, at the same time, recognising that one of the main problems was a consistent application of banking regulation. This can be clearly appreciated if we analyse in full the following sentence:

> the risks in the shadow banking system can easily spill over into the regular banking system as banks often comprise part of the shadow banking or provide support to shadow banking entities (ibid, pp. 2-3)

It is challenging to imagine how risks can spill over into a bank when they come from the bank itself. The other way of interpreting this statement is that banks were the only part of the SBS that was risk-free, which does not seem really consistent either. It is difficult to imaging such a lack of precision accidentally coming from a bank regulator. When the FSB presented its first specific proposals to address shadow banking, the first four in a list of eleven recommendations concerned banks (FSB, 2012a, pp. 16–20). Moreover, these recommendations mostly addressed the Basel Committee for Banking Supervision (BCBS) – the international bank regulator responsible for the Basel Accords: they consisted of demands for information and clarification on the magnitude of exemptions to consolidation and for exposure limits rules for certain vehicles and subsidiaries across different jurisdictions. All in all, this seems to support Fein's 'shadow banking deception' hypothesis.

The most blatant forms of regulatory arbitrage associated with securitisation, which were allowed before the GFC, had already been tackled when the FSB made its first recommendations. First, we saw in

chapter 2 that orthodox dissenters and heterodox authors criticised that banks were able to reduce their capital requirements by transforming loans into ABS, which were subject to lower risk weights. The risk-weights framework was overhauled to prevent equivalent risk exposures being subject of different capital charges.

Second, banks also used to remove loans from their balance sheets into off-balance sheet vehicles without transferring the risks, obtaining a capital relief. This strategy de facto got forbidden in the EU in 2009 and in the US in 2010. The regulatory capital relief is now subject to proof that the transaction involves a significant risk transfer to the SPV. In the EU, these vehicles were already consolidated for accounting purposes since 2005, when the International Financial Reporting Standards (IFRS) issued by the International Accounting Standards Board (IASB) started to apply to listed companies' consolidated accounts. Nevertheless, most national authorities did not take them into accountfor regulatory purposes (Acharya et al., 2013b; Thiemann, 2018). In that way, prudential consolidation would only become effective with Capital Requirements Regulation (CRR) II in 2009. In the case of the US, accounting consolidation was enforced in 2009, when the Financial Accounting Standards Board (FASB) – the body that sets accounting rules in the US – issued the rules FAS 166 and 167. One year later, it was finally applied for regulatory capital purposes, once the Federal Reserve removed the prudential filter (Thiemann, 2018, pp. 207–208).

Finally, banks also used to backstop securitisation vehicles with credit lines that were not properly accounted for in the context of prudential purposes. This was the case for ABCP conduits that orthodox dissenters pointed to as one of the main causes of the GFC, as we saw in the previous chapter. In that way, capital requirements were increased for liquidity facilities of less than one year to securitisation vehicles by raising their credit conversion factor (the percentage applied to their risk weights to determine the capital charge) from 20% to 50% (in the standard approach).

2.2. Regulators and the non-bank sector

As mentioned above, Fein (2013) made a second claim: bank regulators used their SB4 characterisation of shadow banking to extend their control over the non-bank sector. This thesis seems, however, less convincing. Initially, there seemed to have been a momentum to extend prudential regulation to non-bank intermediaries, we saw that in the previous chapter in the FSB's early stance. However, eventually, the post-GFC regulatory reform focused mostly on banks, while few regulations targeted other financial intermediaries, as noticed by many (Buiter, 2018; Schnabl, 2020; Tarullo, 2019). Indeed, shortly after Fein's (2013) publication regulators signalled that they were shifting away from their attempt to tame non-banks and focusing instead on 'promoting resilient market-based financing' (FSB, 2014a). This formed part of FSB's vision of building an independent funding channel to the banking system, taking up Greenspan's (1999) view of financial markets as 'backup forms of intermediation'. The shift would be more explicit in 2018 when the FSB renamed 'shadow banking' as 'non-bank financial intermediation'.

Regulators justified the change on the basis of naming 'more neutrally' 'what used to be known by the vaguely derogatory name of "shadow banking"' (Signorini, 2018). However, as claimed by Gabor, 2018 (p. 3), among others, the renaming involved 'a deeply normative project' of promoting market-based finance. As the Systemic Risk Council – a private sector body of former high-level officials and financial experts presided by Paul Tucker, the 'first high level regulator to publicly speak about shadow banking' back in 2010 (Engelen, 2017, p. 45) – stressed in a letter to the US Treasury Department:

> The broad thrust of [current policy] is that the focus should be on 'activities' rather than on 'institutions'...That finds expression in [growing use of] the term 'market-based finance',... 'shadow banking' ha[ving] developed a pejorative connotation that impedes balanced analysis. Be that as it may, the label 'market finance' is no less a rhetorical device, but one intended to convey something positive irrespective of substance. To give only one example from the many vulnerabilities that contributed to the 2007 phase of the Great Financial

> Crisis, Structured Investment Vehicles (SIVs) were plainly manifestations of market finance since they funded themselves in the capital markets and invested their resources via the markets. (Quoted in Tucker, 2018, p. 28)

In the previous chapter, we already described this shift in the FSB's stance, in which it drifted away from its initial sympathy with the 'orthodox dissent' approach focusing on leverage, regulatory arbitrage and systemic risk. Nevertheless, the FSB's early view was reflected in some of its initial proposals, which were bold and overarching, involving the extension of prudential regulation to non-banks. That was prominently the case for the initial recommendations for repos, for which the FSB defined a framework of generalised minimum haircuts (initial margins) 'to limit the build-up of excessive leverage and reduce procyclicality in the financial system' (FSB, 2012a, p. 11). These haircuts were designed to apply to every participant and collateral class: the lowest haircuts were assigned to government bonds, followed by corporate securities and, finally, securitised products. However, the final proposal, which was adopted in Basel III, was watered down substantially (Gabor, 2016b, pp. 25–26; Gabor and Vestergaard, 2016b, p. 13). Minimum haircuts were reduced and several cases were exempted: inter-bank transactions, banks' borrowing from non-banks, repos against government securities, and centrally-cleared operations (FSB, 2014b). As a result, most repo transactions are left out of the scope of the requirements, as the FSB, 2014b (pp. 20–21) and the EBA (2019, p. 25) acknowledged in their respective impact assessments. This is mainly due to the fact that government securities account for the bulk of collateral in repo transactions: 90% in Europe, 85% of euro-denominated transactions in the euro area and more than 70% in the US[58]. According to (Gabor, 2018, p. 19), the rules concern only about 20% of the global repo market.

The FSB also put forward a framework to enable the enforcement of prudential regulation on non-banks (FSB, 2013). This framework

58 The figures correspond, respectively, to the ICMA's European Repo Market Survey of April 2022 (p. 20), the ECB's Euro Money Market Study 2020 (p. 7) and the SIFMA's US Repo Market Fact Sheet of February 2022. According to the latter, 67.7% of repos and 79.3% of reverse repos in the billateral market were backed by government securities (p. 6), while in the triparty market the share was 70% (p. 6, 11).

concerns those entities classified within shadow banking by competent national regulators based on the FSB's five-economic-functions approach, with which it came along. Hence, unlike in other proposals, this one not only delegated the decision of whether or not to implement it to national authorities, but also its specific design. The FSB's regulatory framework consisted in a 'policy toolkit', 'a menu of *optional* policies from which authorities can draw, *if necessary* to mitigate financial stability risks' (FSB, 2013, p. 4, emphasis added). Many of the recommendations within the 'toolkit' were quite bold and can be summarised as 'Impose prudential regulatory regimes equivalent to those for banks' (ibid, p. 18). They included the enforcement of minimum capital requirements, restrictions on the composition of the asset side – with requirements to hold a certain share of liquid assets and limits on concentration to particular sectors – or leverage caps.

Both in the EU and the US there was progress in enabling the enforcement of prudential regulation on non-banks. In 2011, the EU passed the Alternative Investment Fund Managers Directive (AIFMD), which concerns those funds which are associated with the riskiest profiles inside the asset management industry, such as hedge funds, private equity funds, funds of funds or real estate funds. The AIFMD grants competent authorities the possibility of enforcing leverage restrictions upon recommendation by the European Securities and Markets Authority (ESMA). However, so far, this tool has never been used. Indeed, according to Schnabl (2020), there seems to be a 'lack of clarity on how it should be applied in practice'. Meanwhile, in the US the Dodd-Frank Act called for the creation of the Financial Stability Oversight Council (FSOC), a federal government organisation entitled define any non-bank as systemically important financial institution (SIFI). Upon indication, a SIFI would then be placed under the supervision of the Fed, which could require them to meet more stringent regulatory standards. However, since 2013, the FSOC has only designated four SIFIs – three of them being insurance companies – none of which remained designated as such by the end of 2018. With the Trump administration the FSOC lost strength (Bulhões Cecilio, 2019, p. 128) and, currently, its future remains unclear, it even threatens to disappear (Tarullo, 2019). On the contrary, in the EU, the SIFI framework

has been confined to banks, in the Capital Requirements Directive IV. Meanwhile, the FSB was also publishing a non-legally binding list of systemically important insurers until 2020. That year, the FSB's list was replaced by the International Association of Insurance Supervisors' (IAIS) 'holistic framework', making the exercise more opaque. The latter only results in an assessment of the insurance sector as a whole, whereas information on an individual basis is only transmitted confidentially to the FSB. The FSB left, however, the door open to reconsider its decision in 2022.

Finally, the FSB's proposal for MMFs, which build upon the IOSCO's (2012) recommendations, included the enforcement of certain liquidity requirements, and the obligation for those MMFs offering stable share prices – i.e. 'constant net asset value' (CNAV) – to invest the bulk of their money in government securities[59]. Nevertheless, apart from that, recommendations followed a micro-based market-friendly approach: enhancing transparency through more information disclosure, and the imposition of mark-to-market accounting ('floating net asset value') to MMFs investing in private securities. In addition, MMFs' managers were enabled to make use of certain tools to withstand runs under conditions of stress – 'liquidity fees' (penalties to investors withdrawing their money) and 'redemption gates' (temporary suspension of shares' convertibility)[60]. However, according to Thiemann, 2018 (p. 216), the introduction of safety gates has just 'elevated industry practices to general rules'. Still, there has been an important deviation from the reform's spirit of promoting market discipline and, in particular, from IOSCO's initial recommendation that the '[a]mortised cost method should only be used in limited circumstances' (FSB, 2012b, p. 12). The EU created a new legal category of MMF that now dominates the European market by large: low-volatility NAV (LVNAV) MMFs are enabled to invest in private

59 Both in the US, with the SEC's 2014 reform of rule 2a-7, and in the EU, with the 2018 MMF Regulation, CNAV MMFs are obliged to invest at least 99.5% of their assets in government securities, cash or certain repos collateralised by either cash or government securities.

60 Redemption gates limit temporarily shares convertibility, while liquidity fees impose an extra cost on investors willing to redeem their shares. In the US, these can be imposed discretionarily by non-government or 'prime' MMFs, and for public debt CNAV and LVNAV MMFs in the EU, where they become mandatory in case that the share of assets maturing in one week falls below 10%.

assets while offering a stable NAV as far as the market value of their assets does not fluctuate beyond 20 basis points.

All in all, following the FSB (2020), the BIS (Avalos and Xia, 2021) and the ECB (Capotă et al., 2021; Schnabl, 2020), these measures have proven to be insufficient for mitigating runs during the Covid-19 financial turmoil on both sides of the Atlantic – notably on non-government MMFs, which suffered large outflows. Moreover, the new regulation seems to have been, to some extent, counterproductive. In Europe, the fact that the use of 'liquidity fees' and 'redemption gates' was linked to certain liquidity thresholds may have, indeed, provided an incentive to investors to withdraw their funds before that could happen. The same seems to have happened with the threshold on asset value fluctuation for LVNAV MMFs that allows them to maintain a stable NAV (Capotă et al., 2021). In turn, as noted by (Schnabl, 2020), 'if applied systematically in a stress scenario, such measures could even further limit the ability of firms and other financial institutions to raise liquidity'. As Minsky would say, cash flows are interdependent, hence, preventing runs by denying MMFs' depositors access their funds when they most need them just shifts the problem somewhere else.

3. The 'traditional orthodoxy' project: maintain the status quo

The political project defended by the 'traditional' orthodox approach, which was lately endorsed by the FSB, is one of maintaining the status quo: applying micro-based market-friendly regulation to address information asymmetries problems and foster market discipline. This is the project that Kessler and Wilhelm (2013) identified for the whole orthodoxy, but that must be confined to the subsector that fully stuck to the orthodox paradigm – unlike the 'new orthodoxy' and 'orthodox dissent'. With this caveat, Kessler and Wilhelm (2013 pp. 260-261) offer a good synthesis of this political project:

> the shadow banking system is framed, understood and analysed in terms of agency problems, government failures or information problems that derive from

> economic theory in general and asymmetric information models in particular. This perpetuates the efficient market hypothesis and it frames the current crisis as resulting from 'failures' in the past. It follows that this perspective is positive about the new possibilities that the shadow banking system generates in terms of financial innovation, the efficient dispersion of risks and new forms of liquidity transformations.

The same principles can be found in the most orthodox part of the FSB's agenda, which has been defended more clearly from 2014 onwards. In the shadow banking literature, the regulatory proposals of scholars building upon the traditional orthodox theory concerned only securitisation, as we saw in the previous chapter. These recommendations aim at addressing information asymmetry problems in the originate-to-distribute model, i.e. securitisation *with* risk transfer – in opposition to the off-balance sheet securitisation *without* risk transfer denounced by orthodox dissenters. The proposals, hence consist in i) enhancing transparency through disclosure requirements and ii) realigning originators' incentives by imposing minimum risk retention condition over securitised pools of loan – the so called 'skin-in-the-game' rules (Berndt and Gupta, 2009; Chemla and Hennessy, 2014). This approach informed the IOSCO's recommendations on securitisation with risk transfer, which were endorsed by the FSB proposals and, eventually, implemented (FSB, 2012b, pp. 10–11, 2011a, p. 22).

On the one hand, the Basel Committee and the Board of IOSCO put forward a securitisation labelling system project with the aim of addressing complexity and opacity issues and 'assist in the financial industry's development of simple and transparent securitisation structures' (BCBS and IOSCO, 2014, p. 3, 2015). The framework, dubbed as 'simple, transparent and comparable securitisations', established certain criteria in terms of disclosure, reporting, risk retention and credit quality that securitisation should meet to qualify for the label. In turn, these securitisations would benefit from preferential regulatory capital treatment (BCBS, 2016). The EU implemented in 2019 a system within these lines, the 'simple, transparent and standardised' securitisation framework, in which compliance with the criteria is verified by the

competent national authorities[61]. Nevertheless, we may note that an amendment was introduced in 2021 to add more complex deals to the framework: on-balance sheet synthetic securitisations in which the transfer of the risks is not done through a true sale of the loans, but by contracting derivative instruments.

On the other hand, both US and European originators are now forced to retain a 5% stake in the loans they securitise (the so-called 'skin in the game'), with the aim of ensuring that borrowers' screening and monitoring are conducted properly. Nevertheless, in the US, some loan categories were exempted, notably 'qualifying residential mortgages', which leave out the riskiest ones – such as interest-only, no-documentation mortgages and high debt-to-income ratios – but still include those with no initial down-payment. Moreover, the risk retention requirement was rolled back for collateralised loan obligations (CLOs) – securities backed by low-credit rating corporate loans or private equity firms' loans for leveraged buyouts – in 2018, following a final court decision after litigation of the industry (Renninson and Platt, 2018).

Meanwhile, regulatory reforms in other areas also followed the spirit of the traditional orthodoxy's project. This was the case for a large part of the MMF reform. Although we saw above that some restrictions were implemented, most of the changes aimed at enhancing market discipline by imposing disclosure requirements and prioritising floating net asset value (i.e. mark-to-market accounting). Similarly, we may note that while the FSB passed the regulatory initiative regarding the broad non-bank sector on to national authorities, it urged them to 'enhance disclosure by other shadow banking entities as necessary so as to help market participants understand the extent of shadow banking risks posed by such entities' (FSB, 2013, p. 13). Finally, the traditional orthodox approach was also present in the FSB's repo reform, which included measures to improve public information through enhanced disclosure and reporting, and surveys (FSB, 2013).

61 Regulation (EU) 2017/2401.

4. The ‘new orthodoxy’ project: backstop shadow banking

Unlike Kessler and Wilhelm (2013), Helgadóttir (2016, pp. 13–14) identified orthodox authors with the ‘new orthodoxy’ project of backstopping shadow banking (SB1, SB2 and SB3). Bouguelli (2019) has also analysed this regulatory project, which he associates with what he calls the ‘mainstream view’ of shadow banking – the one held by authors building upon orthodox monetary theory. As we showed in chapter 2, only the ‘new orthodox’ sector endorsed the backstop approach towards shadow banking, which breaks with the ‘traditional orthodoxy’ arguing that there is a case of market failure in non-banks’ maturity transformation. Thus, the new orthodoxy considers that the GFC resulted from a run on these intermediaries, which, unlike banks, lacked access to the state’s safety net. According to Helgadóttir (2016), for (‘new’) orthodox economists, shadow banking is an evolutionary adaptation of the financial system to the new liberalised and globalised environment. This new system faces, however, the same panic problems as the old banking one and, hence, needs a ‘logical and necessary institutional adaptation’ of the state’s safety net (ibid, p. 4). Therefore, she is referring to the ‘new orthodoxy’ when she claims that:

> [the shadow banking] literature appeals to economic history to make the case for the extension of safety nets to shadow banks. It suggests that just as the Federal Reserve emerged from the exogenous shock of the collapse of the call loan market in 1913, and the Federal Deposit Insurance Corporation (FDIC) was a response to the panic that led to the Great Crash of 1929, the systemic crisis of shadow banking in 2008 was naturally followed by the extension of safety nets to this new and systemically important part of the financial sector. (ibid, p. 13)

Although this stance is far from being a consensus among orthodox economists, we showed in the previous chapter that it was the one that shaped the subject initially, putting forward three out of the four main shadow banking characterisations (SB1, SB2 and SB3). In addition, Helgadóttir rightly notices that the Federal Reserve did de facto extend their safety net to entities and markets typically associated with shadow

banking during the GFC, while the Bank of England assumed the role of dealer of last resort. This came 'without a standing account relationship with the central bank' in the form of pertinent regulation (ibid, p. 11).

Helgádottir (2016, p. 4) also notes that the new orthodoxy's interpretation can help to explain 'the preference for reformist over interventionist policies regarding shadow banking'. The same point is made by Bouguelli (2019), who argues that this sector of the orthodoxy played a crucial role in providing a theoretical base to describe shadow banking as a solution instead of as a problem – the competing view put forward by the 'orthodox dissent'. Against this view, new orthodox authors argued 'that the shadow banking system conducts credit intermediation and that it produces deposit substitutes to meet investors' demand for safe assets', which had 'far-reaching consequences' (ibid, pp. 21-22):

> That reframing of the issue plays a crucial role in the regulatory approach adopted by shadow banking theorists. Since shadow banking is seen as a solution, it cannot be held directly responsible for the crisis. Instead, it is said that we experienced a global financial crisis because this solution was incomplete and had some flaws. Consequently, what is needed is to fix what failed with the crisis in order to make this solution viable. (ibid, p. 9)

The new orthodox political project defends extending the state's safety net beyond banks. We find two variants. The first one consists in bringing the pertinent non-banks under the protection of the central bank and the jurisdiction of bank regulators. This is the proposition of Gorton and Metrick (2010), also suggested by Pozsar et al. (2010, p. 71). Gorton an Metrick's (2010) proposal, which builds upon the reform programme put forward by the Group of Thirty (2009), concerns MMFs, and ABCP conduits, which would be converted into new categories of chartered banks or 'special-purpose banks'. MMFs wanting to continue offering bank-like convertibility at part – i.e. withdrawals at demand and a stable NAV – would become 'narrow saving banks' with 'charters, capital requirements, and regulatory examinations' (Gorton and Metrick, 2010, p. 291). Any other MMF would have to use mark-to-market accounting and offer a floating NAV. With these measures, Gorton and

Metrick (2010, p. 270) do not only only seek to prevent runs on MMFs, but to properly price what they consider to be an 'implicit, cost-free government backing' that gives them 'a cost advantage over insured deposits'. According to them, 'In the crisis, the government made good on the implicit promise by explicitly guaranteeing MMMFs, and in the wake of that move it may not be credible for the government to commit to any other strategy' (ibid).

In turn, any entity funding ABS with short-term instruments could no longer operate without holding a 'narrow funding bank' charter. Only these entities would then be allowed to purchase ABS, acting as intermediaries between securitisers and final investors in products ultimately backed by securitised loans. These entities 'could buy only ABS and other low-risk securities and issue liabilities', but '[t]hey would not be allowed to take deposits, make loans, engage in proprietary trading, or trade derivatives' (ibid, p. 286). Meanwhile, the regulator could introduce requirements regarding the composition and quality of these banks' assets. These two classes of special-purpose banks would be allowed to borrow through repos – offer repo 'deposits' – but only using a set of eligible securities defined by the regulators collateral and subject to minimum haircuts. Meanwhile, any other entity could borrow through repos backed by any type of collateral, but would be subject to higher haircuts and limits on maximum positions, giving an advantage to regulated banks (ibid, p. 288). Hence, repos with a 'monetary function' would be distinguished from the others.

Gorton and Metrick's (2010) proposal has not made its way into the post-2008 reform. No restriction has been imposed on who can or who cannot invest in ABS and non-bank purchasers are not subject to capital requirements. However, it seems that, so far, the type of short-term funded ABS business they targeted at, has not recovered since the GFC. Meanwhile, there are MMFs operating with a constant NAV without being subject to capital requirements, although they have to abide by certain portfolio requirements. Moreover, the implicit backstop continues being an issue. During the Covid-19's financial turmoil, both the ECB and the Fed provided support to MMFs. The ECB intervened in the commercial paper market, in which MMFs are major investors, helping to ease their

liquidity problems, while the Fed lent to eligible institutions to purchase high-quality assets from MMFs under the MMMF Liquidity Facility.

The new orthodoxy's alternative to extending central banks' backstop to certain entities is to backstop markets. This is the 'dealer of last resort' proposal defended by Mehrling et al. (2013) and Pozsar, (2014, pp. 33, 64, 2015, pp. 26–27, 30), which is based on Mehrling (2011). Basically, the idea behind it is that instead of preventing distressed sales and dysfunctional markets by backstopping the liability-side, the central bank should backstop the centre of the 'market-based system' – the market in itself – providing liquidity by 'placing bounds on price fluctuation' (Mehrling et al., 2013, p. 9). These authors argue that the functioning of this system, unlike the traditional banking system, depends on smooth pricing, which is ensured by the market liquidity provided by dealers. Hence, what is needed is to ensure that this function is fulfilled at all times, which the central bank can ensure by acting as dealer of last resort. Nevertheless, unlike Gorton and Metrick (2010), authors backing this alternative solution do not make clear whether or not it should be accompanied by additional regulation to offset potential moral hazard problems.

The dealer-of-last-resort function has been more or less explicitly assumed by the largest central banks. So far, only the Bank of England (2015) has endorsed it officially. However, since the GFC, central banks have actively and widely intervened in financial markets to support several markets. The last large intervention coincided with the Covid-19 crisis. The Fed backstopped the corporate debt market through the Primary and Secondary Market Corporate Credit Facility. In the same way, the ECB implemented the Pandemic Emergency Purchase Programme and expanded its already ongoing Corporate Sector Purchase Programme through which it acquired government debt, banks' covered bonds, corporate bonds and commercial paper both in secondary and primary markets (in the case of government securities only in the secondary market).

Nevertheless, we may note that these interventions are not a sign of success of the 'new orthodox' ideas. Moments of crisis are prone to lead

to a decoupling of theory and economic policy: in the urgency of acting, the policymaker becomes pragmatic (Ponsot and Rocca, 2013). In that way, the central banks' asset purchase programmes have typically been depicted as temporary and exceptional measures using terms such as 'unconventional policies' (ibid). Moreover, it is worth noting that, as Hauser (2021, p. 9) has outlined, through such actions, central banks revealed themselves rather as '"buyers of last resort" than as "market-makers of last resort"'. With few exceptions, the interventions have been unidirectional and assets were held with no defined intention to sell them. This is rather different from Mehrling et al.'s (2013, p. 9) view of the dealer of last resort as the provider of an 'outside spread', i.e. *two-way* prices putting a ceiling and a floor to the market price. Moreover, without pertinent regulation, such a backstop raises the type of moral hazard concerns about which Gabor (2016) and Gabor and Vestergaard (2016) warned. In the UK, these concerns have revived the debate on how the Bank of England should run the dealer of last resort function since its institutionalisation was not accompanied by a framework defining the terms under which it has to be implemented (Hauser, 2021). We may also note that the FSB has spoken against extending central banks' backstops to non-banks and expressed its concerns about the potential distortions introduced by central banks' direct interventions in financial markets (FSB, 2020c, p. 9).

5. The heterodox and orthodox dissenters' project: de-leverage and simplify finance

Although orthodox dissenters and heterodox authors within the shadow banking literature show some differences – for example, the former tend to consider the originate-to-distribute model 'valuable' (Acharya et al., 2010, p. 250), while the latter tend to call for banning it (Lavoie, 2012) – overall, they share a common view on the regulatory project. Both advocate for a profound and overarching regulatory reform to contain the financial instability problems that led to the GFC. Contrary to the 'new orthodoxy' proposals aiming at preventing runs, orthodox dissenters and heterodox economists put the focus on constraining

leverage and reducing the degree of complexity of modern financial systems.

5.1. Banks' off-balance sheet risk-taking and securitisation

Regarding banks' activities, the 'orthodox dissent' has been especially active in the analysis of regulatory arbitrage questions. As we noted in chapter 2, they put forward one of the main competing interpretations of the GFC. Their view established that the problem was that banks' abused the state's backstops, using securitisation vehicles to engage in off-balance risk-taking. Consequently, one of their main demands is to ensure that any off-balance sheet vehicle that does not transfer all the risks to investors, is consolidated by its sponsor bank for regulatory purposes (Acharya et al., 2010; Bengtsson, 2013; FSB, 2011a; Thiemann, 2018). This applies also to any vehicle or subsidiary either implicitly being backstopped or being susceptible to it (Acharya et al., 2011, p. 24).

We saw above that regulatory reforms did address the most common forms of pre-2008 regulatory arbitrage associated to securitisation. However, there still remain many other opportunities for banks to engage in regulatory arbitrage. According to Thiemann, 2018 (p. 208), by 2018, some jurisdictions such as Germany, France and Netherlands, still exempted some classes of vehicles, which, following accounting rules, would have to be consolidated, from regulatory capital calculations. In addition, European regulators have also exempted multiseller ABCP conduits – which issue short-term debt ('commercial paper') backed by commercial loans – with the aim of enabling cheaper credit for small and medium-sized companies (ibid).

In addition, banks can still engage in off-balance sheet regulatory arbitrage if their backstop to the non-consolidated entity is not explicit, which is known as 'reputational risk' or 'step-in risk'. Although the FSB (2012b, p. 19) already called for addressing this problem in its first regulatory recommendations, the BCBS only presented an overarching framework by 2017. In the EU, these guidelines came into force in May

2022 (Delegated Regulation (EU) 2022/676). Nevertheless, it is not clear whether they will have any relevant effect. In practice, consolidation depends upon banks' self-assessments, while banks are obliged to 'provide the competent authority, *upon request*, with all the necessary information' (ibid, article 5.2, emphasis added), enabling authorities to require consolidation if they deemed it opportune (ibid, article 5.3). Therefore, this approach can potentially foster regulatory competition between jurisdictions. Following Thiemann (2018, p. 223): 'placing the assessment of step-in-risks with banks, which then has to be challenged by regulators, puts not only a further argumentative burden on regulators but also forces them to weight the international effects of their action'. Nevertheless, at least within the EU, this may not be the case, since large banks are now under the supervision of the ECB in collaboration with national authorities due to the creation of the Single Supervision Mechanism in 2016 (ibid, p. 235). In any case, we will have to wait to properly assess its effectiveness in curbing off-balance sheet risk-taking.

In 2017, the EU's MMF Regulation had already attempted to address the problem of implicit backstops in this industry. MMFs are now prohibited from receiving any type of external support[62], although, as noted by staff from the Bank of Italy, '[i]nteraction between MMFs and external parties is not entirely forbidden, however' (Branzoli et al., 2021). Moreover, in the context of the Covid-19 crisis, the ESMA (2020) issued a clarification regarding this ban, providing a more lenient interpretation. On one hand, asset purchases 'executed at arms' length conditions' are left aside from the rule. On the other hand, determining if any other action constitutes an act of support is to be assessed on the basis of whether 'third parties execute transactions solely with the MMFs to which they are affiliated'. This is to be verified ultimately by the competent national financial markets authority. The industry expressed its satisfaction with the clarification, but demanded that it was explicitly introduced in the regulation, to which the ESMA (2022, pp. 8, 32) agreed. Thus, we may expect this to happen in the following months.

Meanwhile, as we saw in the previous chapter, post-Keynesians focused on the originate-to-distribute model, i.e. securitisation with risk

62 Article 35 Regulation (EU) 2017/1131.

transfer. On the one hand, they warned about the negative effects that market liquidity cycles may have on underwriting standards, which may worsen credit cycle dynamics. On the other hand, they argued that this form of securitisation also contributes to financial fragility by increasing the aggregate leverage in the financial system. This results from the fact that loans are transferred from banks' balance sheets to entities that are not subject to minimum capital requirements. Consequently, many post-Keynesians go further in their regulatory proposals than orthodox dissents, and plead for banning securitisation completely, so that banks have to go back to the traditional relationship lending model (Lavoie, 2012; Unger, 2016; Wray, 2016). This possibility was never envisaged by regulators, who, on the contrary, expressed their commitment to revitalising securitisation (FSB, 2015, p. 9). However, some regulations have considerably narrowed the possibilities for more complex forms of securitisation – the issuance of securitised bonds backed by other securitisations, such as CDOs, or ABCP on ABS, the so-called 're-securitisation' – as it has been the case for the EU's Securitisation Regulation, passed in 2019.

5.2. Functional separation of banks

Both orthodox dissenters and heterodox economists have also advocated enforcing a Glass-Steagall-like functional separation of universal banks' activities to isolate their traditional banking from their market business. These authors argue that this would be a more effective way of limiting banks' opportunities for regulatory arbitrage (Acharya et al., 2010, p. 313; Scialom, 2019, p. 157,162) and constraining banks' risk taking (Bouguelli, 2019, p. 20). In the EU, this approach was backed by the Liikanen et al. (2012, p. 89) Report, which held that one of the main problems of European banks was '[e]xcessive risk-taking fuelled by intra-group subsidies'. The Report was followed by an attempt to enforce some functional separation by compelling banks with a volume of trading above a certain threshold to run their proprietary trading business in a different legal entity. Nevertheless, the draft prepared by the European Commission was finally dropped in 2017, although France and Germany adopted a watered-down version (Alexander, 2015). On paper, France has

prohibited banks from lending directly to 'alternative investment funds', a regulatory category meant to encompass the riskiest types of collective investments, such as hedge funds; only the trading subsidiary is allowed to do so (Giraud and Scialom, 2013, p. 8). Nevertheless, the restriction has little practical relevance since collateralised loans are exempted and they account for the bulk of banks' lending to these institutions (ibid, p. 13). In addition, neither in France nor in Germany, functional separation was accompanied by any prohibition of banks to lend to, buy assets from, or conduct any other transaction with their trading affiliates, provided that it is done at arms' length. Hence, the only restriction is given by the EU, which sets a limit for the outstanding exposure to a single entity or group of entities (including subsidiaries) at 25% of banks' capital.

Also in the US, some movements were made regarding the functional separation of banks' commercial and trading activities. The Dodd-Frank Act's 'Volcker rule' prohibited banking groups from engaging in proprietary trading inside the US as well as operating hedge funds internally or investing in external hedge funds and private equity funds (Avraham et al., 2012). However, since market-making activities and hedging and liquidity management operations were excluded – activities that only differ from proprietary trading in aim and not in form – it became complicated to determine the scope and effectiveness of the prohibition. Initially, a presumption of guilty was applied and banks had to prove that any position they held for less than 60 days was not for proprietary trading purposes (Bulhões Cecilio, 2019, p. 156). However, some amendments were done in mid-2019, applying from 2020, easing the restrictions. The presumption of guilt was replaced by one of innocence and the liquidity management exception was extended to cover certain derivatives. Meanwhile, banks' transactions with non-affiliate subsidiaries had been limited. The Fed made use of the Dodd-Frank Act to set a cap of 25% of so-called 'Tier 1' capital – the core form of banks' capital, made up of shareholders' equity and retained earning – on aggregate net credit exposure to a single counterparty for banking groups starting from 2020 – for global systemic banks the limit is 15%.

In any case, similarly to the EU, in the US there has been no significant change regarding restrictions on banks' transactions with

their subsidiaries. Outstanding transactions with a single affiliate are limited to 10% of banks' capital (including provision for loan losses), while the aggregate amount with all its affiliates cannot exceed 20%, although with several exemptions[63]. Assets purchased from affiliates are considered as outstanding transaction as long as they are held by the bank, so credit has to be collateralised at 100-130%. Nevertheless, the Fed had the authority to grant waivers and used it quite frequently (Wilmarth Jr, 2020, chap. 8). This has been the case for most major events since 2000: 9/11, the GFC and, more recently, the Covid-19 crisis. In case of the Covid-19 crisis, the Fed temporarily exempted banks from the regulatory limits for purchases of investment grade securities from their affiliate MMFs and broker-dealers. Thus, although the Dodd-Frank Act limited the Fed's capacity to authorise exemptions, it did not abolish it (Omarova, 2011, pp. 1766–68). Therefore, banks' capacity to extend their backstop and money creation privileges to their market operations has not been significantly severed.

5.3. Macroprudential regulation

Orthodox dissenters and heterodox authors agree that banks may take into account their own individual risks but they will never internalise systemic risk. Therefore, both stress the need to go beyond the traditional orthodox micro-based approach and to enforce macroprudential regulation. In that vein, Acharya and Schnabl (2010) call for increasing regulatory capital requirements and deposit insurance fees in line with systemic risk externalities. Meanwhile, many post-Keynesians consider that the problem lies in the last decades' liberalisation of the banking sector. This freed banks' money creation from any type of qualitative or quantitative control beyond capital requirements. Therefore, they argue that raising capital requirements will not be enough to prevent harmful credit boom-bust cycles from happening in the future (Lavoie, 2019). The reason is that banks can easily increase their capital by i) increasing interest rate spreads, ii) distributing less profits or even, iii) 'create' their own capital by financing investors' acquisition of new shares[64]. It follows

63 Section 23A of the Federal Reserve Act. The Dodd-Frank Act just added securities lending and borrowing as well as derivatives to the list of transactions concerned by the restrictions (Federal Rerserve, 2021).

64 See Werner (2016, p. 374) for some examples of the latter.

that direct credit controls in the form of caps on leverage or on aggregate lending emerge as more effective measures to curb credit booms (Lavoie, 2012, p. 230; Unger, 2016; Wray, 2016, p. 185).

Some of these claims have been, to some extent, included in Basel III, which was finalised in 2010. The new rules have increased significantly the regulatory demands on the banking sector. Regulatory capital and liquidity buffers have been raised – more for the largest banks, in an attempt to address too-big-to-fail moral hazard concerns – and a countercyclical component of up to 2.5% has been introduced, which national authorities can activate if deemed necessary. In addition, an absolute leverage cap has been enforced, which does not depend on the risk-weighted-asset framework that determines capital charges. However, it has not been strictly applied. On the one hand, European banks enjoy certain leeway to go above the ceiling[65]. On the other hand, during the first important crisis since its implementation – the Covid-19 crisis – regulators temporarily exempted certain items from being considered for the estimation of the leverage ratio – reserves in the EU and, in the US, also Treasury securities.

Nevertheless, both orthodox dissenters and heterodox economists consider that macroprudential regulation should have an overarching scope and apply also to non-banks. Acharya et al. (2010, p. 312) argue that 'systemic financial intermediaries' benefit from underpriced explicit or implicit government guarantees that encourages them to engage in excessive risk-taking resulting in systemic risk[66]. Hence, they should be charged with fees that price appropriately these guarantees and that, additionally, compensate for the externalities of the systemic risk they contribute to create. Meanwhile, Aglietta and Scialom (2010, pp. 34–35) argue that to curb systemic risk 'The perimeter of banks subject to the

65 As highlighted by the BIS (2018) there remain certain flaws in the design of the leverage caps, specially in the EU, where banks can in practice exceed the maximum leverage ratio. Contrary to the US, banks settled in the EU are demanded to abide by the leverage ratio on an end-of-quarter basis, fostering banks to engage in 'window dressing'. In addition, according to Bucalossi and Scalia (2016, p. 26), '[b]esides reporting frequency, other elements of the LR design adopted by the European banking authorities, such as the netting of repo trades with central counterparties, the regulatory scope of consolidation, and the deduction of cash margins on derivatives transactions, all facilitate the achievement of larger LRs by euro-area banks'.

66 Acharya et al. (2010, p. 250) refer to 'large, complex financial institutions (LCFIs) — the universal banks and financial conglomerates, investment banks, insurance companies, and (in rare cases) even hedge funds — that today dominate the financial industry'.

macro approach [countercyclical capital requirements and liquidity management tools] should be enlarged to encompass all systematically important institutions, be they in the regular or in the shadow banking system [non-banks]'. Hanson et al. (2011, pp. 13-14, 25) go further and advocate for the implementation of macroprudential regulations, not only for 'systemically significant institutions' but to the whole financial system. These regulations should 'impose similar capital standards on a given type of credit exposure irrespective of who winds up ultimately holding the exposure—be it a bank, broker-dealer, hedge fund, or special purpose vehicle' (ibid, pp. 15-16). Thus, they consider that a good starting point would be to enforce minimum haircuts on repos collateralised by ABS. We will see below further proposals referring to minimum haircuts. In the same vein, according to Wray (2015, p. 189): 'it is not sufficient to put in place effective bank examinations—microprudential regulation—but equally essential is macroprudential regulation of the system as a whole'. Wray (2016) places special emphasis on non-banks acting as hedging counterparts in derivative contracts. We may note that in the last few years, some high-level European central bankers have pointed at the lack of a macroprudential framework for non-banks, making claims similar to these authors' (De Guindos, 2019; Makhlouf, 2021).

5.4. Repos

Another key point in both orthodox dissenters' and heterodox authors' proposals is the regulation of repos with the aim of constraining its use for leveraging. The enforcement of minimum repo haircuts is a common demand of these authors, if not for every asset class (Gabor, 2016a), at least for ABS collateral (Hanson et al., 2011; Stein, 2010). Following Stein (2010, p. 49), minimum haircuts would 'impose a similar capital standards on a given type of credit exposure, irrespective of whether it is a bank, a broker-dealer, a hedge fund, or any other entity that ends up holding the exposure'.

Gabor and Vestergaard (2016) envisage the adoption of the aforementioned dealer-of-last-resort proposal to backstop market liquidity, although only if accompanied by a new 'social contract' between the state and the financial sector, 'each surrendering some self-interest

in the pursuit of arrangements that benefit all parties overall' (ibid, p. 31). Backstopped markets would be delimited, defining the 'safe asset universe' (ibid, p. 28), typically encompassing, at least, sovereign securities[67]. At the same time, the financial sector would have to be subject to new regulation. However, due to the potential problems to push forward effective regulation to mitigate moral hazard problems, Gabor (2016b) argues against the dealer-of-last-resort facility. Alternatively, Sissoko (2014, p. 4) sees no justification for such a backstop, questioning repos' economic value: they provide little funding to the real economy but contribute to financial instability. Sissoko (2020, p. 26) is, indeed, especially critical of repos and advocates limiting severely their use and even banning them completely from interbank markets. According to Sissoko (2017), this would in turn reduce the possibilities of banks to fuel repo credit-financed asset bubbles.

As we saw above, the final reform has remained far from the claims of these authors. Following Nijs (2020, p. 198): 'When observing post-crisis regulation, a minor impact has been realized directly on the functioning of the repo market. In essence, direct reforms of the repo market have been minimal and were limited to heightened transparency requirements in repo contracts, and leverage restrictions placed on certain bilateral repo contracts'. Similarly, the vice-president of the ECB at that time claimed that 'the FSB recommendations to introduce minimum initial levels are [...] quite narrow' and '[v]ery little has been done to prevent the expansion and misuse of [repos] in any future euphoric episode' (Constâncio, 2017a). Some argue that, indeed, the most constraining measures on repos were indirect and came from the new banking regulation (ibid). In that way, leverage caps would have made repo business more expensive for dealer banks, while liquidity requirements have reduced the amount of available collateral (Cullen, 2018). Finally, we may note that the new repo rules were initially meant to be implemented before the end of 2017 but, after being re-scheduled three

67 They note, however, that the use of government securities as base repo collateral may involve an important political problem: ensuring stability of government securities requires central banks intervening in these markets, but this reduces the outstanding stock of securities available for private agents, what may foster the production of risky private collateral. As a result, fiscal policy may be also required to stabilise financial markets. Meanwhile, central banks have 'to judge carefully how to balance direct support and potential shortages' (Gabor and Vestergaard, 2016a, p. 30).

times, the deadline is currently set for January 2023 in the case of bank-to-non-bank transactions and January 2025 for non-bank-to-non-bank transactions. Meanwhile, the regulations already implemented only consist of enforcing some reporting and disclosure requirements.

6. Conclusions

In this chapter we have examined the political use of the term 'shadow banking' by competing political projects as a category defining a 'regulatory perimeter' for the post-GFC regulatory reform. We argued that this was especially the case among those two groups who defined the four main shadow banking characterisations: the 'new orthodoxy' (SB1, SB2 and SB3) and the international community of regulators (SB4). We added to the political projects of these two groups those of the 'traditional orthodoxy', and the heterodox and orthodox dissent. We reason that the examination of the regulatory dimension of 'shadow banking' is crucial for determining the prospects of the literature in terms of both research and regulatory agenda. In particular, we claimed that the fulfilment of any demand made by these competing projects renders the term 'shadow banking' obsolete for political purposes. To the extent that 'shadow banking' exists as a regulatory and not only a descriptive category, we contend that its future is conditioned by the results of this political clash.

Building upon previous contributions that have noticeds the use of 'shadow banking' for political purposes (Gabor, 2018; Engelen, 2017; Bouguelli, 2019; Fein, 2013; Kessler and Wilhelm, 2013; Helgadóttir, 2016) and our findings in chapter 2, we have elaborated on these competing regulatory projects. For each of them we have presented the main objective of its promoters, the specific regulatory proposals, and the degree to which their demands have been fulfilled by the reforms eventually implemented. In short, the regulators' projects focused on non-banks, the new orthodoxy advocated extending central bank backstops to new entities and markets, the traditional orthodoxy defended the status quo of market-friendly micro-based regulation, whereas heterodox authors and orthodox dissenters plead for a profound

reform to reduce the financial system's complexity and constrain leverage strategies.

Our findings can be summarised as follows. First, regulators used 'shadow banking' politically to channel attention away from their responsibility within the GFC, blaming financial entities beyond their jurisdiction. Consistently, their 'shadow banking' regulatory perimeter (SB4) encompassed almost every non-bank entity, but left banks aside. Nevertheless, no radical reform ended up being enforced on SB4, which was later re-baptised as efficient 'non-bank financial intermediation'. Second, the traditional orthodoxy fulfilled its only regulatory demand by informing the reform of the orginate-to-distribute model. In addition, regulations concerning other areas followed the traditional orthodoxy's market-friendly spirit. Third, although the new orthodoxy failed at pushing forward its regulatory demands, central banks have endorsed, at least implicitly, an enlarged lender-of-last-resort function, backstopping new entities (notably MMFs and CCPs) and markets. Finally, the demands of the orthodox dissent and heterodox economists are the only ones that have remained largely unfulfilled, although there has been some minor advances in the direction of their claims. Therefore, we conclude claiming that orthodox dissenters and, especially, heterodox economists have to rethink their shadow banking research agendas. There is a risk of finding themselves debating on something that most of the orthodox scholar and the regulatory community may consider no longer existent.

Annex – A summary of the post-GFC political projects and final reforms by area of action

This annex presents a summary of the proposals put forward by the different regulatory projects we identified in the shadow banking literature and the final reforms implemented in the wake of the GFC. We organise them by area of regulation for better allow comparison between these alternative regulatory projects. We present them using the five main areas of regulatory action set by the FSB as a guideline: i) banks' activities, ii) securitisation, iii) securities financing, iv) MMFs and v) other non-bank entities

Table 15 offers a summary of the banking reform. In broad lines, the regulatory changes have followed the propositions coming from the international regulators. However, from all the problems identified by the latter in the shadow banking literature, only two have been effectively tackled: the increase of micro-prudential capital requirements and the avoidance of capital relief when loans are securitised but retaining off-balance sheet exposure. Although important advances have been made in preventing off-balance sheet regulatory arbitrage, the reform has failed at addressing the entire problem, as well as the potential spillover effects of non-banks in the banking system. Meanwhile, some claims coming from the orthodox dissenters and heterodox economists have had mild recognition. That has been the case of macro-prudential requirements in the form of countercyclical capital buffers and leverage caps, or the enforcement of some watered-down forms of functional separation in some jurisdictions. Nevertheless, more direct forms of credit control have not been taken into consideration at all. Hence, banks have become subject to higher standards, but many of the problems reported by regulators – not to say heterodox and orthodox dissenters – have not been fully tackled. Finally, we may note that there has been no proposition coming from orthodox authors. This stems from the fact that, in the shadow banking literature, the only problems they have associated with

banks have to do with the originate-to-distribute model that we review below. We decided to deal with it in a separate section since regulation on securitisation is not particular to banks, but to any entity securitising loans.

Table 15: Banks' regulatory reform

		Proponents					
		Heterodox	Orthodox dissent	New orthodoxy	Trad. Orthodoxy	Int. regulators	Implemented
Capital requirements	Increase micro-prudential					x	Yes
	Macro-prudential	x	x				Mildly
Off-balance sheet risk-taking	Loan de-recognition without risk transfer		x			x	Yes
	Other		x			x	Mildly
	National regulatory competition		x				Only within EU
	Functional separation	x	x				Mildly
Interactions with OFIs	Spillover effect into banks					x	Mildly
	Lending	x					Mildly
Other	Credit controls	x					No

Table 16 summarises the regulatory reform of the originate-to-distribute model. The issues concerning information asymmetries have been tackled, in line with the traditional orthodoxy's demands. Nevertheless, competent authorities on both sides of the Atlantic have allowed some deviations. On one hand, in the US, CLOs and most RMBS have been exempted from minimum risk retention rules. On the other hand, the EU has enabled synthetic securitisations to qualify as 'simple, transparent and standardised'. Meanwhile, the alternative proposals from the new orthodoxy – backstop and regulate ABS investors – and from the heterodoxy – fully ban loan de-recognition – did have no room at all.

Table 16: The regulatory reform of the originate-to-distribute model

		Proponents					
		Heterodox	Orthodox dissent	New orthodoxy	Trad. orthodoxy	Int. regulators	Implemented
Information asymmetries	Originators' minimum risk retention				x	x	yes
	Transparency and complexity				x	x	yes
ABS investors	Backstop and regulate			x			no
Prohibition		x					no

Table 17 summarises the repo reform, which has combined the FSB's late minimal regulatory approach to repo haircuts with a de facto backstop of financial markets by central banks. Hence, this suggests that the moral hazard problems about which regulators, orthodox and heterodox scholars have warned are currently at play.

Table 17: Repos regulatory reform

		Proponents					
		Heterodox	Orthodox dissent	New orthodoxy	Trad. orthodoxy	Int. regulators	Implemented
Participants	Disclosure					x	Yes
Repo borrowers	Backstop and regulate			x			No
Markets	Dealer of last resort			x			De facto
	Generalised minimum haircuts		x				No

Regarding the MMFs' reform, summarised in table 18, we find a pattern rather similar to the case of repos. Formally, a light-touch regulation approach typical of the traditional orthodoxy has been favoured against the backstop and regulate approach advocated by the new orthodoxy (for CNAV MMFs). However, in practice, the reform has proved insufficient and central banks have used several mechanisms to backstop MMFs when needed. The Fed had already done it in the GFC

using similar methods when it lent banks to purchase high-quality ABCP from MMFs through the ABCP MMMF Liquidity Facility, as well as lending through an SPV to any institution for the purpose of buying ABCP and unsecured commercial paper in the Commercial Paper Funding Facility (Wray, 2012, p. 58). In addition, we have noted how the EU LVNAV MMFs constitute a deviation from the approach, by allowing funds with private portfolios to promise a constant redemption value.

Table 18: MMFs' regulatory reform[1]

		Proponents					Implemented
		Heterodox	Orthodox dissent	New orthodoxy	Trad. orthodoxy	Int. regulators	
Enhance market discipline	Disclosure					x	Yes
	Floating NAV					x	Only private MMFs in the US
Backstop and regulate or floating value				x			Mild regulation but de facto backstop

[1] The regulation of sponsor's backstops is considered within the banks' regulatory reform of off-balance sheet exposures (table 15).

Finally, table 19 summarises the regulatory reform of other non-banks. Orthodox dissenters' and heterodox economists' demands for macro-prudential regulation on non-banks have had little success. The possibility to exert that option exists in the US, through the FSOC, and in the EU, through ESMA's recommendations on AIFs. However, it is not being exploited. Meanwhile, the FSB seems to have abandoned any intention of reactivating any initiative in this direction. As a result, regulations have remained within the traditional orthodoxy's market-friendly approach, in the form of disclosure requirements. Market liquidity problems arising from the growth of the management industry – which continued steadily in the wake of the GFC – are causing market liquidity disturbances as has been pointed out by many regulators. Moreover, this has already been proved to be incompatible with banks' regulatory reforms. Stability has so far been preserved through a mix of waivers on banking regulations and broad interventions by central banks.

Table 19: Other non-banks' regulatory reform

		Proponents					Implemented
		Heterodox	Orthodox dissent	New orthodoxy	Trad. orthodoxy	Int. regulators	
Enhance market discipline	Disclosure					x	Yes
Prudential regulation	Micro-prudential			x		x	No
	Macro-prudential	x	x				No
Homogeneous holistic regulation			x				No

Chapter 4. Re-integrating 'shadow banking' into the heterodox theoretical framework

1. Introduction

We have shown in previous chapters that 'shadow banking' emerged semantically to demarcate the source of systemic risk that threatened the whole global financial system in the GFC. In chapter 3, we went further in our argumentation claiming that 'shadow banking' did not only emerged as an analytical category but also as a 'regulatory perimeter'. This was the use of the term made by the two groups that defined the four main shadow banking characterisations: the 'new orthodoxy' and the international community of regulators, through the FSB. Thus, the 'shadow banking' polymorphism can be understood as the result of a political clash between competing regulatory projects. Consequently, we expressed our concern about the survival of the concept 'shadow banking' beyond the political dispute.

Ten years after the outbreak of the crisis, leading regulators declared that the problems that led to the GFC had been finally tackled and that the bulk of the regulatory reform had successfully concluded (Carney, 2018). Most orthodox economists and regulators joined the optimistic climate. With the closing of the regulatory cycle, they started to remove 'shadow banking' from their vocabulary, which, beyond retrospective analyses, had no further utility. At our current point in time, we may question the future of 'shadow banking' as an analytical category. This is especially pertinent among those economists who are uneasy with the dominant optimism and consider that the regulatory reform has been mild and insufficient. Is it still a useful concept? Under which conditions? Should it rather be abandoned?

In this chapter, we elaborate on these questions analysing 'shadow banking' in retrospective to look ahead into the future. We argue that 'shadow banking can still be useful for heterodox economics, but only if several issues are tackled. First, it has to be stripped from both its problematic polysemy – its definition has to be narrowed down and demarcated clearly – and its orthodox DNA – 'banking' has to be equated to money creation. Second, it has to be part of a coherent attempt of integrating the different financial instability sources identified in the shadow banking literature into the traditional heterodox framework for the analysis of systemic risk. That means defining clear and operational analytical categories. For that, we develop upon the idea of amplifying sources of risks, already present in the literature, and upon previous conceptual framework proposals.

The remainder of the chapter is organised as follows. Section 2 reviews the actual status of the term 'shadow banking' within the academic and regulatory community, shows its future prospects, and presents the available options for the heterodox research agenda on shadow banking. Section 3 advances on a consistent redefinition of 'shadow banking' within a heterodox framework encompassing the whole set of systemic risks identified in the shadow banking literature. For that we review some appealing conceptual proposals and borrow features that we consider useful in order to build our proposal. We conclude with some final remarks in section 4.

2. 'Shadow banking': present and future prospects

We are now fifteen years after the onset of the GFC and it has been already five years since the regulatory reform was declared concluded. As showed in chapter 3, with some concessions and a large dose of central banks' pragmatism, we can argue that the 'traditional orthodoxy' project has won. After some reforms and an initial flirting with enforcing overarching prudential regulation, the international community of regulators re-embraced the market-friendly approach. Meanwhile, the 'new orthodoxy' had some success regarding central banks' operative, but

its regulatory demands were dismissed. Similarly, the orthodox dissent and heterodox projects were largely defeated. As a result, the dictionary has been rewritten and 'shadow banking' redefined as an accident of the past.

The abandoning of 'shadow banking' among orthodox economists may seem, nevertheless, somehow paradoxical. The 'new orthodoxy' used 'shadow banking' to make their claim – what we called in chapter 2 the theory 'fix' – that financial markets can be dysfunctional in the presence of maturity transformation. This point seems to be now widely accepted: panic-triggered liquidity spirals seem to have been integrated into the orthodox paradigm (Blanchard, 2014; Mishkin and Eakins, 2018). One explanation to this paradox is that, now, the problem is known by everyone, as it was not the case before the GFC. As pointed by Fein (2013, p. 4): 'Academics whose econometric models failed to forecast the crisis' because '[shadow banking] was invisible'. Thus, 'shadow banking' would have been, primarily, a problem of information, which does no longer exists. Following Patalano and Roulet (2020, p. 14), 'the current narrative appears to be that [...] post-crisis regulatory reforms have largely addressed shadow banking risks, paving the way for resilient sustainable market-based finance that can provide balanced, countercyclical and compatible financing on terms that suit issuer and investor preference'. After 'overcoming' the shock there was no more reason to keep 'shadow banking' alive.

Meanwhile, one sector of the 'new orthodoxy' seems to have been more prosaic and assessed that the problem has been understood and addressed, although through a larger intervention of the state – the expansion in public debt and central banks' balance sheets has crowded out shadow moneys, while central banks' have more or less de facto committed to backstop the whole financial system (Pozsar, 2015, pp. 26–27; Mehrling, 2011). Under these conditions, 'shadow banking' as an unstable form of finance that lacks public backstops becomes barely redundant. This is what Pozsar (2015, p. 27) states regarding the Bank of England's commitment to backstop the Eurodollar money market:

> the international portion of the shadow banking system is now insured against liquidity "bumps" in wholesale funding (repo) and risk transfer (swap) markets. Thus, *we may remove the word shadow* when referring to the offshore portion of shadow banking.' (emphasis added)

On the contrary, the remaining sector of the 'new orthodoxy' has considered that the essential problem of shadow banking runs has not been solved yet, and, therefore, continues using the term 'shadow banking' (Gorton, 2019). Nevertheless, these authors seem to have resigned themselves to accepting defeat and abandoning their normative project. This is easily understandable when we read the words of the ECB vice-president. While acknowledging the pertinence of the new orthodoxy's project, he concludes that: 'However, in the end, [...] their proposals seem too complex to be within the realm of practical possibility, especially in the present environment emerging in advanced economies of reversing several recent regulations in a sort of desperate drive to go back to the old normal that led the world into crisis' (Constâncio, 2017b). Therefore, lack of political prospects seems to have been the reason for some 'new orthodox' authors give up on their regulatory agendas. That is the case of Gorton, one of the most influential authors of the shadow banking literature, co-authoring six of the fifty most cited publications (see chapter 1, annex III). Moreover, Gorton was also invited to present his view of the GFC at the 2008's Jackson Hole symposium and was interviewed by the US Congress Financial Crisis Inquiry Commission. Recently, he has acknowledged that '[a]fter various attempts to explain the crisis, I retreated to my office to carry on with research' (Gorton, 2020, p. 289).

On their part, leading regulators have officially abandoned it, following the FSB's move in 2018, rebranding 'shadow banking' as 'market-based financial intermediation'. Since then, among all the official publications of the BIS, the Fed, the ECB and the Bank of England, the term has only appeared twice: once in the BIS' February 2019 Quarterly Review and another one in the Fed's 2019 Financial Stability Report published in November that year. Otherwise, 'shadow banking' has been confined to working papers. Officials only pronounce it when asked

directly by the press[68] or to refer to it as 'what was once known as "shadow banking"' (Signorini, 2022). The European Banking Authority (EBA) constitutes an exception, however unavoidable, since the EBA had been addressed by the EU's 2013 Capital Requirements Regulation using that term[69]. The shift makes part of the dominant stance of optimism that can be summarised in the words of Mark Carney – by then-Governor of the Bank of England and Chairman of the FSB – at a press conference in 2017: 'We have fixed the issues that caused the last crisis' (Elliott, 2017). Just before, he had communicated to the G20 leaders that 'G20 countries now have a strategic opportunity to build on this foundation to create an open, global financial system' (Carney, 2017). Hence, the renaming of shadow banking as non-bank financial intermediation marks the end of a regulatory cycle for developed countries with liberalised financial systems, as we showed in chapter 3. Meanwhile, for developing countries, it entails the resumption of a more explicit project of financial liberalisation (Gabor, 2018).

In chapter 3, we also gave certain credit to Fein's (2013) provocative thesis that regulators used the definition of 'shadow banking' as 'something beyond their scope' to avoid any blame for their part of responsibility in the crisis. Following this argument, with the reform finalised, 'shadow banking' would have fulfilled its role as scapegoat for regulators looking to divert attention to the non-bank sector. In the meantime, regulators had to face the recurrent complaints from the asset management industry – which inevitably involves the banking industry – not only for the bad image the label 'shadow banking' was giving to their business, but also for the eventual regulatory implications that could accompany it (IMMFA, 2014). Whichever the main cause of regulators dropping their initial normative project, the industry did succeed in passing regulatory reform relatively unscathed, as we showed in the previous chapter (sections 3.4 and 3.5).

Meanwhile, in the heterodox camp, some authors have opened the debate on whether the term is appropriate or not. Bouguelli (2019) has

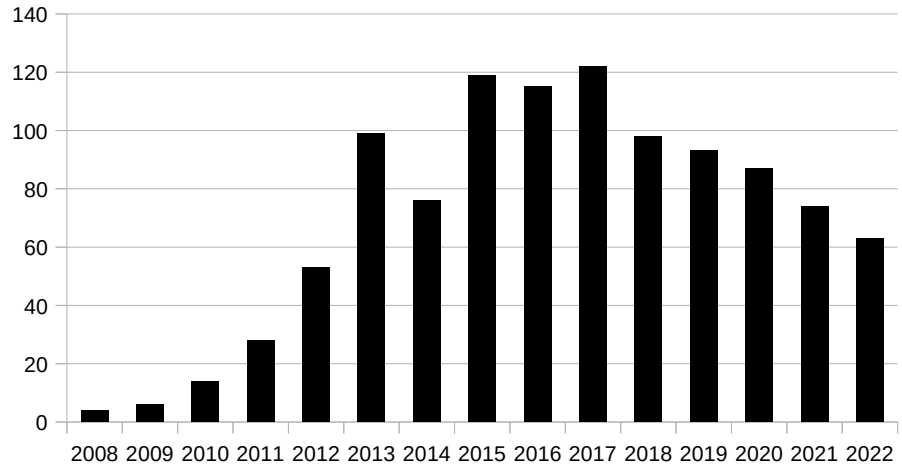
68 See for example the interviews to Benoît Couré, member of the Executive Board of the ECB, in November 2019 (Baddou and Bensaid, 2019) or Luis de Guindos, vice-President of the ECB, in February 2020 (Stumpf, 2020).

69 Article 395 of the Regulation (EU) 575/2013.

pertinently rejected the *banking* half, since, as we saw in chapter 1, it has been defined within the orthodox loanable funds theory. Thus, all four main characterisations of 'shadow banking' are at odds with heterodox theory since they involve no money creation. Nevertheless, other heterodox authors have stuck to the term for the reasons why most orthodox economists have recently dropped it: it points out an opaque and risky area of the financial system which needs to be supervised and regulated (Tadjeddine, 2021). Finally, we may note that, among orthodox dissenters, Acharya – probably the main author within this group – has recently used 'shadow banking' again with a similar meaning that one held by this group in the past, as banks' off-balance sheet risk taking, now in the form of 'credit lines commitments' (Acharya and Steffen, 2021). This business would constitute a bet made by banks to collect fees during good times, but that puts them under important stress when things go bad, as it happened during the Covid-19 crisis. Nevertheless, we may note that Acharya has also embraced alternative characterisations of shadow banking, in particular the FSB's SB4 (Acharya et al., 2013a).

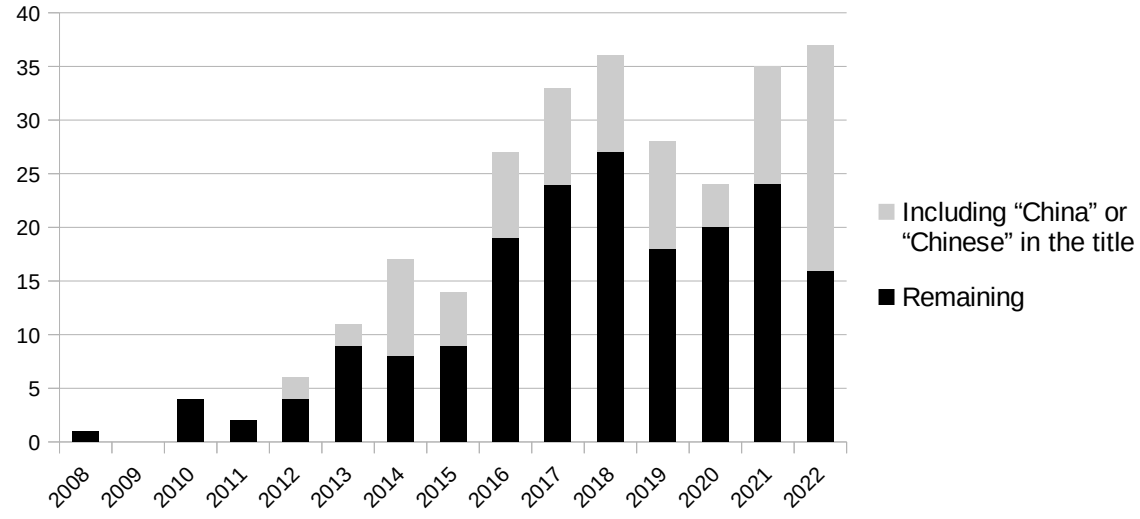
All in all, the impact of this shift in the stance of both orthodox economists and leading regulators towards 'shadow banking' can be already appreciated in the broad academic and policymaking community. As shown by figure 7, the number of total publications including 'shadow banking' in the tittle has declined since 2018 – it encompasses a broad set of documents including reports and working papers. Focusing only on academic publications – figure 8 – although their number has remained more or less stable in the last years, this has been due to a significant increase in the number of papers on China, in which the term is used to support regulatory arbitrage – the Chinese 'shadow banking' is 'usually portrayed as the escape valve of a financial system repressed by the long hand of the state' (Gabor, 2018, p. 3).

Figure 7: Number of overall publications containing ‘shadow banking’ in the title (Google Scholar)



2022 only encompasses until the end of October.
Source: authors’ representation from Google Scholar.

Figure 8: Number of academic publications containing ‘shadow banking’ in the title (Scopus)



2022 only encompasses until the end of October.
Source: authors’ representation from Scopus.

Taking the above into account, we may expect that, without the backing of either core orthodox economists or main regulatory authorities, the use of ‘shadow banking’ will end up disappearing, unless the next financial crisis comes about, or will be confined to regulatory arbitrage activities in those countries with less liberalised financial systems, as China. In the face of this, heterodox economists have three options. The first one is to follow the trend and abandon ‘shadow

banking'. After all, there is not much sense in continue using a term which was precisely adopted to engage in a debate with those that are now dropping it. Alternatively, the second option is to stick to it. Indeed, it has a catchy negative connotation which sparks images of murky businesses and has great value for a normative project towards the enforcement of tighter oversight and regulation. Following Macey (2012): '"Shadow banking" is a great term. Although the term fails to impart much meaning, it manages to convey the impression that, whatever it is, it must be nefarious, somewhat clandestine and of dubious legality'. However, this comes at the risk of perpetuating the troubling 'shadow banking' polysemy and an incoherent debate. Moreover, any attempt to bring 'shadow banking' back to life will most likely lead to facing a wall instead of finding an ear. After the FSB's rechristening of shadow banking, this might be even truer than any past regulatory attempt, the eventual answer we may expect is straight: you are talking about 'efficient market-based finance' that is precious for the economy. Finally, the third option, is to reappropriate 'shadow banking' for its symbolic value and re-signify it inside a consistent heterodox framework which solves the conceptual problems it has so far had. We consider that it is worth exploring this third alternative.

3. An heterodox proposal for a more operating analytical framework

A working heterodox redefinition of shadow banking would require three things. First, addressing Bouguelli's (2019) concern about the use of orthodox notions of 'banking'. Banking should, hence, be restored to its heterodox meaning and confined to describe activities in which state-backed money is created. This means excluding the activities of independent non-bank intermediaries which, although they can create credit and liquidity by expanding their balance sheets, cannot do so, as banks do, without depriving some other part of the economy of the use of purchasing power (i.e. through a direct bilateral exchange of liabilities with borrowers) (Lavoie, 2019). Second, the current 'shadow banking' polysemy would have to be tackled: the term should describe a specific phenomenon giving rise to a specific form of systemic risk. This means

deciding which of the forms of systemic risk identified in the shadow banking literature should be described by 'shadow banking'. Third, we have to determine the best way to fit the remaining forms of systemic risk alongside the new 'shadow banking' within the traditional heterodox analytical framework of systemic risk. The latter boils down to three primary sources of systemic risk that emerge from different parts of the system and give rise to different instability dynamics. First, Minskyian financial instability applies widely to both creditors and borrowers through cycles of risk-taking and balance sheet fragilisation. Second, the banking system is also subject to this, although the result – credit cycles – is qualitatively different due to banks' credit creation power. Finally, financial markets are subject to Keynesian market liquidity cycles driven by conventions.

Therefore, we first elaborate on these three 'traditional' sources of systemic risk. Second, we bring together the different forms of systemic risk identified in the shadow banking literature, and we select the potential candidates to be covered by our redefinition of shadow banking. Third, we examine those conceptual maps of the financial system that have incorporated a shadow banking category, assessing which of their features can be useful for our goal. Finally, building on that, we assemble our proposal.

3.1. The traditional heterodox financial instability framework

As we mentioned in chapter 2, heterodox approaches – French regulationists and post-Keynesians – build upon a macro analysis of the financial system, which leads them to build their analysis upon the notion of 'systemic risk' (Aglietta, 1991) or 'macroeconomic paradoxes' (Lavoie, 2014). We may note that heterodox authors consider financial instability to be an structural feature of a capitalist economy. In the words of Minsky (2016, pp. xv–xvi): 'the processes which make for financial instability are an inescapable part of any decentralized capitalist economy'. Thus, while financial regulation is considered crucial to *reduce* financial instability and to *minimize* its negative effects on the economy, despite that it will

never succeed in *preventing* instability from happening (Galbraith, 1994, p. 108; Kregel, 2007, p. 14; Lavoie, 2014, pp. 255–256).

We may consider that the heterodox analytical framework of financial instability identify three main sources of systemic risk: Minskyian risk-taking cycles, banking credit creation boom-bust cycles, and Keynesian market liquidity instability. We leave aside the heterodox contributions to the analysis of systemic risk arising from payments systems and runs – notably developed by regulationists – since orthodox economists have also elaborate on it. Although there are significant divergences in the analyses of both schools on this issue, we consider that the aforementioned three research programmes on systemic risk constitute the hallmark of heterodox approaches.

The first source of systemic risk applies to the whole economic system and corresponds to Minsky (1992, 1982) 'financial instability hypothesis' or 'paradox of tranquillity' (Lavoie, 1986), epitomised as 'stability is destabilizing' (Minsky, 2016, p. 26). During a period of relative tranquillity, agents' strategies will have more possibilities to succeed, which will render them more confident (Minsky, 2016, p. 67). In their regular pursuit of profits, they will progressively tend to adopt more risk-prone attitudes through increasingly fragile funding structures. While higher leverage and maturity mismatch or short-term funding allows them to reap higher profits, this comes at the expense of reducing their margins of safety, which renders them more vulnerable to any shock disrupting their expected cash flows. Meanwhile, the 'financial layering' of the economy increases: agents' capacity to meet their payments become more dependent on other agents' meeting theirs (Minsky, 2016, pp. 150–151). As a result, the same interdependence of cash flows that validated agents' strategies during good times makes it more easi for any shock to spread from one agent to another. The more fragile agents' financial positions are, the more likely that a small shock will attain a larger part of the economy and trigger a financial crisis (Kregel, 2010, p. 4). Following Minsky (2016, p. 179): 'Such a pyramiding of liquid assets implies that the risks to the economy increase, for insolvency or even temporary illiquidity of a key nonbank organization can have a chain reaction and affect the solvency or liquidity of many organizations'.

The second source of instability may be found in banks' money creation power. Following Lavoie (2014, p. 193), the quantity of banking credit depends on the availability of creditworthy borrowers willing to borrow, which in turn depends i) 'on the willingness of banks to grant creditworthy status to their customers' and ii) 'on the amount of collateral they can show'. These two variables give rise to two different destabilising mechanisms leading to unstable credit cycles.

The first one arises from cyclical changes in banks' attitudes toward risks expressed through their evaluation of potential borrowers. Following Lavoie (2014, pp. 249, 245), 'the assessment of creditworthiness [...] depends on both objective and subjective criteria', which, in turn, depend on 'the state of banking entrepreneurs' animal spirits', i.e. 'the confidence banks have about an uncertain future'. Aglietta (1993), the more time that passes since the last crisis, the more banks' underestimate the probability of the next one to happen. This is reinforced by competition which pushes banks to increase credit simultaneously in order to preserve their market shares. This results in a 'coordination failure' whose outcome is the generalised increase in the level of borrowers' indebtedness, which may jeopardise their solvency. Ultimately, once a certain level of fragility is reached, banks' reassess drastically and altogether their strategy leading to a credit crunch. Wolfson's (1996) take on credit rationing is quite similar. According to him, banks' stance towards risk depends on i) the 'lending convention' that 'the existing state of affairs will continue into the future', so 'borrowers who have a history of repaying loans on time and maintaining a strong financial condition will be preferred', and ii) the confidence with which the lending convention is held, which depends on 'conditions in the macrofinancial environment' (ibid, p. 453). Thus, banks' coordination through an unstable convention explains that they first expand credit altogether and, once the financial fragility has increased enough, they sharply revise their criteria creating a credit crunch.

The second mechanism arises from the fact that the availability of collateral conditions lending decisions, but, at the same time, the latter can also affect the value of available collateral. This is what happens when banks finance the purchase of already existing assets accepting them as

collateral. More purchases push prices up fostering speculative demand, while revaluing collateral reassures banks to provide more credit to cater to the growing demand, creating a self-reinforcing loop from which credit-fuelled asset bubbles emerge (Aglietta, 2011, pp. 194–195; Guttmann, 2016, p. 113; Keen, 2009; Aglietta and Scialom, 2010, pp. 42–44)[70]. Historically, shares and houses have been particularly prone to experience this type of dynamics due to the fact that their supply tends to be rather sticky to price increases (Werner, 2005, p. 227). The expectation of price increases encourages speculative demand and banks to finance it, on the basis of collateral appreciation, which make loans apparently safe. However, this self-reinforcing loop cannot go on forever and, eventually, bubbles burst. At some point, either speculators abandon the market or banks refuse to continue increasing their credit risk exposure, and the value of the assets and the collateral collapses, while debts remain. As a result, both borrowers and banks may face sizeable losses and risk bankruptcy.

The third source of instability is particular to financial markets and emerges from the fact that market liquidity cannot be taken for granted, but emerges as the result of the aggregate decisions of its participants, from which prices emerge (Keynes, 1936, chap. 12). For that reason, participants have incentives to engage in a self-referential dynamic in which they try to guess what will the others do: an investor will condition her decision on her opinion about what will the others do, which will be, in turn, based on their own opinions about what will the others do. If an investor wants to get her money back, she has to rely on other's willingness to buy her security. However, if many other investors also want to sell their securities at the same time, they will not succeed, at least not at the price they were initially expecting. Hence, a 'paradox of liquidity' arises in which 'the attempt of economic agents to become more liquid transforms previously liquid assets into not-so-liquid assets' (Lavoie, 2014, pp. 19–20), something that ensues from a fallacy of composition: 'there is no such thing as liquidity of investment for the community as a whole' (Keynes, 1936, p. 155). Therefore, the idea of the existence of a 'fundamental value' as conceived by orthodox financial

70 This point has also been raised by Hayes (2006, p. 432) and Cesaratto and Di Bucchianico (2020, pp. 25–26).

economists is rejected since its estimation depends on variables that are not observable, but subject to radical uncertainty (Orléan, 2008).

Orléan (1999, chap. 2) elaborates on Keynes' analysis through the French *économie des conventions*. Following Orléan, financial markets' stability relies on participants' consensus on a certain convention. For example the 'emergent economies' of the early-1990s, 'Asiatic miracle' of the mid-1990s or 'dot-com' of the late-1990s were conventions grounded on a shared belief in future gains in each of these respective markets (ibid, pp. 145–176). This mechanism of coordination is subject to endogenous instability dynamics. The stability provided by the consensus leads to an underestimation of risks and, hence, a compression in yield spreads between different categories of assets. At some point, this is identified by strategic speculators that begin to question a convention that now they assess is based on overly optimistic expectations. Eventually, strategic speculators end up convincing a majority of the market participants – bad news may provide the big push – and an 'auto-referential crisis' sets off in which the process reverts. Participants become extremely averse to risk and initiate a so-called 'flight to safety' – they move their money into those assets that are considered to be safer, typically those guaranteed by a powerful state – and spreads widen. As investors restructure their portfolios, panic spreads to other markets (Aglietta and Orléan, 2002). At this point, only an intervention coming from outside the market – typically orchestrated by the central bank – is able to stop the downward spiral and establish a new convention.

3.2. The amplifying forms of systemic risk

As we noted in chapter 2, in their analyses of shadow banking, heterodox authors have identified a set of different forms of finance that *amplify* inherent financial instability dynamics – which emerge from the aforementioned the primary sources of systemic risk. This notion of combined effects and interactions between different forms of risk is not new and can be found for example in Scialom and Tadjeddine (2014). From our analysis in chapter 2 and 3, we can identify five forms of systemic risk that have been associated in the literature with shadow banking: i) banks' off-balance sheet risk-taking, ii) banks' securities

financing, iii) the originate-to-distribute model (on its heterodox interpretation), iv) repos, v) non-banks' risk-taking. We build mainly on the heterodox analyses that we complement with that of orthodox dissenters for the case of off-balance sheet risk taking. As we noted in chapter 3, despite certain regulations have aimed at addressing these risks, the reforms have not been enough to solve the problems. Table 20 below summarises them.

First, banks may extend credit and backstops to non-consolidated entities, whether non-bank subsidiaries or off-balance sheet vehicles, circumventing capital regulation. Unless regulators are willing or able to clamp down on these activities, regulatory arbitrage expands banks' possibilities for competition-driven risk-taking through off-balance sheet credit creation (Acharya et al., 2010; Thiemann, 2018), amplifying the instability problems associated with banks' money creation power. Following Lavoie (2012, p. 226): 'The business of banking is essentially a trade-off between the appeal of profits and the fear of losses—a battle between returns and risk'. Regulatory arbitrage allows banks 'to extend leverage beyond previously recognized safe ratios, thus improving their returns on equity, while simultaneously fully abiding by the terms of the Basel capital adequacy ratios' (ibid. p. 230). Is in that way, that competition may push them towards levels of off-balance sheet leverage that would be beyond Basel requirements if held on-balance sheet.

The GFC showed that most ABCP conduits had an explicit backstop from their sponsoring banks through credit lines, as well as many MMFs had implicit ones that crystallised mainly in the form of asset purchases, as described in chapter 1 (section 4.2.1). Savings on regulatory capital costs were thus split between sponsoring banks – which obtained higher return-on-equity than if holding the assets on-balance sheet – and wholesale investors – which got higher interest rates than on banks' on-balance sheet deposits. In the competition for higher profitability, many banks engaged in these activities, increasing the purchases of financial assets on the ultimate basis of credit creation – first as banks' contingent liabilities and then as effective credit creation. We saw in chapter 3 that some measures have been taken to prevent off-balance sheet regulatory arbitrage. These have concerned the de-recognition of loans without risk

transfer and the issuance of ABCP, while they have promoted the regulatory consolidation of affiliates on which banks retain a significant stake. However, banks still retain considerable room for off-balance sheet risk taking, especially through implicit support to affiliates.

Second, banks' lending to their market-based subsidiaries and other independent non-banks may result in money creation being funnelled towards financial markets, which may widen the amplitude of liquidity cycles and amplify their destabilising effects (Sissoko, 2017). The latter provides a good account of how this mechanism, notably through margin loans, may have driven the US stock exchange boom-bust of the 1920s (ibid, pp. 88-94). In modern markets, this role is played by repos and, although, it is complicated to obtain quantitative evidence, we do know that hedge funds and asset managers do borrow substantially from banks for leveraged asset purchases (Mancini et al., 2015; Baklanova et al., 2016; Adrian et al., 2013; Baines and Roberts-Sklar, 2020). Before the GFC, repos were used to purchase mortgage-related securities (Pozsar et al., 2010) and may have played a role in amplifying, first, the increase in RMBS and CDOs prices and, then, its collapse.

To that, we could also add banks' on-balance sheet (consolidated) proprietary trading activities, which is equivalent although with banks risking their own capital. We may note that the trading book – that part of banks' assets related to proprietary trading, market-making and hedging – represents a large part of many banks' balance sheets (more than 50% in many cases) (Hardie and Howarth, 2013, p. 33; CGFS, 2009, p. 9). Before the GFC, banks were the main investors in US mortgage-related securities and derivatives (Krishnamurthy, 2008, p. 4; Greenlaw et al., 2008, p. 34), which makes undoubtedly that they had a saying in the price dynamics of these products. On the other way around, the collapse in the price of these securities could have had a negative impact on the more traditional lending activities of those banks that faced large losses due to mark-to-market accounting (Hardie and Howarth, 2013). The regulations that have addressed this form of risk have been rather mild, as we saw in chapter 3. This is the case of the large exposure framework or the functional separation restrictions implemented in some jurisdictions.

Third, the originate-to-distribute model may lead financial market liquidity cycles to amplify banks' credit creation cycles. With credit risk being distributed to investors, securitised lending ultimately depends on the latter's willingness to take on risk, which will be conditioned by procyclical market liquidity, as described by (Aglietta and Scialom, 2010, p. 42) and as can be drawn from the post-Keynesian analyses presented in chapter 2 (section 3.1.4). Hardie and Howarth (2013) also claim that market liquidity dynamics fostered mortgage lending in the US through securitisation. We may stress that this does not necessarily mean that banks *needed* either market investors to fund the loans or securitisation to economise on capital to create a credit boom. The case of Spain, which we analyse in the next chapter, is quite revealing in this regard. Nevertheless, the fact that banks do not longer need to carry the risks, at the same time that they can book upfront fees, can create an important incentive for expanding credit (Lavoie, 2012). Before the GFC, this may have exerted an important amplifying force on credit creation dynamics in the US, where the originate-to-distribute model seems to have been used most. As mentioned in chapter 3, minimum retention rules have been established, but they are likely too small to be able to hinder significantly this type of dynamics and, moreover, many loan categories have been exempted from them. In addition, post-Keynesians have stressed that through the transfer of loans' risk to non-bank investors through ABS, the overall leverage of the financial system increases – since the latter are not subject to minimum capital requirements – rendering it more fragile to absorb any shock (Bouguelli, 2019). This risk has not been addressed by regulators.

Fourth, certain instruments, such as repos and other forms of collateralised securities financing may increase market liquidity instability by facilitating leveraged purchases, as noted by Gabor and Sissoko. The interlocking of investors' funding liquidity and market liquidity through collateral margin practices and mark-to-market accounting increases leverage possibilities on the upward phase and makes the subsequent fall in prices sharper through liquidity spirals. The destabilising role of repos is widely acknowledged by both orthodox authors and regulators, as we saw in the previous chapters. This has been

widely documented, for example, in the GIIPS countries' sovereign debt securities during the euro area sovereign debt crisis (Gabor, 2016a), which we develop in the next chapter and in the MBS market during the Covid-19 crisis (Bouguelli, 2021). Nevertheless, the regulatory minimum haircuts introduced to address this risk have been too low and confined to a small part of the market, as we saw in chapter 3 (section 3.3). Therefore, repo procyclicality remains a concern.

Fifth, non-bank intermediaries may increase the overall financial fragility when taking on credit risk in forms that increases the aggregate leverage of the financial system. We already noted above the case ABS in the originate-to-distribute model. This is also the case when they provide undercapitalised risk insurance to other entities, as happened with AIG's credit default swaps (CDS) (Wray, 2016, p. 189). In addition, non-banks may also show dynamics of balance-sheet fragilisation à la Minsky, through higher leverage and maturity transformation, with overarching consequences for the overall financial stability – this is what Aglietta (2016, pp. 296–300) calls 'dynamic vulnerabilities'. The case of Lehman Brothers is a paradigmatic one. As Chapter 3 (Section 3.5) showed, no prudential regulation has been imposed on non-banks apart from certain liquidity and portfolio requirements on MMFs.

Table 20. Heterodox systemic risks associated with shadow banking

From \ To	Bank credit creation	Market liquidity cycles	Overall financial system fragility
Bank credit creation cycles	Regulatory arbitrage	Margin lending and proprietary trading	
Market liquidity cycles	Originate-to-distribute	Repos	
Non-banks' Minskyan risk-taking cycles			Originate-to-distribute, provision of underpriced insurance, speculative and Ponzi finance

Out of these five areas of systemic risk, we can see that the first three involve banks' money creation and thus are candidates for our proposal for redefining shadow banking. These are: i) banks' regulatory arbitrage, ii) banks' on-balance market activities and iii) banks' originate-to-distribute securitisation. These three can be, in turn, described as compounded forms of systemic risk, since they emerge from the action of one basic form of systemic risk on another, which is, thus, amplified. Meanwhile, the fourth constitutes the amplification of a basic form. Finally, the fifth arises from the effect of a primary source of risk, Minskyian risk-taking, to non-banks.

3.3. Towards an analytical re-framing

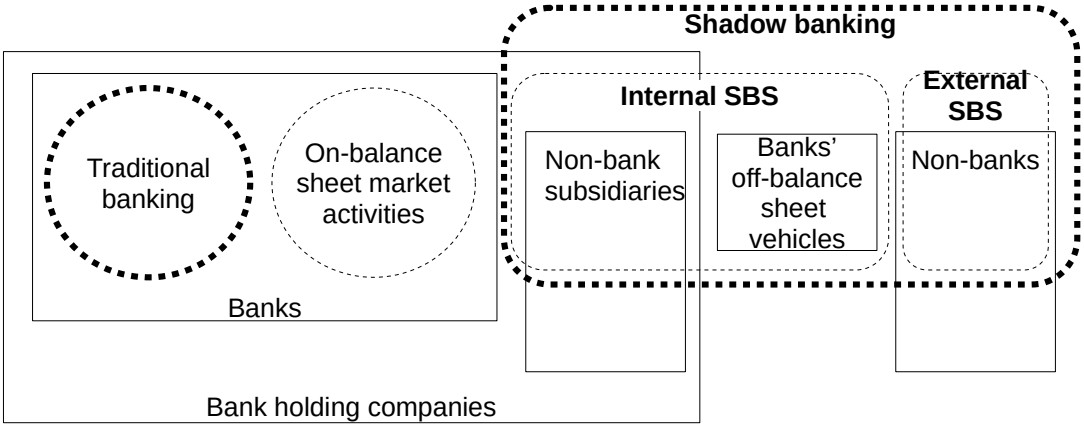
We may now explore different ways of integrating consistently these five forms of systemic risk in the heterodox analytical framework of systemic risk. We examine first, among those analytical frameworks which include a 'shadow banking' category, those that rely on a clear delineation of banks and banking groups. The latter is crucial for identifying the way in which banks' credit creation operates. Hence, we have identified three frameworks that we review hereunder. These have been put forward, respectively, by i) Pozsar et al. (2010), ii) Hardie and Howarth (2013) and iii) Tadjeddine (2013, 2021) and Scialom and Tadjeddine (2014).

Pozsar et al. (2010) offer, from an orthodox background, one of the first and most influential pictures of the shadow banking system (SBS) – according to Google Scholar this is the third most cited publication on the topic (see chapter 1, annex III). Elaborating on Pozsar's (2008) first sketch, now, at the New York Fed, he delivered with Adrian, Ashcraft and Boesky a large and thorough 36'' by 48'' map of the SBS linked to US credit. Here, we offer a stylised version which focuses on the institutional composition of each of the main areas in which they split the financial system. As shown in figure 9 below, three areas are identified. First, traditional banking, which is stable thanks to the state's backstops. Second, shadow banking, which encompasses the internal subsystem – that driven by bank holding companies through non-bank subsidiaries

and off-balance sheet vehicles, corresponding to our first characterisation of shadow banking – and the external subsystem – made up of independent non-bank entities, our second characterisation of shadow banking – both exposed to runs[71]. Three, other financial intermediaries not involved in shadow banking, which pose no significant risks since they do not engage in maturity transformation.

For our purpose, this framework shows the following drawbacks: i) it does not take into account on-balance sheet interactions between banks and markets, which are left outside both traditional and shadow banking, ii) it encompasses under shadow banking a multiplicity of phenomena (banks' regulatory arbitrage, banks' interaction with markets through subsidiaries and some independent non-banks), iii) shadow banking does not necessarily involve money creation (certainly not for the external SBS), iv) it does not provide with clear criteria to distinguish between non-banks involved in shadow banking and those that not (apart from their involvement in credit intermediation chains, which in practice are not easy to identify).

Figure 9: The financial system's conceptualisation following Pozsar et al. (2010)

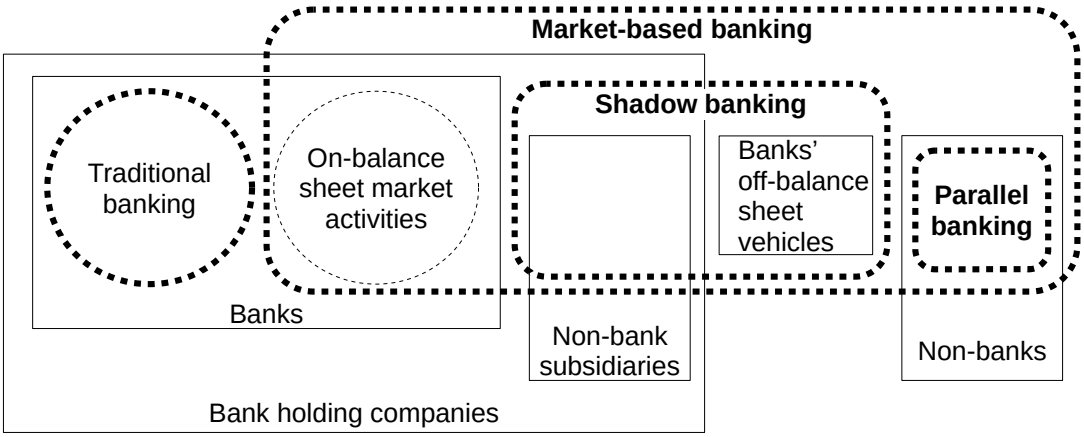


Source: author's representation inspired on Pozsar et al. (2010).

71 Pozsar et al. (2010) add a third shadow banking subsystem, the 'government-sponsored' one, which involves bank-originated credit funded by government-sponsored entities in capital markets. Hence, for the sake of simplifying, we can consider it to be distributed between figure 9's internal SBS – the banks' vehicles and subsidiaries involved in securitisation in the 'government-sponsored' subsystem – and the external SBS – the government-sponsored non-banks in charge of the funding.

Hardie and Howarth's (2013) framework solves some of the former drawbacks. It is built around the original concept of 'market-based banking', which they introduced to move beyond comparative political economy's traditional taxonomy of national financial systems. This taxonomy differentiates between 'bank-based' and 'market-based', which is unsuitable to account for the increasing intertwining between banks and capital markets. In particular, their 'market-based banking' seeks to capture the increasing influence of markets in determining banks' lending conditions (Hardie and Howarth, 2013, pp. 23–24). They use it unidirectionally, without exploring the impact of banks' activities on market dynamics. Under market-based banking they encompass: i) banks' on-balance sheet mark-to-market investments, ii) the bank-run originate-to-distribute model, their *shadow banking*, which is equivalent to Pozsar et al.'s (2010) internal SBS, and iii) 'parallel banks', non-banks which develop similar activities to banks' shadow banking and which can be identified with Pozsar et al.'s (2010) external SBS. Hence, as shown by figure 10 the financial system is conceptually made up of: i) traditional banking, ii) market-based banking, encompassing shadow banking, subject to market risks and iii) other non-bank intermediaries, also subject to market risk.

Figure 10: The financial system's conceptualisation following Hardie and Howarth (2013)



Source: author's representation inspired by Hardie and Howarth (2013).

On the upside, this conceptual framework allows accounting for banks-markets interactions beyond the originate-to-distribute model, as well as separating more explicitly banks' regulatory arbitrage (their shadow banking) from the activities of credit-related non-banks (parallel banks). However, the other two drawbacks keep applying: i) shadow banking does not necessarily involve money creation, ii) it is not clear how to distinguish between 'parallel banks' and other non-banks.

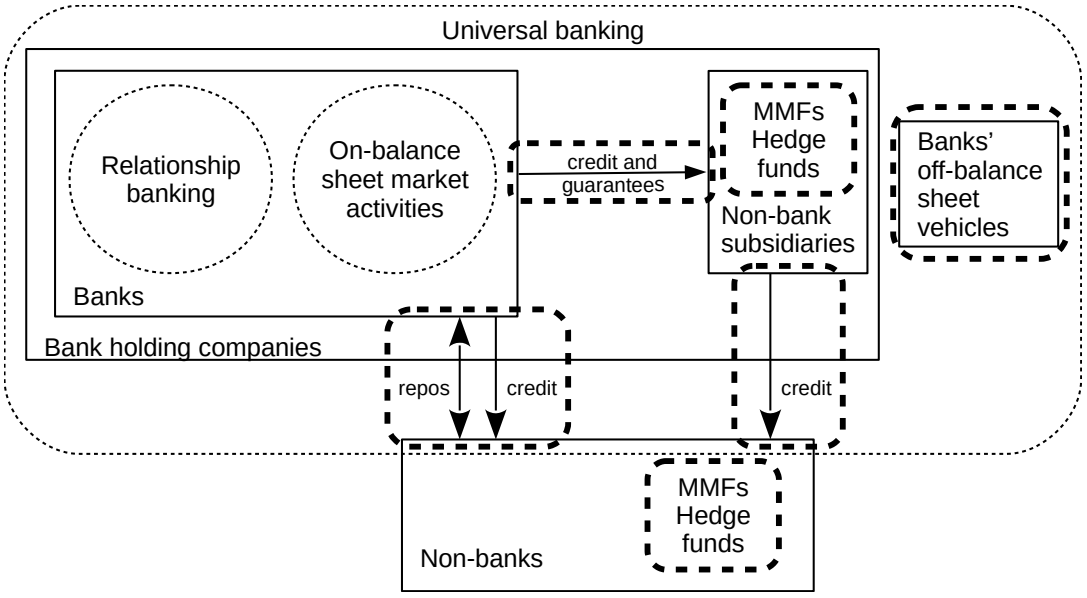
To the best of our knowledge, Scialom and Tadjeddine (2014) and Tadjeddine (2021) have been the only ones linking the meaning of *shadow banking* to banks' money creation power. Following Scialom and Tadjeddine (2014, p. 14; our translation): 'the possibility of intra-group financing between banking and financial subsidiaries is, without a doubt, a form of shadow banking'. Shadow banking may also be found in banks' 'provisioning of liquidity backstops to securitisation vehicles or their financing of hedge funds', as well as banks' role on repo markets, 'where they replace the lack of public guarantees and unduly extend the financial safety net to non-regulated entities' (ibid, pp. 22, 12; our translation). Following Tadjeddine (2021, p. 50), these activities reveal a transformation of the monetary liquidity hierarchy, bringing entities which are not subject to banking regulation closer to central banks' backstops. She assesses that this is what has allowed, since the GFC, the survival and growth of the financial system in an environment of sluggish economic growth.

Nevertheless, the notion of shadow banking held by these authors is wider, defined as 'the hybridisation of the banking and finance functions', which gives rise to 'hybrid risks' (Tadjeddine, 2017). This also includes securitisation with its off-balance sheet vehicles (which combines bonds' market liquidity with loans' credit risk) and certain non-bank entities such as MMFs (which connects bank-like panics with market liquidity) and hedge funds (which use leverage to finance illiquid and risky investments, in a bank-like fashion). We may depict their conceptual view as shown in figure 11. The financial system is made up of two main parts. First, universal banks, large financial groups with at least one banking entity and including their off-balance sheet vehicles and second, the remaining independent non-bank intermediaries. In turn,

shadow banking (in thicker dots) can be found in i) the connections between banks and non-banks, whether inside a banking group or not, through different forms of credit and ii) certain non-bank entities with bank's features (securitisation vehicles, MMFs and hedge funds), also inside or outside banking groups.

This conceptualisation opens the way for overcoming the issue of money creation in the definition of shadow banking. However, on the downside: i) the concept of shadow banking is still too broad in terms of the different forms of systemic risk that it encompasses, ii) it leaves aside other forms of interactions between banks and markets which were encompassed by Hardie and Howarth's (2013) *market-based banking*, such as on-balance sheet proprietary trading, and iii) it is also subject to the problem of differentiating risky or shadow banking non-banks from other non-banks.

Figure 11: The financial system's conceptualisation following Tadjeddine (2013, 2021) and Scialom and Tadjeddine (2014) (shadow banking is delimited by thicker dotted lines)



Source: author's elaboration inspired by Tadjeddine (2013, 2021) and Scialom and Tadjeddine (2014).

3.4. Our proposal

In light of the above, we may build our risk-focused conceptual taxonomy of the financial system by combining those features of the previous frameworks we noted valuable for our purpose. Table 21 rearranges the above table 20 following this conceptual taxonomy.

Table 21. An updated heterodox conceptual framework for systemic risk

From \ To	Bank credit creation	Market liquidity cycles	Overall financial system fragility
Bank credit creation cycles	**Banks' shadow banking** (regulatory arbitrage)	**Market-based banking** (margin lending and proprietary trading)	
Market liquidity cycles	**Market-based banking** (originate-to-distribute)	**Liquidity instability amplifying instruments** (repos) **Central bank's shadow banking** (buyer of last resort)	
Minskyan risk-taking cycles			**Non-banks** (hedging counterpart, maturity mismatch and leveraging)

First, from Scialom and Tadjeddine we take the notion of shadow banking as the illegitimate extension of the public safety net through banks' backstops to non-bank entities (whether subsidiaries, off-balance sheet vehicles or independent intermediaries). These backstops are often not properly encompassed by prudential regulation and constitute a form of off-balance risk-taking. By default, we include *any* non-consolidated bank subsidiary, since they can be potentially the object of implicit backstops by their sponsors – we apply, hence, the principle of presumption of guilt instead of presumption of innocence. Taking into account Tadjeddine's (2021, p. 50) view of shadow banking as a direct liquidity provider through money creation, we may also include central banks' asset purchases beyond government securities.

Although Tadjeddine differentiates backstops provided by banks from those provided by central banks, she considers that both have a

similar function in supporting the financial system. We may note that both allow financial market participants to benefit from money creation without abiding by any regulatory duty in exchange. Therefore, we propose encompassing both within a broader concept of shadow banking as *money creation subject to no social contract*. Nevertheless, we shall distinguish between *banks' shadow banking*, which may amplify credit creation instability, and *central banks' shadow banking*, which may boost risk-taking in financial markets. The notion of 'social contract' used here is similar to that of Scialom (2019, p. 89, our translation) as the '"contract" of delegation of money creation power', referring to banks, and that of Gabor and Vestergaard (2016, p. 31), for the case of the dealer of last resort. This notion goes further in the scope of responsibilities that can be demanded to those on which this power is delegated than the orthodox notion, which narrows accountability down to prudential regulation (Tucker, 2009), leaving aside questions such as the social assessment of credit allocation. On another level, we may also note that within our definition, banks' shadow banking is, paraphrasing Michell (2017, p. 24), 'a classic banking story', i.e. inherent to banking, a continuous quest 'to expand leverage and to squeeze capital and liquidity even more tightly' in order to increase profits.

Second, from Hardie and Howarth (2013) we retain the notion of 'market-based banking', but we confine its reach to direct interactions between banks and markets, i.e. on-balance sheet market activities and the originate-to-distribute model. These activities involve the interaction between banks' credit creation and market liquidity in both directions. For example, banks' proprietary trading may affect market prices. In turn, market dynamics may impact banks' trading book value (with mark-to-market securities portfolios), as well as lending decisions in the case they run securitisation with risk transfer. Hence, we leave out of our notion of market-based banking: i) indirect forms of interaction between banks and markets through non-consolidated banks' subsidiaries, which we consider as part of shadow banking, ii) non-banks involved in Hardie and Howarth's (2013) 'parallel banking', which have no money creation power and iii) banks' regulatory arbitrage, which we include inside shadow banking.

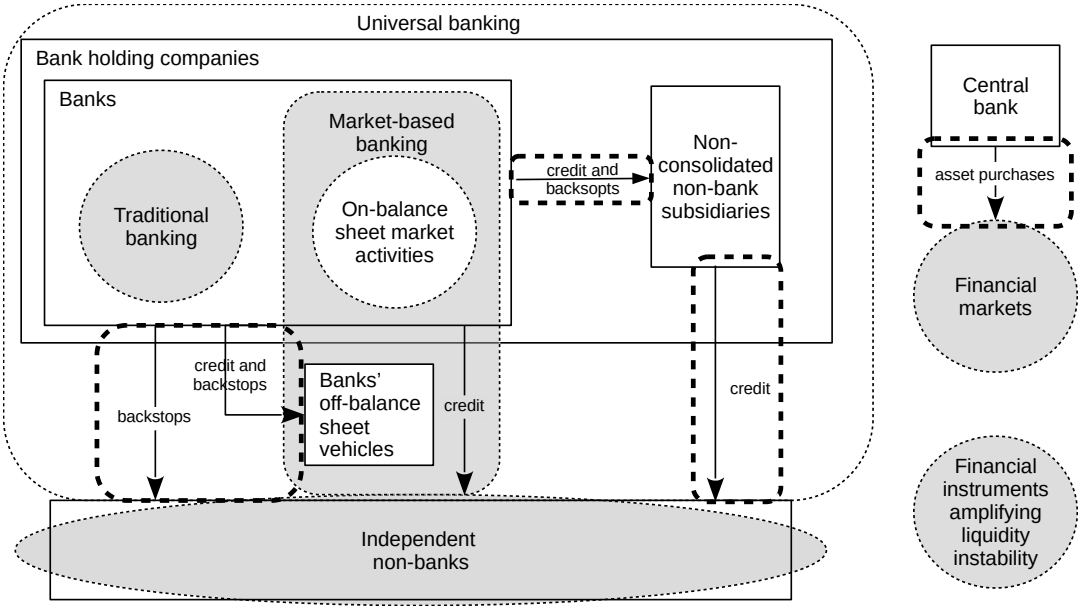
Beyond banking groups, we opt for considering independent non-banks as a single group, instead of trying to differentiate between risky and non-risky intermediaries. With this choice, we seek to give weight to three claims. First, entities offering deposit-like instruments, such as MMFs or ABCP conduits, can only exist if they are backstopped by either banks or central banks (Claessens and Ratnovski, 2014, p. 5; Thiemann, 2018, p. 29; Parlatore, 2015, p. 4). In that way, they are already encompassed by our concept of shadow banking. Second, distinguishing between risky and non-risky non-bank intermediaries in our current liberalised financial systems may prove rather cumbersome (Pozsar, 2015). Moreover, we are experiencing more and more frequent episodes in which even those considered to be the safest assets – developed countries' government debt – are subject to high volatility. This was the case during the euro area sovereign debt crisis (Gabor, 2016a), even more remarkably of US treasuries in March 2020 (Bouguelli, 2019), and more recently of UK gilts in late September 2022 (Bank of England, 2022). Intermediaries traditionally considered rather simple and conservative, such as pension funds, are engaging more and more in risky leveraged strategies typical of the hedge fund industry (Norfield, 2012; Pozsar, 2015; Czech et al., 2021), in which they are also investing. Last, but not least, distinguishing between risky and non-risky entities may be also misguiding. Following Minsky (2016, p. 68), maturity mismatches, as well as high leverage, are not necessarily structural features of certain entities, but may increasingly emerge and increase throughout the financial system as the risk-taking cycle matures[72]. Indeed, Minsky conceived financial intermediation as a business that boils down to 'make on the carry' charging more than what you pay for – leverage and short-term funding are the ways to achieve it (Minsky, 1986, pp. 70, 235, 277). This is even truer nowadays, considering the degree of liberalisation of financial activities and how competition based on targets can push strongly towards higher risk-taking.

Finally, we assign the last category to those instruments that contribute to feeding the illusion of aggregate liquidity, such as repos,

72 See also Ingham, 2004 (pp. 140–141).

which we may simply dub ‘financial instruments amplifying market liquidity instability’.

Figure 12: Our proposal for an updated heterodox financial system’s conceptualisation (shadow banking delimited by thicker dotted lines)



The six forms of systemic risk are identified by shaded areas, except for shadow banking, which is identified by thicker dotted lines.

Source: author’s representation.

All in all, these four categories complement the other two heterodox primary sources of systemic risk – market finance and traditional banking – to build our conceptual proposal, summarised graphically in figure 12. We may recall that, in our design, Minskyan risk-taking already applies to non-banks. While other non-financial actors are also subject to it, we are concentrating on the financial system. Therefore, six forms of systemic risk may be found (all in shaded areas, except for shadow banking, in thicker dotted lines); two basic ones: *traditional banking* (money creation) and *financial markets* (liquidity instability); and four compounding ones: i) *market-based banking* (direct interaction between money creation and market liquidity), ii) *shadow banking* (indirect interaction between money creation and market liquidity) iii) *independent non-banks* (amplifying Minskyan cycles) and iv) *financial instruments amplifying market liquidity instability*.

4. Conclusions

This chapter has sought to shed some light on the future of 'shadow banking' as both an analytical and regulatory concept. We showed that the question is quite relevant for heterodox economists. The utility of the concept is confined to its use in the normative debate with orthodox economists and regulators. For analytical purposes, it is rather inconvenient since it has multiple meanings and has been framed within an orthodox understanding of banking. However, the current dominant narrative among regulators and orthodox economists is that the problems once attributed to shadow banking have been fixed and, hence, they are replacing the term with less pejorative alternatives.

As such, we argued that both orthodox economists and regulators seem to have used 'shadow banking' as a scapegoat, both insisting that it developed invisible to their eyes. Economists pointed to a particular case of market failure in maturity transformation outside banks and certain market frictions due to information asymmetries, of which they were not yet aware. Meanwhile, regulators said the activities were either hidden by fraudulent bank managers or were beyond their reach, in the asset management sector. Hence, once the regulatory reform was concluded, the official discourse announced that 'bad' shadow banking had been extirpated and 'good' shadow banking would henceforth be known as 'market-based' or 'non-bank financial intermediation'.

As a result, the use of 'shadow banking' has been declining since then. Face to that, we defended that the best option for heterodox economists is not to abandon it – for its symbolical value for a normative project – but to redefine it consistently within the heterodox conception of banks as money creators. For that purpose, we have first examined the five different forms of systemic risk identified in shadow banking literature. In turn, we have explored the best way to integrate them into the traditional heterodox analytical framework, made up of three primary sources of systemic risk – Minskyan financial instability, banks' credit cycles and market liquidity dynamics.

We have described three of them as compounded forms of systemic risk since they involve the action of a basic form of risk on another – i) banks' regulatory arbitrage amplifies banking systemic risk, ii) banks' securities financing amplifies liquidity instability through credit creation and iii) banks' originate-to-distribute securitisation involves bidirectional amplification of credit creation and market liquidity instability. The fourth – repos and similar forms of collateralised securities financing – amplify market liquidity instability. Finally, the fifth, non-banks, arises from the effect of Minsky's primary source of systemic risk on these intermediaries, which has, in turn, an impact on the overall financial system.

Finally, we have reviewed several conceptual frameworks to come up with our proposal, adding four analytical categories to banks' credit creation and market liquidity instability. First, 'shadow banking', redefined as *money creation subject to no social contract*, encompassing two different forms – i) banks' shadow banking in the form of banks' off-balance sheet credit and backstops to affiliates and independent non-banks and ii) central banks' shadow banking in the form of asset purchases different from government securities. Second, 'market-based banking', encompassing direct forms of interaction between banks' credit creation and market liquidity: i) on-balance sheet market activities, such as proprietary trading and ii) the originate-to-distribute model. Third, non-banks' Minskyan risk-taking. Fourth, 'financial instruments amplifying market liquidity instability'.

Part 3. Shadow banking, finance-dominated capitalism and growth regimes: a case study and some contributions

We ended part 2 with a conceptual framework that integrates the contributions on financial instability analysis made in shadow banking literature within the traditional heterodox systemic risk theory, that was presented in part 1. In part 3 we aim at incorporating this framework into the macroeconomic analysis of finance-dominated capitalism to assess the relative impact of these developments on the pattern of growth of Spain between 1998-2019. Chapter 5 builds on a qualitative or institutional approach complemented in chapter 6 by a quantitative assessment in terms of contribution to growth, as we detail below.

The analysis of the macro-structural changes of 'financialisation', 'finance-led capitalism' or 'finance-dominated capitalism' has been developed by the French Regulationist school and the post-Keynesian school since the late 1990s (Clévenot, 2011). These authors have identified five main effects of the increasing domain of finance over the effective demand that can be summarised as follows. First, shareholder value maximisation have led firms to shorten their time horizon – focusing on immediate distribution of profits and appreciation of shares – what may have undermined the development of long-term projects and caused sluggish investment (Guttmann, 2008; Hein, 2019; Stockhammer, 2008; Cordonnier et al., 2019). Meanwhile, other authors have noted that the decoupling of investment from profits observed in developing countries may be due, up to an important extent, to capital mobility and firms' offshoring strategies (Auvray and Rabinovich, 2019; Milberg and Winkler, 2010). Second, households' consumption has been undermined

by a decrease in the wage share also related, up to some extent, to shareholder value orientation – pushing firms to squeeze workers' participation in profits – and to capital mobility and the threaten of de-localisation – combined with the deregulation of labour markets and composition changes to sectors with weaker trade unions (Boyer, 2000; Hein and Treeck, 2007; Hein, 2019; Lavoie, 2012; Hein et al., 2018). Third, financial liberalisation has enhanced credit access and conditions for households, which the latter have used to compensate for their decreasing share in aggregate income (Lavoie, 2012). Fourth, heightened competition among institutional investors and banks has fostered financial and real estate bubbles feeding back into consumption through wealth effects and collateral revaluation (Aglietta, 1999; Hein and Treeck, 2007; Hein, 2019; Guttmann, 2008; Stockhammer, 2008; Lavoie, 2012). Last but not least, fiscal policy is constrained by a combination of a lower tax base due to capital mobility and a larger dependence on financial markets financing which may impose limits to public spending (Boyer, 2000; Théret, 2016).

Many authors have already attempted to integrate shadow banking within financialised capitalism macroeconomics, notably post-Keynesians (Michell, 2017; Caverzasi et al., 2019; Botta et al., 2020; Herbillon-Leprince, 2020). Nevertheless, they have not taken into account the shadow banking's polysemic problem that we exposed in part 1 and have typically confined their analysis to one particular area of shadow banking literature – the originate-to-distribute model that prevailed in the US before the GFC[73]. Hence, they have left aside all the other issues addressed in the literature – other forms of banks' regulatory arbitrage and market-based activities, the role of other non-bank intermediaries than banks' vehicles and MMFs, as well as the use of repos beyond the securitisation process.

Most of these analyses have built on stock-flow consistent (SFC) modelling (see Herbillon-Leprince, 2020, pp. 110–122 for a review of SFC models incorporating shadow banking). This is a valuable approach to understand the interaction between the real and financial dimension, but that does not account for institutional dynamics – although these can be

73 These works fall within what we called in chapter 2 the 'post-Keyneisan view' of the first conceptualisation of shadow banking.

integrated through external shocks affecting key parameters (Clévenot, 2006, pp. 216–219). However, our study case does not only feature some important structural transformations – affecting especially the financial system, fiscal spending and the labour market, as we will see in this chapter – but also several important shocks – such as the bust of a housing bubble, the GFC, the euro-area sovereign debt crisis, coupled with capital flows and exports' volatility. All these changes and shocks would need to be properly understood before any SFC modelling attempt, in order to sketch the most convenient design of the model as well as to figure out the way in which they would affect the model's variables. The analysis of these changes and shocks developed on this chapter of these changes by interpreting available evidence in light of the theoretical framework of financialisation macroeconomics and expanded financial instability dynamics could contribute to that. However, we have choose to orientate it towards towards an alternative methodological approach: the supermultiplier demand-led growth decomposition.

This methodology, which is introduced with more detail in the next chapter, has recently gained interest within growth regimes literature (Campana et al., 2022; Hein, 2022; Morlin et al., 2022; Passos and Morlin, 2022). In short, it is a heterodox demand-led alternative to traditional supply-side growth accounting inspired by neoclassical growth theory. Instead, the decomposition builds on supermultiplier theory (Serrano, 1995a) that expands the principle of effective demand to the long-term. Growth is driven by autonomous demand components, those that are not systematically related to production's circular flow of income (broadly, households' credit-financed spending, public spending and exports), while productive investment adjusts to changes in effective demand. This 'supermultiplier' mechanism has been recently theoretically embraced by many post-Keynesians (Lavoie, 2016; Dutt, 2019; Palley, 2019). The supermultiplier growth decomposition methodology allows thus estimating the contribution of demand-related variables to growth – not only autonomous expenditures but also parameters affecting the induced demand, such as functional income distribution or the propensity to consume. The fact that the basic supermultiplier model does not account for the determination of most of the variables means that the demand-led

decomposition methodology has to be complemented with some form of applied analysis to interpret the results. This opens the door for complementarities with other theories, notably with those building strongly on institutional analyses, such as comparative and international political economy (Campana et al., 2022; Morlin et al., 2022) and we claim, also, the French regulation school.

Chapter 5. Finance-dominated capitalism in Spain

1. Introduction

This chapter is devoted to analysing the factors affecting the main demand variables, which will be used in the next chapter to interpret the supermultiplier growth decomposition results and debate with literature on Spain's growth pattern between 1998-2020. Our theoretical framework will ground on regulationist/post-Keyneisan financialisation macroeconomics, introduced above, and our expanded financial instability framework, presented in chapter 4. Thus, we will analyse the institutional changes and financial dynamics affecting the effective demand and we will relate them to the main stylised facts of our period. We will only focus on those concerning households spending (the evolution of the wage share evolution, credit dynamics and wealth effects) and the public sector, hence, leaving aside any eventual effects on productive investment. On the one hand, this decision stems from the fact that this chapter aims at providing the background to interpret the supermultiplier demand-led growth decomposition developed in chapter 6, which does not allow accounting for the changes in business investment envisaged by financialisation literature. Moreover, chapter 6's results do not show any significant deviation in the behaviour of productive investment from supermultiplier theory that could be explained by financialisation. On the other hand, previous macro-fianncialisation analyses of Spain have given a great deal of attention to productive investment, but little to the public sector, as well as to the financial instability dynamics affecting government and households' spending (Ferreiro et al., 2016; Massó and Pérez-Yruela, 2017). Hence, we have prioritised the study of the latter two. Nevertheless, we consider that there is considerable scope for further study of the effects of financialisation on firms' investment in Spain to be developed in the future.

The remaining of the chapter is structured as follows. Section 2 explores the potential impacts of financial instability on the effective demand using chapter 4's conceptual framework. In turn, we examine whether and how the macro-structural changes identified in financialisation literature were at play in our study case and up to which point they were affected by financial instability dynamics. In that way, section 4 analyses the evolution of the wage share through changes in capital-labour relations, section 5 addresses households' indebtedness dynamics, section 6 focuses on households' wealth and section 6 is devoted to public spending. We conclude in section 7 with our final remarks.

2. Financial instability, shadow banking and the effective demand

After analysing shadow banking literature in the first part of the thesis, we concluded chapter 4 with a proposal to re-arrange the heterodox systemic risk conceptual framework to incorporate the contributions of the former. To the two basic forms of systemic risk affecting the financial system – stemming from banks' credit creation and financial markets liquidity – we added four conceptual categories. First, 'shadow banking' defined as money creation out of the social contract. When done by banks it amplifies credit creation instability by expanding competition beyond regulatory safety limits. When done by central banks it can boost market liquidity and risk-taking. Second, 'market-based banking' defined as the interactions interactions between banks and markets – either through proprietary trading, credit to non-banks and the originate-to-distribute model – which create fed back effects between credit creation and market liquidity. Three, non-banks led by Minskyan risk-taking, which can affect overall financial conditions. Four, financial instruments such as repos that can amplify market liquidity instability. All in all, these different elements have an impact on the funding conditions of non-financial agents, as well as on the value of households' wealth, which can in turn influence the effective demand.

As we mentioned above, heterodox authors interested in the macroeconomic implications of shadow banking have tended to focus on just one of these aspects – the originate-to-distribute model. Their assessment is that with this type of securitisation banks' credit creation and overall leverage is stretched by the expanding demand for financial assets, which is used to accommodate for increasing households' indebtedness and inflating asset prices (Michell, 2017, p. 24; Caverzasi et al., 2019, p. 19; Guttmann, 2016, p. 127; Botta et al., 2020)[74]. In turn, this can have indirect effects on households' consumption through wealth effects (Botta et al., 2020). This setting is considered to enable the financial system to detach from the productive process and facilitate wealth accumulation on the basis of households' debt (Michell, 2017, p. 32; Caverzasi et al., 2019, p. 19).

Below we complete this assessment exploring how the remaining sources of financial instability identified in shadow banking literature may affect the effective demand. As mentioned above, we focus on households' and public spending, leaving aside corporate investment. We also leave aside potential feedback effects of changes in effective demand on financial conditions. While they can be important, especially, by enhancing agents' confidence on future prospects, they do not change the internal dynamics of the financial system, which are the focus of our conceptual framework[75]. Moreover, our final goal is not modelling endogenous instability dynamics, but having a background to interpret the results obtained in the next chapter through the supermultiplier demand-led growth decomposition.

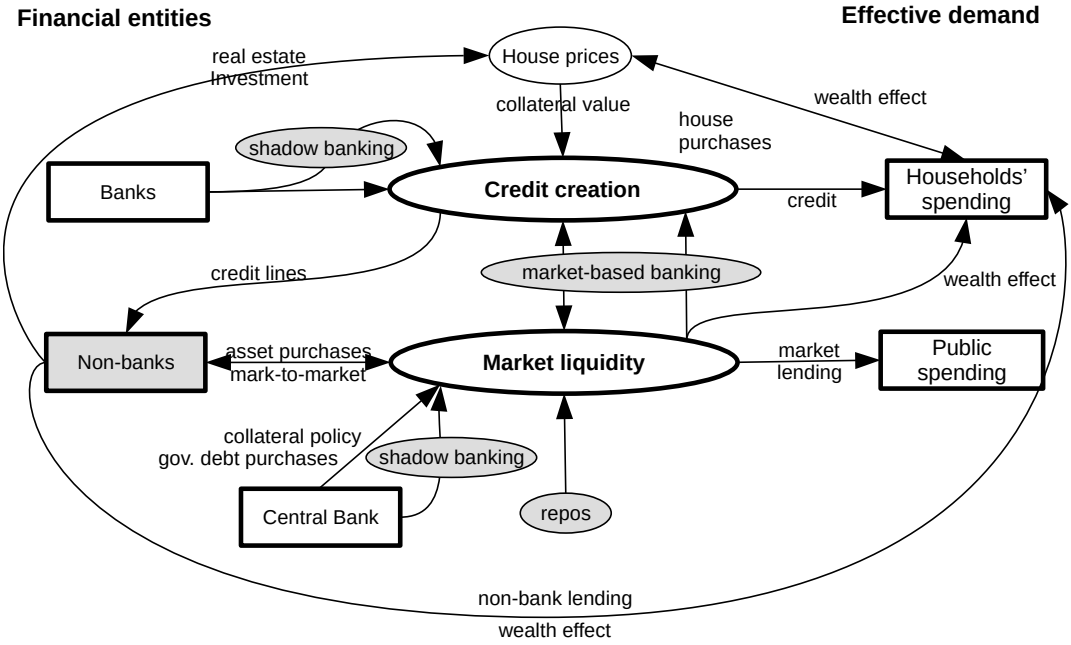
Figure 13 displays our scheme of the potential effects of financial system's instability on the effective demand. The figure's main elements are the following. At the centre we find the two basic forms of financial instability dynamics driving the financial system: bank credit creation

74 As we remarked in the previous chapter, as noted by Lavoie (2012, 2019), this idea does not necessarily rely on the hypothesis that securitisation enables the expansion of credit because capital requirements constitute a hard constraint to banks' credit creation capacity, as is held by some post-Keynesians. Alternatively, it can be argued that securitisation may lure banks to expand credit by the prospects of higher profits in the form of up-front fees and leverage levels above regulatory limits.

75 For example, increases in effective demand result in higher income for both households – from wages and capital – and the government – from tax revenue. The former enhances households' creditworthiness – which may facilitate credit creation – and savings – which may be invested in financial markets. In turn, this may ease governments' funding conditions.

and market liquidity. On the left side we find the two main types of financial entities: banks and non-bank intermediaries. On the right side, we have the two components of effective demand that we take into consideration: households' spending and public spending. Finally, shaded in grey, we can see the four forms of financial instability amplifiers identified in the previous chapter: shadow banking (run by both banks and the central bank), market-based banking, repos and other liquidity-instability amplifying instruments, and non-banks' Minskyan risk-taking. Below we describe the effects of financial dynamics in the effective demand, as depicted in figure 13.

Figure 13: Financial system's instability with shadow banking instability amplifiers (in grey) and the effective demand



Source: author's representation.

Public spending can be affected directly by market liquidity conditions. Government debt yields are typically taken as a reference for financial markets' assessment of fiscal policies, which is an important criterion for their design. Low funding rates give governments more leeway while an increase in interest rates signals disapproval and the necessity of re-consider fiscal policies to abide by creditors' demands and avoid snowball effects. However, market liquidity is inherently unstable and can thus have an important impact on public spending. Market

liquidity dynamics can, in turn, be affected by several factors, as shown in figure 13. On the one hand, liquidity instability can be amplified by i) banks' credit creation dynamics through market-based banking (in particular, proprietary trading activities), ii) non-banks' propensity to risk-taking and iii) the use of repos and other liquidity instability amplifying instruments. On the other hand, the central banks' eligibility policy and asset purchases – both subject to a clear social contract or in the form of shadow banking – can be important in offsetting downward liquidity phases, but may increase the upward ones.

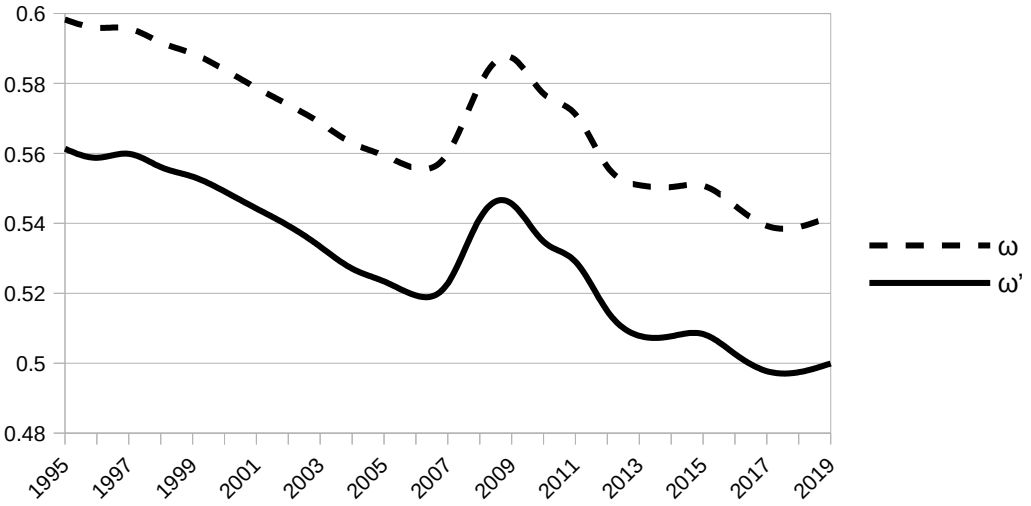
Meanwhile, households' spending may be affected directly by i) credit creation dynamics – driving debt-financed consumption and residential investment – ii) non-banks lending driven by their Minskyan risk-taking propensity dynamics, iii) market liquidity through financial wealth effects – from both their direct investments in financial assets and their non-banks-intermediated portfolios – and iv) the appreciation of houses, which may also feed into consumption through wealth effects. In turn, these four elements are affected by the following financial instability dynamics.

First, banks' credit creation is basically driven by banks' risk-taking propensity and changes in the value of collateral – especially, of real estate. In addition, credit creation may be amplified by i) shadow-banking risk-taking – driving competition beyond regulatory safety limits – and ii) market liquidity dynamics through market-based banking – proprietary trading affecting banks' results through mark-to-market accounting, and the originate-to-distribute model in which demand for securitisation bonds may lead banks' credit creation, since banks can get rid of the risks associated to the loans. Second, non-banks' lending may be affected by banks' credit creation and shadow banking backstops, as well as market liquidity, both enhancing their funding conditions. Three, market liquidity can be influenced by the factors already examined above. Finally, house prices are affected by households' purchase decisions, as well as non-banks' investment in property.

3. The wage share and workers' bargaining power

The decline in the wage share is one of the main macro-structural changes identified in financialisation literature (Boyer, 2000; Hein and Treeck, 2007; Lavoie, 2012) and has been documented for many countries, including Spain (Hein et al., 2018, 2017; ILO and OECD, 2015). Heterodox authors have attributed this to politico-economic changes affecting workers' bargaining power: the retrenchment of workers' protection institutions (the welfare state, trade unions and labour market regulation); free trade, capital movements, and offshoring; firms' behaviour under financialisation; structural changes in the sectoral composition of the economy; and persistent unemployment (Stirati and Meloni, 2021).

Figure 14: Adjusted wage share (over GDP)



Source: European Commission's AMECO database and own calculations from the Spanish non-financial national accounts (Banco de España).

Figure 14 plots the evolution of the wage share in Spain since 1995 using two different measures. One the one hand, the most commonly used indicator, the adjusted wage share (ω), which weights the sum of contractual wages and an the estimate of the wage-like part of households' mixed income (from owned businesses), over GDP (Y), as shown in equation 1 below. This indicator aggregates private wages (W_{Priv}) and government wages (W_G), being, hence, subject to composition effects. For example, when a crisis strikes, we may expect private sector's activity

to contract immediately, but not the public sector's one. Since the wage share is higher in the public sector (because there are no profits), the overall wage share increases in relation to the private one. Although not significant, this effect can be observed in figure 14 between 2007-2009. In In any case, workers in both sectors are subject to different conditions, what justifies paying attention to the private adjusted wage share (ω'), the ratio of wages to gross value added in the private sector.

$$\omega = \frac{W}{Y} = \frac{W_{Priv} - W_G}{Y} \quad (1)$$

Stockhammer (2013) provides an approach to estimate the private wage share, used as reference in heterodox analyses of the determinants of functional income distribution (Stockhammer, 2017; Pensiero, 2017; Behringer and Van Treeck, 2018). As shown in equation 2, this estimation provides an adjustment to the overall adjusted wage share using government consumption (C_G) as a measure of the weight of the public sector in the economy. This is deducted from GDP in the denominator, considering that the wage share in the public sector is equal to 1 since there are no profits.

$$\omega' = \frac{W_{Priv}}{Y - C_G} = \frac{\omega Y - W_G}{Y - C_G} \quad (2)$$

However, government consumption encompasses not only government wages, but also purchases of goods and services produced by the private sector[76]. Hence, we consider it more accurate to deduce only government wages from GDP in the denominator of the private wage share's formula, as shown in equation 3.

$$\omega' = \frac{W_{Priv}}{Y - W_G} = \frac{\omega Y - W_G}{Y - W_G} \quad (3)$$

As figure 14 shows, the adjusted private wage share decreased from 57% in 1998 to 50% in 2018, during both periods of expansion (1995-2007 and 2014-2019) and recession (2008-2013). Leaving aside the cyclical increase in the wage share in the outbreak of the crisis

76 Government consumption also encompasses capital depreciation, which for simplicity we include within government consumption of private goods and services.

(2007-2009) and the increase in 2019 following a substantial increase in the minimum wage[77], the wage share's fall was steady and has to be explained by structural changes.

The following factors seem to have been especially critical during the first period of expansion, characterized by intense employment creation and a remarkable reduction of the unemployment rate. First, a regime of capital-labour relations underpinned by wage moderation, supported by Spain's two main trade unions (Muñoz de Bustillo Llorente and Antón Pérez, 2007). This was formalised in the collective agreements between trade unions and employers of 1997 and 2002 (*Acuerdos Interconfederales para la Negociación Colectiva*) (Cárdenas et al., 2020). These agreements reintroduced the 'voluntary wage policy' – in which 'workers accept a less intensive use of their bargaining power' – that had been already in place in the late 1970s-early 1980s with little success for workers (Ferreiro and Gómez, 2014, p. 111). Second, the labour regulatory reforms of the mid-1990s facilitated that, between 1998-2007, both the coverage ratio of collective agreements and the proportion of union members fell, and the ratio of involuntary part-time employment increased[78]. Third, job creation was biased towards sectors with less struggle tradition and lower ratios of union membership and against traditional industries (Blanco Blanco, 2004)[79]. While real wages in the industry increased slightly between 2001-2008, in the former sectors they fell. In addition, both in construction and in the services sector, the percentage of workers covered by collective agreements decreased (Muñoz de Bustillo Llorente, 2007). Fourth, the precarious conditions under which the large number of migrants from non-EU countries were incorporated into the labour market, despite of a roughly similar level of education, or an even higher one if we do not compare by range of age (ibid).

77 The 2019's minimum wage increase was the most significant of a series of raises initiated in 2016, after several years with no changes. In 2016, the minimum monthly wage was increased from €649 to €655. In 2017, it was raised again to €708, and to €740 in 2018, and finally, in 2019, it was incremented to €900.

78 The ratio of coverage of sectoral collective agreements was relatively high in Spain compared to other countries, while the regulatory minimum wage too low, making the wages set by the former more determinant than the later for the bargaining power balance (Fernández et al., 2006).

79 Half of the new job posts created between 1995 and 2008 were in construction and in sectors G to I in the International Standard Industrial Classification (ISIC): wholesale and retail trade, repair of motor vehicles and motorcycles; transportation and storage; and accommodation and food service activities.

During the recession (2008-2013) cyclical factors affected workers' bargaining power. The unemployment rate rose from 9% in 2008 to 26% by 2013. The effect was intensified by the persistence and duration of unemployment (Stirati and Meloni, 2021), which can be observed in the fall in the ratio of insured unemployed workers (Cárdenas del Rey and Herrero Alba, 2021). Meanwhile, the structural changes brought by the programme of macroeconomic reforms and fiscal consolidation implemented from 2010 also affected workers' bargaining power through: i) the changes in labour regulation implemented between 2010-2012 (Álvarez et al., 2018)[80] ii) the cuts and freezing in public wages between 2010-2014 (Uxó et al., 2016) and iii) the reduction in the quantity and scope of unemployment benefits in 2012[81].

Finally, during the second phase of economic growth (2015-2020), downward pressure on the private wage share may be explained by an increase in precarious employment, facilitated by the labour market reforms implemented during the recession. As a result, the ratio of part-time employment increased between 2013 and 2018 to a level that doubles the EU average. In addition, it must be noted that, by the end of 2019, the unemployment rate still stood at 14%.

4. Households' indebtedness

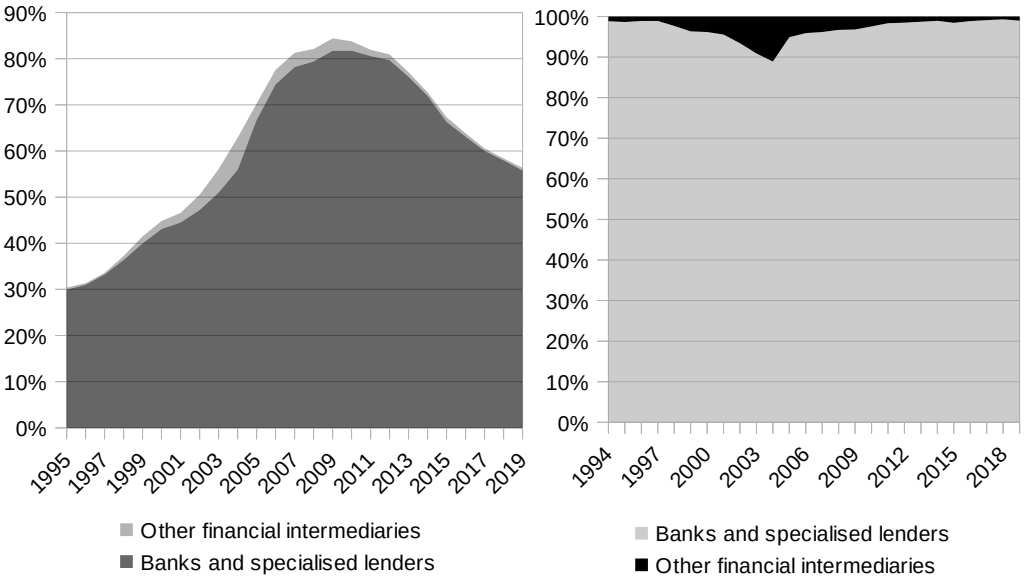
Macro-financialisation literature points at households' indebtedness as a crucial element to offset the depressing effects of the falling wage share on consumption. In Spain, this seems to have been especially important during the economic boom that lasted until 2008, when households' indebtedness increased from 35% to above 80% of GDP, as figure 15 shows. This was followed by a long period of deleveraging, in which households' outstanding debt fell to about 55% of GDP by 2019.

80 The results of a study by the Bank of Spain analysing the effects of unemployment and the 2012 labour reform on wages, point to a deepening of the wage moderation process following the approval of the 2012 reform'.

81 Unemployment allowances after 6 months of welfare were reduced from 60% to 50% of the regulatory base, while restricting access to the minimum assistance benefit (*renta mínima de inserción*) to unemployed citizens with a previous employment record.

Available data does not allow identifying the exact share of banks and non-banks on this lending, but we can clearly infer from figure 15 that the bulk of it was granted by the Spanish banking sector. The right side of the figure shows the highest level of disaggregation for households' borrowing in the national financial accounts, which distinguish between monetary financial institutions – in this case, banks and specialised lenders – and other non-banks. The latter increased their share on households' borrowing during the first economic boom, peaking at 10% of total outstanding households' borrowing in 2004 – when the credit boom was still far from its peak – and receded since then to barely 1% by 2012. Although we do not know the share represented by specialised lenders in total lending to households, it seems to have been negligible. Data from the supervisory statements of credit institutions – encompassing deposit entities and specialised lenders – on outstanding loans to the non-financial private sector shows that the latter accounted for an average 5% during our period.

Figure 15: Households' indebtedness as percentage of GDP (left side) and by lending sector (right side)



Source: Spanish national financial accounts (Banco de España).

As we saw in chapter 2, heterodox authors attribute credit cycles to two factors. On one hand, banks' Minskyan risk taking that makes banks' safety margins to decrease the more times passes since last crisis event – the so-called 'disaster myopia' – as well as with heightened competition that pushes them to expand credit all together to preserve market shares

(Aglietta, 1993; Wojnilower, 1980). On the other hand, mortgage and margin lending can lead to house and stock collateral appreciation that can feed back into more credit creation.

The intensity of these two dynamics depends strongly on the institutional framework. The liberalisation of the banking sector has been held responsible for amplifying financial instability problems in several ways, as noted by heterodox economists and some orthodox dissenters. First, the lifting of quantitative credit controls unleashed competitive forces increasing the intensity of credit boom-busts (Lavoie, 2012; Wray, 2016). Second, the elimination of restrictions on banks' market activities led to amplified effects of credit creation on market liquidity (Sissoko, 2017, p. 2019) and the other way around (Hardie and Howarth, 2013), while it opened the door for shadow banking risk-taking through market-based off-balance sheet vehicles (Acharya and Schnabl, 2010). In the meantime, regulators' discretion has proven key in allowing or stopping banks' engaging in shadow banking activities (Thiemann, 2018; Acharya and Schnabl, 2010). Below we examine the role of these factors on the Spanish credit dynamics.

4.1. Liberalisation, competition and intrinsic myopia

The beginning of the liberalisation of the Spanish banking system can be traced back to the mid-1960s. Before, the sector was characterised by the presence of universal banks – there was no formal separation of commercial and investment activities – the use of certain credit controls used for securing banks' lending to certain sectors, restrictions to competition – to the opening of new branches and the concession of new banking licences and regulated interest rates – both on deposits and loans (Pons, 2012; Martín-Aceña, 2012). The liberalisation process would take three decades throughout which these restrictions were progressively lifted – new branches opening in 1974, capital controls in 1986, the liberalisation of interest rates was completed in 1987, credit controls were finally eliminated in 1992 and the last public banks were privatised in 1999 in what is nowadays the BBVA.

However, some new restrictions and requirements were also introduced during this period. Soon after its accession to the European Economic Community in 1986 – the EU after 1992 – Spain experienced a housing bubble (1986-1991) coupled with a boom in mortgage credit and loans to real estate developers. In response to that, the Bank of Spain decided to enforce quantitative limits on the growth of banks' credit to the private sector in the second half of 1989 and throughout 1990 (Saurina Salas and Trucharte Artigas, 2017). This experience would make the Bank of Spain to introduce certain macro-prudential regulation in the form of countercyclical provisions, which applied between July 2000 and September 2016.

Nevertheless, the last great banking crisis has to be traced way back. Between 1977-1985, 29 banks were intervened and 20 more appertaining to a single group were expropriated. According to regulators, this was the result of a combination of international factors and 'difficulties [deriving] from the way in which the banking status quo was broken up' (FGDEB, 1980; quoted in Poveda, 2012, p. 223). Hence, by the late 1990s, fifteen years had passed since this episode and while capital regulation and supervision had been improved, interest rates and credit controls had been lifted completely, facilitating competitive risk-taking dynamics.

During the decade preceding the 2008 crisis, there seems to have been an intense competition through the expansion of branch networks, interest rate margins and, especially, the volume of credit. Between 1998-2008, the number of branches increased by more than 20%. Margins on mortgage loans were already relatively narrow at the beginning of the credit boom when compared to other European countries and were farther compressed by Spanish banks during the following years[82]. According to Akin et al. (2014), this would have farther fostered competition through massive mortgage origination. The system of incentives that banks

82 By the beginning of 2003, when the ECB starts publishing data on lending margins on loans for house purchase, margins were significantly lower in Spain (1.6 pp) than in the main euro area member (2.0 pp in France, 2.6 pp in Germany and 2.4 pp in Italy) and were reduced to 1 pp by the end of 2007. Similarly, spreads of the average more-than-three-years-mortgage interest rates on the one-year euribor (reference rate for variable-rate mortgages) decreased from 1.5 pp in 1999 to 0.75 pp in 2007, while for covered bonds it fluctuated around 0.7 pp, according to the data published by the Bank of Spain. For RMBS, it went down from 1.6 pp to 0.6 pp, according to the data collected by Peña Cerezo (2014, p. 315).

established during this period did, at least, head in that direction. Branch managers of both banks and *cajas* (savings banks) were granted bonuses based on the volume of mortgages granted, while they held a great degree of discretion to approve loans – only the largest ones needed the approval of risk committees (García-Montalvo, 2009). Meanwhile, the significant lengthening of mortgage loan terms also suggest that banks' eased considerably credit conditions to support their expansion strategy – average from almost 24 years in 2004 (first year available) to 28 years by 2008. The results of the ECB's Bank Lending Surveys also point at competition as the main reason reported by banks for easing credit standards on loans for house purchase. However, the Surveys' results have to be interpreted cautiously since during most of the period there were more banks that reported a tightening credit terms and conditions standards than an easing[83].

The outbreak of the crisis in 2008 was followed by an intense process of consolidation among banking institutions which involved especially the savings banks sector. There was a successions of mergers and most of the *cajas* either converted into banks or were bought by one. Thus, by 2008 only 2 *cajas* lasted from the 47 there were in 2008. Another significant result of the crisis was the outstanding reduction of the branch networks. Although the process started already in the last quarter of 2008, it was one of the 'primary' conditions for the 'operational restructuring' of the sector in the Memorandum of Understanding of the loan granted by the EU to the Spanish government for the bailout of the banking sector in September 2012[84]. By the end of 2020, the number of branches had more than halved.

4.2. Collateral and credit

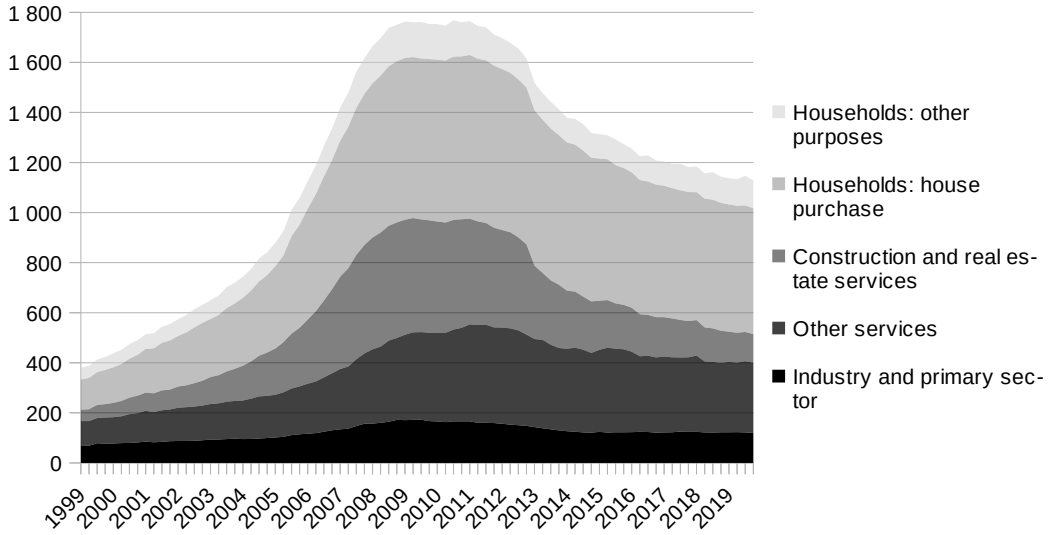
Between 1998-2008, in parallel to heightened competition, we can also appreciate how the feedback effect between housing collateral appreciation and credit expansion came into play. As figure 16 shows, banks' lending activity was remarkably focused on the real estate market

83 The survey only shows more banks easing than tightening conditions from late-2005 to the third quarter of 2006

84 The Memorandum of Understanding can be accessed at: https://ec.europa.eu/economy_finance/eu_borrower/mou/2012-07-20-spain-mou_en.pdf.

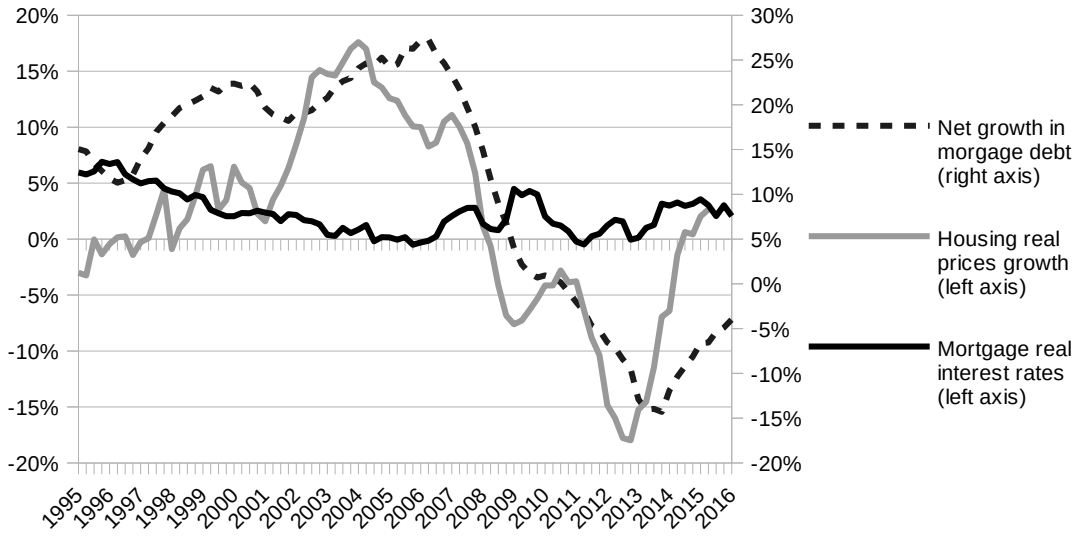
– at the eve of the crisis, about two-thirds of outstanding loans funded house purchases, real estate activities and the construction sector. Initial demand pressures in the late 1990s stemming from socio-demographic factors led to a speculative credit-fuelled bubble. The combination of increasing house prices and decreasing interest rates created substantial profit margins, as shown by figure 17. García Montalvo (2006) showed evidence of the speculative delusions among house buyers. Replicating the Case and Shiller's (2003) US surveys, he founded that, by 2006, residents in the two largest Spanish cities (Madrid and Barcelona) were expecting an average price increase of more than 25% during the following ten years.

Figure 16: Deposit entities' outstanding loans to the private sector (billions of euros)



Source: depository entities' individual supervisory statements (Banco de España).

Figure 17: Mortgage debt growth and interest rates vs. evolution of housing prices



Sources: Banco de España, OECD and Spanish National Institute of Statistics (INE).

In this context, the macroprudential regulations of the Bank of Spain – the countercyclical provisions we saw above – do not seem to have been effective at all in containing the boom. As noted by researchers from the BBVA, the third largest Spanish bank, 'dynamic provisions helped create a cushion in good times, but they did not discourage credit growth or rising house prices in the boom. When the size of a boom is big enough, the impact of additional provisions on credit supply is marginal' (de Lis and Garcia-Herrero, 2013, pp. 46–47). Meanwhile, despite bank supervisors alerted the main competent national authorities – the members of the Governing Council of the Bank of Spain and the Finance Minister and his head of cabinet – no measures were taken.

The exhaustion of the housing bubble can explain the end of the credit boom, which preceded the 2008 crisis and was led by a change in both borrowers' and banks' sentiment towards the market prospects. During the years of the boom, the construction sector had responded vigorously to the increasing demand. In each of the years between 2002-2007, more houses were built in Spain than in France and Germany together, which represent a population three times larger and a territory twice as big (Naredo, 2010). As a result, the stock of unsold houses accumulated over the years and, at some point, the market became too saturated and expectations started to shift.

Already by mid-2004, the price hike had begun to slow down. The volume of new credit for house purchase started decelerating in the second quarter of 2006 and contracting by the end of the year. Meanwhile the number of deals in the real state market had started declining in the second half of the year. Thus, according to the ECB's bank lending surveys, by the beginning of 2007 there were way more banks reporting a decrease in the demand for mortgage loans than an increase. At the same time, banks started tightening credit conditions on the basis of 'the general economic activity' and 'housing market prospects', while the share of doubtful loans began to increase. In addition, the ECB's increased the official rate by 2 percentage points between December 2005 and May 2007, affecting borrowing costs directly since mortgage loans were at variable rates. Nevertheless, we may this could not have sufficed to discourage speculators, which by the beginning of 2007 could still enjoy from an 8 percentage points margin between the increase in house prices and the borrowing cost (see figure 17 above).

Alternative explanations of the credit crunch and the burst of the bubble based on external factors related to the GFC do not seem to be relevant. On one hand, the Bank of Spain (2009, 2017, p. 201, 2013) argues that this was caused by the disruptions in the international markets in which Spanish banks were borrowing large amounts. However, this borrowing was denominated in euros and they had access to the Eurosystem's lender-of-last-resort facilities. Moreover, the ECB's bank lending surveys suggest that the 'costs of funds and balance sheet constraints' played a marginal role in banks' tightening of credit conditions, unlike 'the general economic activity' and 'housing market prospects'. On the other hand, direct foreign inflows into the real estate market had already been decreasing since 2004 and did not represent a sizeable part of the demand, as we will see later.

The burst of the bubble had a great impact on the banking system, although losses would not start showing up until 2010. For the sector as a whole, first losses were recorded in the last quarter of 2011[85]. The macroprudential provisions did likely contribute to delay banks' negative

85 Net income results in 2011 were €7.7bn, down from €18.8bn in 2010, €20.0bn in 2009, €25.4bn in 2008 and €32.1bn in 2007.

results, but they were clearly not sufficient to absorb the sizeable losses. The increase in non-performing loans was generalised, but particularly outstanding for construction and real estate companies – peaking above 37% by the end of 2013 – while for households' mortgage loans, the ratio did not exceed 6% (Banco de España, 2017a, p. 151). At the same time, the banking system accumulated a large volume of depreciated foreclosed properties. Between 2010-2013 a large bailout was deployed in several phases, its largest part at the end of 2012 using the funds lent to the government by the European Stability Mechanism.

By 2014, the banking sector had been recapitalised, house prices had bottomed out and it seems that both households and banks were more willing to engage into credit. The volume of new operations for house purchase and consumption increased for the first time since 2006 and 2007, respectively. Banks reported an increasing demand for credit from 2014 and between 2014-2015 more banks began to report an easing of terms and conditions due to 'pressure from competition', the 'general economic activity' and 'costs of funds and balance sheet constraints', according to the ECB bank lending surveys. Nevertheless, credit activity remained far from the buoyancy of the previous boom – indeed, households continued deleveraging and net borrowing only increased for consumption credit and from 2016 on.

4.3. Shadow banking

As we described in the previous chapter, banks' shadow banking activities can be an amplifier of credit creation dynamics by extending competition beyond regulatory safety limits. During the 2000s, the Spanish banking sector did not get significantly involved in the type of off-balance sheet regulatory arbitrage that was so widespread in other countries. The Bank of Spain had a decisive role on it, preventing banks from obtaining capital reliefs through securitisation without risk transfer and the use of ABCP conduits backstopped by credit lines. Thiemann, 2018, pp (128–129) suggests that this was due to the high profitability the banking sector had in Spain, contrary to other countries such as Germany, were the regulator's permissiveness may have been driven by concerns on foreign takeovers.

Nevertheless, prior to the EU's adoption of the International Financial Reporting Standards (IFRS) – which started applying in Spain in June 2005 with retroactive effect as from January 2004 – Spanish banks did use securitisation vehicles to de-recognise loans from their balance sheets with no restriction[86]. The new accounting standards banned de facto the accounting de-consolidation of securitisation vehicles in which the sponsor retained a significant risk exposure, as banks often did (Thiemann, 2012). Spanish lenders provided credit enhancements to their SPEs typically through subordinated loans for the value of 5% to 10% of transferred assets and interest rate swaps to smooth fluctuations in the collections of mortgage repayments (Collazo Brañanova, Orestes, 2013, pp. 91–92). Unlike in Spain, other national competent regulators decided to prevent this change from having any impact on banks' regulatory capital requirements, endorsing banks' capital regulatory arbitrage.

After the introduction of the new accounting rules, only 5% of new securitised loans were de-recognised from banks' balance sheets leading to regulatory capital reliefs (Fuentes Egusquiza, 2007) – by 2007, only 16% of outstanding securitisation bonds encompassed de-recognised loans[87]. Hence, the orginate-to-distribute model – in which loans are effectively sold and risks spread among investors – widely used in the US was not significant in Spain. However, Spanish banks did continue securitising a large amount of loans, becoming the third world issuers of RMBS in the years preceding the GFC. The use of securitisation vehicles allowed banks detaching the securities' credit risk of the securities from their own credit risk – confining it to the portfolio of securitised loans – obtaining higher ratings and cheaper funding.

Similarly, the use of ABCP conduits for off-balance sheet risk taking was also forbidden in Spain. As we described in previous chapters, these conduits were used by banks to hold long-term ABS against short-term commercial paper, booking a good spread with no capital charge. Banks backed these vehicles through credit lines of less than one year that were exempted in most of the countries by a applying a 'credit conversion factor' – used to calculate the regulatory capital charge – of 0%

86 CBE 4/2004

87 According to the data from the Bank of Spain's Supervision Reports.

(Thiemann, 2018, pp. 127–128; Acharya and Schnabl, 2010). In Spain, the regulator imposed a factor of 100% in 2002, that was later lessen to 50% in 2008 with the introduction of the new Basel regulation.

Notwithstanding, Spanish banks did use another form of regulatory arbitrage. During the economic boom that ended in 2008, they did often grant mortgage loans above the purchase price of houses (Bover et al., 2019). Through appraisal agencies – that they owned in most of the cases (Aznar, 2011) – banks obtained inflated collateral book values which allowed them to lend above the house prices but reporting loan-to-value ratios below 80%. Any loan above this threshold was considered to be riskier and was subject to higher capital charges – as well as not eligible for collateralising RMBS and covered bonds (ECB, 2009)[88]. Thus, between 2004-2006, the median appraisal was almost 1.5 larger than the purchase value (Bover et al., 2019). This regulatory arbitrage strategy allowed Spanish banks to increase their leverage beyond the safety limits established by regulation. In that way it constitutes a shadow banking activity within our chapter 4's definition and may have contributed to amplify credit creation and risk taking dynamics by expanding banks' possibilities for competition – not through off-balance sheet vehicles but 'cooking' the books to hide risk exposures.

4.4. Market-based banking

As we noted in the previous chapter, market-based banking activities – in particular, the originate-to-distribute model and proprietary trading – can lead to spillover effects of market liquidity dynamics on credit creation[89]. On one hand, securitisation following the 'originate-to-distribute model' – transferring loans' risks to investors – can foster banks to expand credit if demand for ABS increases. As we showed above, this was not significant among Spanish banks, which used

88 Covered bonds are on-balance sheet debt securities issued by banks backed by a pool of loans on which only their holders have recourse in the event of failure of the bank. Hence they are safer than RMBS since they offer a 'dual recourse' – to the pool of loans and to the whole banks' balance sheet. During the 2000s these two instruments were the main source of funding of Spanish banks in wholesale markets.

89 We may recall that our definition of 'market-based banking' (chapter 4) is is narrower than Hardie and Howarth's (2013) original one – which includes non-banks or 'parallel banks' side – and describes direct interactions between bank credit creation and market liquidity either through the originate-to-distribute model or the trading book.

securitisation mainly for funding purposes, retaining the exposure to loans' risks. This continues being the case after 2008. However, instead of selling the securities to investors, banks have been buying the bulk of their own issues to pledge them as collateral to the Eurosystem – according to SIFMA's data, between 2008-2018 Spanish banks retained 94% of their issues[90]. This became a common practice among European banks that was given the name of 'securitisation-for-repo' (European Securitisation Forum, 2008, p. 1) or 'originate-to-repo' (González-Páramo, 2010) – since the Eurosystem conducts its lending operations through repos.

On the other hand, market liquidity may affect banks' lending activity through their trading operations if banks' portfolio value falls down sufficiently to lead banks to reassess their risk-taking strategy and tighten credit conditions. The Spanish banks' trading book – which encompasses those assets that are marked-to-market and hence exposed to price volatility – was sizeable, although relatively smaller compared to other countries. By 2007, it accounted for 17% of their assets – the equivalent to almost half of that year's Spanish GDP – but for French and Dutch banks it was 46% and 28% respectively (Hardie and Howarth, 2013, p. 33; CGFS, 2009, p. 9).

In any case, market volatility do not seems to have had a great impact on Spanish banks during the GFC, which were not so so exposed to US mortgages as other European banks were – notably Belgium, British, Dutch, French and German banks, which suffered significant losses and received large bailouts from their governments between 2008-2009 (Hardie and Howarth, 2013). Some Spanish banks did record some losses on investments in Lehman bonds on behalf of their clients, but the bulk of their risk exposure was concentrated on the Spanish economy and its real estate market (Royo, 2013, p. 638). Therefore, when accounting rules were changed in October 2008 (Bischof et al., 2011; Fiechter, 2011) allowing banks to reclassify assets out of the trading book 'to avoid higher markdowns and accordingly reduce the effect on income' (ECB, 2008, p.

90 Initially Spanish banks did not need to resort significantly to Eurosystem's borrowing. However, after the collapse of the ABS market in 2008, Spanish banking institutions continued securitising loans with the sole purpose of accumulating ABS as a precautionary measure 'to have at hand collateral with which to obtain financing at the Eurosystem' (Banco de España, 2009b).

77), Spanish banks did not significantly resort to it, contrary to many of their European peers[91]. According to Bischof et al. (2010, p. 3), 'a number of system-relevant banks would have faced the risk of immediate bankruptcy had the amendment (or, alternatively, changes to regulatory capital requirements) not been adopted'.

Quite the opposite, many Spanish banking institutions seemed to have indeed benefited from financial markets' distress. During the decade prior to the GFC, the Spanish banking sector had been funding itself extensively abroad in wholesale markets through mortgage-backed capital market instruments – RMBS and covered bonds. With the contagion of the US mortgage crisis the price of these securities collapsed, despite the low default rates of the underlying loans. European banks seem to have been one of the main links of contagion[92], while asset managers amplified the shock by dropping their portfolios to avoid mark-to-market losses (Estrada and Saurina, 2016). In this environment, Spanish banks took advantage to buy back their own liabilities at discount prices – which they could finance easily by pledging them as collateral to the Bank of Spain – booking substantial capital gains[93]. This is a practice that they pursued throughout several years.

5. Households' wealth

Wealth effects affecting households' consumption can stem from changes in the value of their real estate property and their financial assets. As figure 18 shows, the largest part of Spanish households' wealth consists on real estate assets. Their value has fluctuated rather

91 While Bischof et al. (2011) find that one out of the eight Spanish banks in their sample reclassified assets under this scheme, none of the eight banks of Fiechter's (2011) sample did it. The change in accounting rules was made by the International Accounting Standards Board (IASB) – which sets the accounting rules in the EU since 2005, the IFRS – following pressures from the European Commission (Bischof et al., 2010). The amendments to the IAS 39 and the IFRS 7 were enforced into EU law in record time, allowing banks to reclassify assets from their trading into their banking book and, hence, valuing them at historical cost instead of their market price, avoiding booking large write-downs. Banks could choose the date of reclassification, i.e. the value at which they wanted to record the asset up to July 1, 2008.

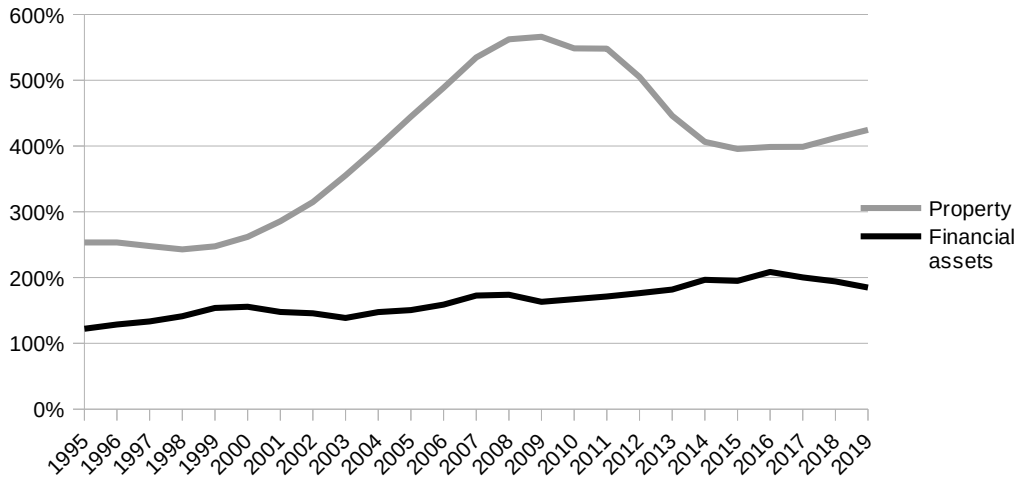
92 According to the BIS consolidated banking statistics, between September 2008 and March 2011, British banks reduced significantly their exposure to the non-bank Spanish private sector, which encompasses banks' securitisation vehicles. By the end of 2008, the latter accounted for about 60% of outstanding fixed-income securities from Spanish issuers.

93 Spanish banks purchased the securities at premium over market price but at significant discount over face value (CNMV, 2012).

cyclically, going from around 250% of GDP at the beginning of our period to above 650% at the beginning of the crisis in 2008 – we may note that house prices more than doubled during this period. Meanwhile financial wealth has represented around one-third of total households' wealth at the beginning of the two phases of economic expansion – in 1998 and 2014. However between 40-50% of it is made up of bank deposits and it is hence not subject to market fluctuations.

Analysing the whole set of factors behind the evolution of the prices of theses assets is beyond our scope in this chapter, something that would require, *inter alia*, evaluating the impact of changes in the official interest rate and analysing the conventions guiding investors (Orléan, 1999, chap. 3). Here, we will just focus on assessing whether financial institutions may have had any impact on them through the channels we envisaged above (figure 12) relying on balance sheet and transactions data on the Spanish financial system and the Eurosystem; since no capital controls apply, we may also consider foreign financial inflows. We may highlight that this type of data only accounts for *net* transactions throughout a certain period, not the volume and composition of total demand, for which *disaggregated gross* transactions would be needed[94].

Figure 18: Spanish households' wealth (as percentage of GDP)



Source: Banco de España 2018 Annual Report.

94 We refer here to effective gross transactions or what Borio and Disyatat (2010, p. 9) dub 'gross-gross' transactions. In national financial accounts, net or gross flows indicate whether changes in assets are net of changes in liabilities or not. However, gross flows estimate *net* changes in a particular category of asset or liability. For an actual gross estimation we would need data on all the transactions made on a particular item.

5.1. Real estate wealth

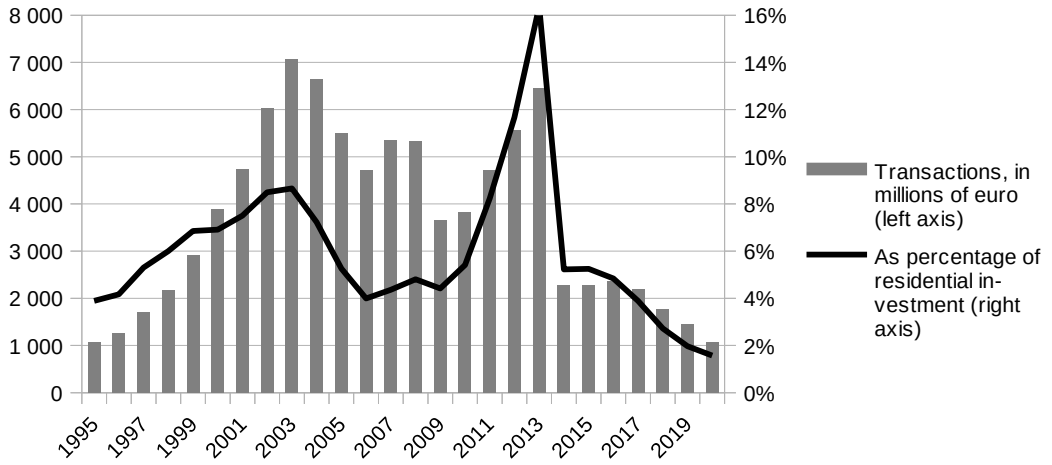
The house price dynamics seem to have been importantly driven by households' purchases financed by bank credit – we analysed above the factors affecting the banking system's lending dynamics – the volume of non-banks' loans was negligible and likely focused on consumer credit. Non-banks do also seem to have had no significant impact on households' property wealth by outright investment in property – real estate funds' assets represented 9% of total investment funds in September 2008 (first figure available from the national financial accounts) and 0.001% of households' real estate wealth.

Meanwhile, foreign inflows – which corresponded mainly to individuals (Rodríguez and Bustillo, 2008; García-Herrero and Fernández de Lis, 2008) – do not seem to have been relatively significant. Figures 19 and 20 display the evolution of foreign real estate direct investment by individuals and firms, respectively. Columns shows transactions values in millions of euros and lines as percentage of residential investment. The latter has to be interpreted as a relative reference indicator, not as an estimation of their share in total demand, which is much larger since investment only accounts for primary market transactions. As we can see in figure 19, during the 2000s boom, only individuals' investment was significant, with a peak value in 2003 that represented a volume equivalent to almost 9% of residential investment, which in turn accounted for no more than one-third of total number of transactions[95]. In addition, they might be overestimated, as suggested by the sizeable fall in 2014 when there was a change in methodology and primary source, which is supposed to provide a more accurate estimation. Moreover, foreign inflows increased considerably once the bubble had burst and prices were falling substantially, from 2010 onwards, both for individuals and firms. All in all, this suggests that their importance to explain the bubble was marginal. At most, they could have contributed to

95 Residential investment only accounts for house purchases in the primary market. For the whole market there is no data available on the volume of transactions, only on the number of transactions, published by the Spanish Ministry of Public Works – the year in which the series starts, 2004, they accounted for 32% of total transactions and their weight followed a downward trend until the crisis.

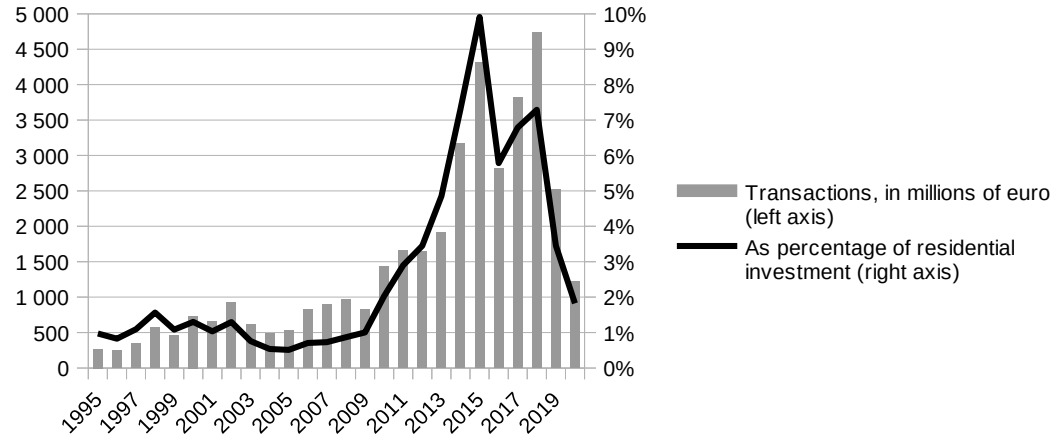
slow down the sizeable fall in prices that followed the burst and the recovery of the market from 2015 onwards.

Figure 19: Foreign real estate direct investment in Spain by individuals[1]



[1] Estimates also include legal entities' investment, although according to the Bank of Spain, its value is negligible and most of their real estate investment goes through equity participations in firms located in Spain. In 2014 there is both a change in methodology and primary source, so figures are not comparable with the previous years.
Source: Banco de España and Spanish National Statistics Institute (INE).

Figure 20: Foreign real estate direct investment in Spain through equity participations



Source: DataInvex (Spanish Ministry of Industry, Commerce and Tourism).

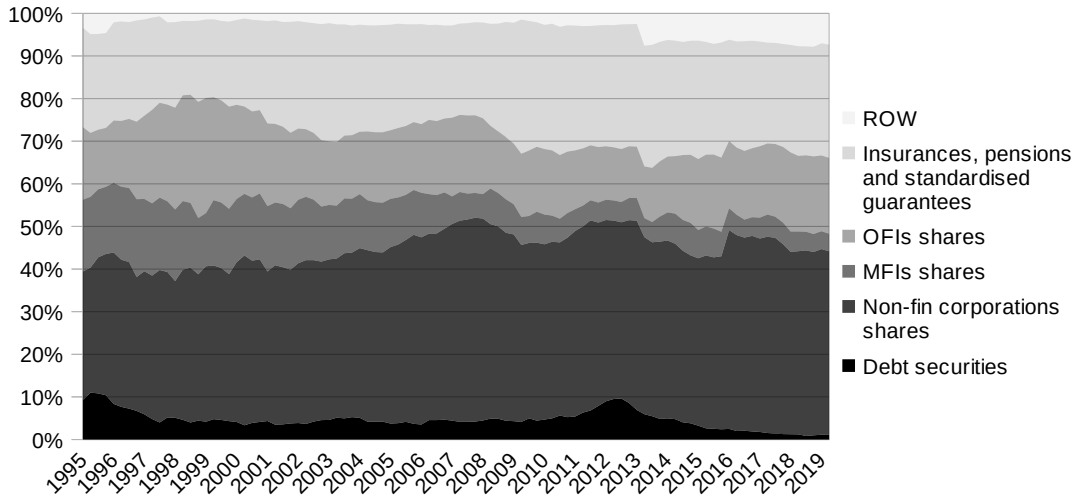
5.2. Financial wealth

Households' financial wealth is made up of items whose value is set in financial markets and, hence, fluctuates through time and others than not. However, available data does not disaggregate assets based on this criteria – neither the national financial accounts nor the Bank of Spain's

Survey on Households Finances. Some asset categories, such as currency and bank deposits are not subject to market fluctuations, but other categories, such as shares and equities are mixed – they include both shares which are not publicly traded and equity participations that can not be sold. Moreover, some assets may be subject to market pricing but may have a less clear impact on households' current wealth since they involve long-term contractual commitments, such as some pension and insurance schemes, but other have features of investment products, allowing clients to withdraw their money.

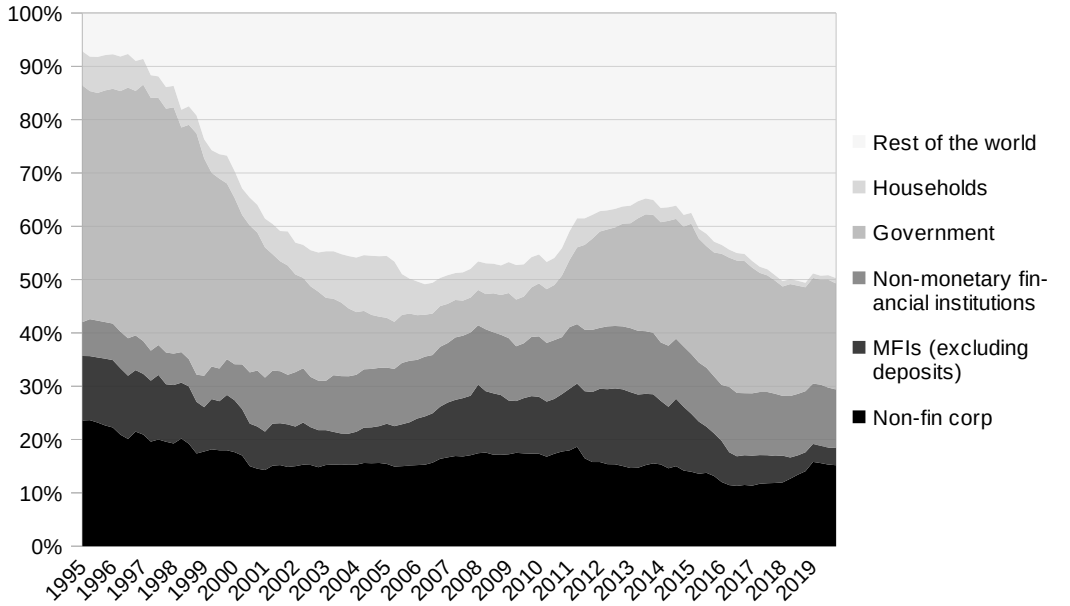
We opt for a wide-ranging approach encompassing every financial asset category but currency and deposits – the latter are the largest category, accounting for 40-50% of total financial wealth, as noted above. As figure 22 shows, the part of households' financial wealth potentially exposed to market fluctuations is mostly made up of non-financial corporations' shares (about 40%) and claims on non-banks – insurance and and pension schemes (around 25%) and other financial intermediaries, most likely investment funds (20%). In turn, these intermediated holdings seem to consist mainly on securities issued by the rest of the world and government debt – each one accounting between 40%-50% since the early-2000s, see figure 22 - and government debt.

Figure 21: Households' financial wealth excluding cash and bank deposits (millions of euros)



Source: Spanish national financial accounts (Banco de España).

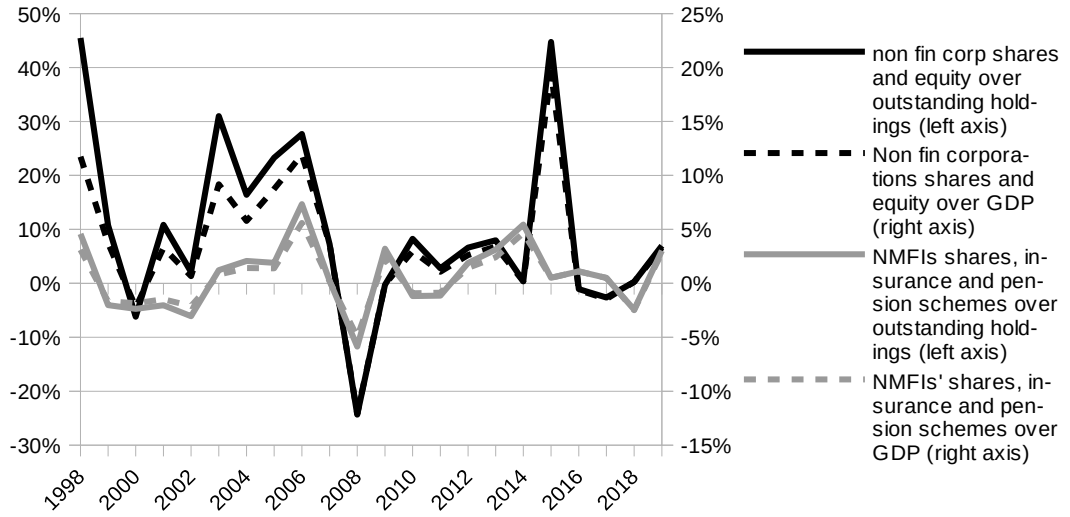
Figure 22: Non-banks' asset composition by counterparty sector[1]



[1] Excluding deposits at monetary financial institutions, which consists mostly in the accounting counterpart to banks' securitised loans retained on-balance.
Source: Spanish national financial accounts (Banco de España).

Through the national financial accounts we may obtain a rough picture of the size of the fluctuations in the value of households' holdings of their two main items of financial wealth – equity investments in non-financial corporations and non-banks – by deducting net acquisitions from net changes in outstanding value for each of both. Figure 24 plots the results over i) the outstanding value of households' respective holdings at the beginning of that year (continuous line) and ii) each year GDP (dashed line). As we can see, price fluctuations were significant for corporate stocks during the first half of the period, as well as their size in relation to GDP, exceeding 10% in 1998 and 2006 – the peak in 2015 is due to a primary data cleaning concerning the estimation of unlisted shares and equities, the main Spanish stock index, the IBEX 35, fell slightly that year.

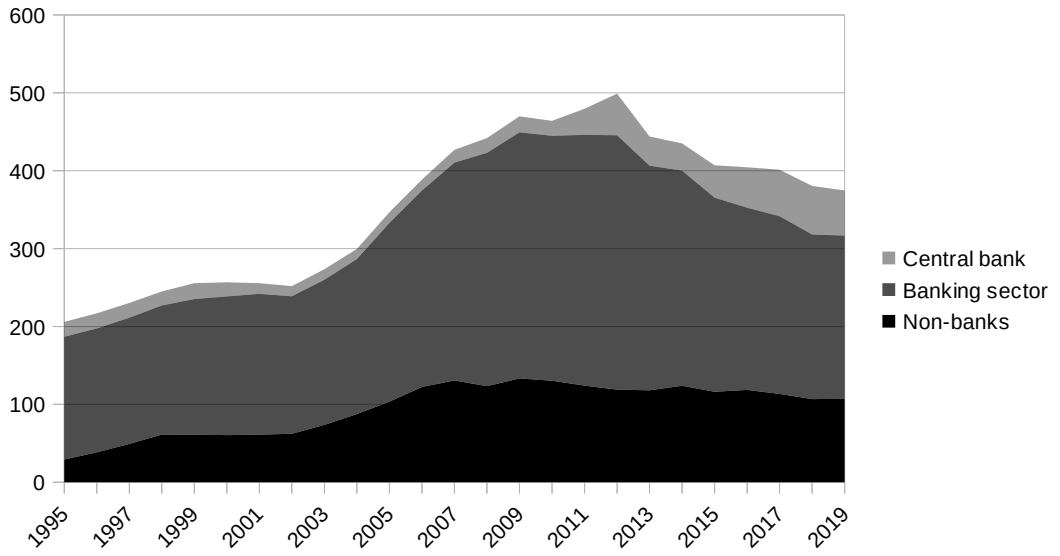
Figure 23: Revaluation of households' main financial wealth items: over outstanding holdings (continuous lines, left axis) and over GDP (dashed lines, right axis)



The peak values for non-financial corporations shares and equities in 2015 stems from a primary data cleaning concerning the estimation of unlisted shares and equity.
Source: Spanish national accounts (Banco de España).

As we noted above (figure 12), the value of households' marketable financial wealth can be affected by the financial system through i) banks' proprietary trading activities, ii) non-banks – either directly through households' intermediated savings or indirectly affecting market liquidity – iii) central bank interventions and iv) the use of repos. Since we are dealing with data on a country basis, we may add foreign capital inflows. We examine this this five factors below. As reference data we may note that we are dealing with a part of households' wealth that represents at most one-quarter of the total.

Figure 24: Spain. Composition of the Spanish financial system (as % of GDP)



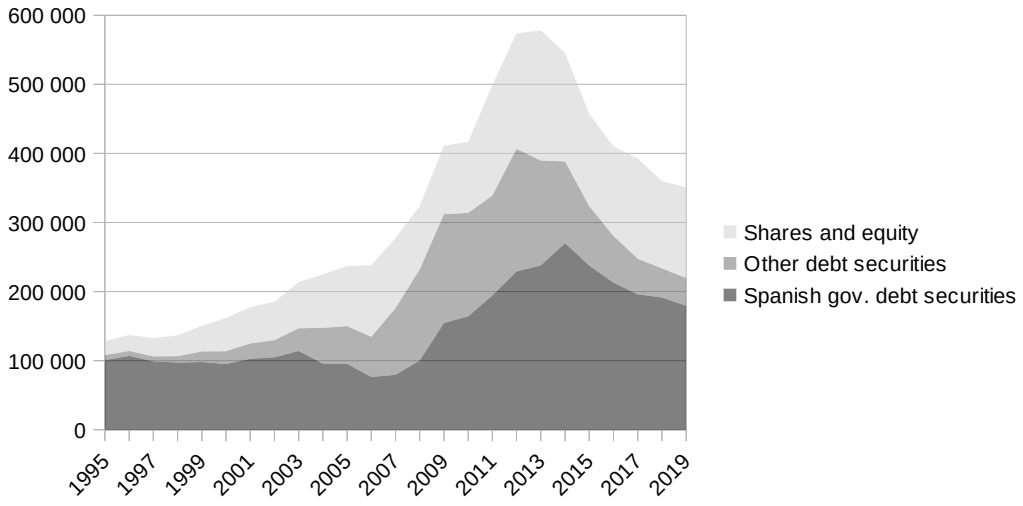
Source: financial accounts of the Spanish National Accounts (Banco de España).

5.2.1.Market-based banking

As figure 24 shows, in terms of balance sheet size, banks dominate the Spanish financial system. Although the size of the non-bank sector is not negligible, it is overestimated, as we show below, since the only consistent data for both sectors comes from the national accounts, which group entities on a individual and not on a consolidated basis. Nevertheless, we showed above that Spanish banks' activities are focused on domestic credit and that market-based banking is relatively less significant than in other European countries. Figure 25 the volume of debt securities and shares held by banks based on their consolidated statements – insurance companies and non-financial companies owned or controlled by banks are not included. Spanish banks did increase their holdings of equity, although this might be related to non-consolidated companies, since their acquisitions of equity participation on non-financial corporations was negligible as we will see later and they reduced their market share on Spanish listed stocks – from 15% in 1995 to 3% by 2020 (García Coto and Garrido, 2022, p. 2). Thus, they seem to had little direct effect on financial markets through their portfolio of securities during the main boom that lasted until 2008. Nevertheless, once the crisis

started, they did increase substantially their holdings of debt securities, especially from the Spanish government, but also from other sectors, as shown by figure 25.

Figure 25: Outstanding debt securities and equity participations held by Spanish banking entities (millions of euros)



Source: statistics based on depository entities' individual supervisory statements (Banco de España).

An important part of the latter may be related to the significant support that they seem to have provided to non-banks during the crisis. We can observe that relying on non-consolidated data, since data based on consolidated statements do not offer that level of disaggregation. On one hand, banks' increased considerably their holdings of non-banks' debt securities between 2007Q3-2009Q2, by more than €200 billion, although an important part of it has to be related to retained securitisation bond issues (from consolidated vehicles) to be used as collateral to borrow from the Eurosystem, as we described above. On the other hand, between 2007Q3-2012Q1, banks increased their outstanding loans to non-banks from €23 billion to €130 billion, the equivalent of around 10% of GDP. Again, this include both consolidated and unconsolidated entities, as well as independent intermediaries.

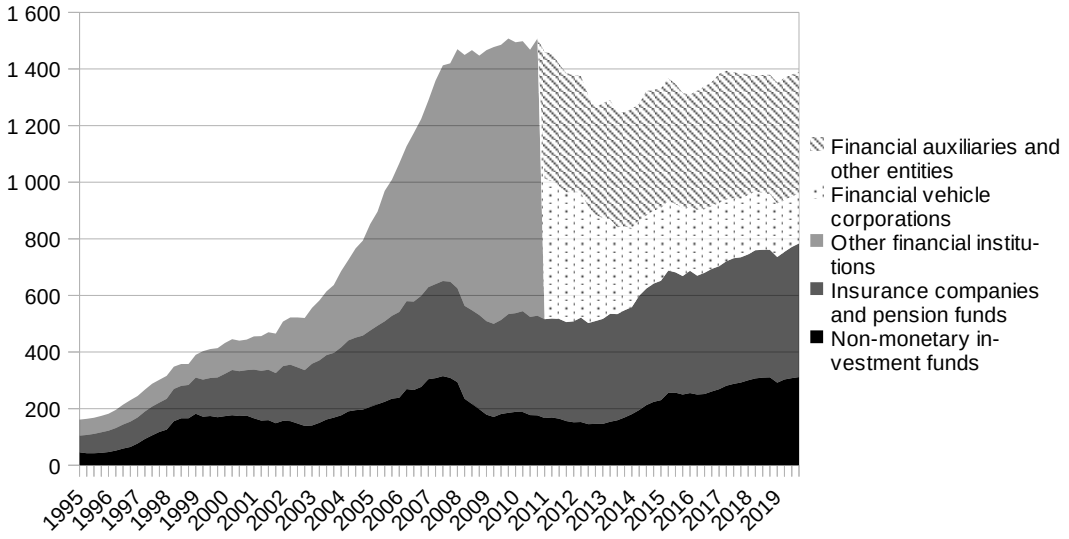
Apart from these operations, banks' transactions on derivatives can also have an important impact on market liquidity, but about which we can infer little from available data. Similarly, we know that banks' did grant stock-collateralised loans to investors, but we do not know if the volume was important. All in all, we can only conclude that banks may

have had an indirect effect on households' financial wealth by backing non-banks and intervening in the sovereign debt market, in which households owned a part through the intermediary of non-banks.

5.2.2. The non-bank sector

The non-bank sector grew considerably in the last twenty-five years, as can be seen from figure 24 above. In relation to the size of the banking sector, in the late-1990s, it represented one-third, at the eve of the crisis, it amounted to about 45% and after the following contraction of the banks' balance sheets, it increased to 50%. Nevertheless, as we already advanced before, the non-bank sector is mostly owned by banking groups and, moreover, an important part of it is just an accounting extension of banks. This is the case of securitisation vehicles, which were mostly consolidated for both accounting and prudential purposes, to which we may attribute more than half of the increase in the non-bank sector, as shown by figure 26 – disaggregated data is only available from 2011. The other half of the increase within the other financial institutions group seems to stem from holding companies set by financial groups for organisational purposes. Meanwhile, the remaining non-banks, the collective savings' management sector that has led the growth of the non-bank sector since the crisis, is largely dominated by banking groups. The latter control around 50% of insurance companies' assets (Afi, 2021) and, since 2015, more than 80% of investment funds' assets (Álvarez Román and Mayordomo Gómez, 2020). Finally, other entities commonly associated to shadow banking, such as MMFs or hedge funds have a negligible size.

Figure 26: Spain. Composition of the Spanish non-bank sector (billions of euros)



Source: financial accounts of the Spanish National Accounts (Banco de España).

As we saw above (figure 26), the value of investment funds, insurance companies and pension funds' intermediated savings was quite volatile during our period, but the size of these fluctuations was rather small compared to that of households' direct holdings of corporate equity. Most of the fluctuations in the former may be attributed to movements in international markets – we saw above that the largest part of their assets were claims on foreign entities. Nevertheless, their exposure to Spanish government debt increased in the aftermath of the crisis. Thus, the fall in price of these securities during the sovereign debt crisis may have had some impact on the value of households' intermediated financial wealth.

Meanwhile, non-banks do not seem to have had a great direct impact on the value of corporate stocks – the main form of households' financial wealth. Insurance companies and pension funds invested mostly in debt securities, not equities, while, among investment funds, bond funds were much larger than equity funds throughout our period[96]. Finally, we may note that, according to the (Banco de España, 2020a, p. 86), by 2019, these intermediaries were not investing that differently than banks – more than 40% banks' financial securities portfolios of that year involved common holdings with investment funds, insurance companies

96 The asset size of the former was about 10 times larger than the later on the eve of the crisis, since then it has decreased relatively and by mid-2020 it was only twice larger.

and pension funds – neither between them – with cross-shares of common holdings ranging between 65%-85%.

5.2.3. Repos

Assessing the impact of repos on the liquidity of households' financial assets, first of all, due to limitations of available data on collateral composition. For the best of our knowledge this is only estimated by the ECB's Euro Money Market Survey – conducted over a large panel of European banks – on a geographical basis, and the ICMA's European Repo Market Survey – that targets a representative sample of large financial institutions operating in Europe, mostly banks – disaggregating by country and by category of issuer, between governments and others. According to the latter, between June 2001-December 2021, government collateral accounted for an average of around 85% of Spanish collateral used in repos. Other securities would have amounted to a peak value of around €100 billion of collateral at the eve of the crisis.

The latest ECB's Money Market Study – based on the Money Market Survey – do differentiate among collateral issuers, although on only for the aggregate results, assessing that most of private collateral consisted in financial companies' bonds (ECB, 2021, p. 11)[97]. The latter represent a small part of both households' direct and intermediated holdings of financial assets[98]. Therefore, the only identifiable effect that repos could have had on households' financial wealth was on the value of their intermediated savings invested in government debt.

5.2.4. Central bank

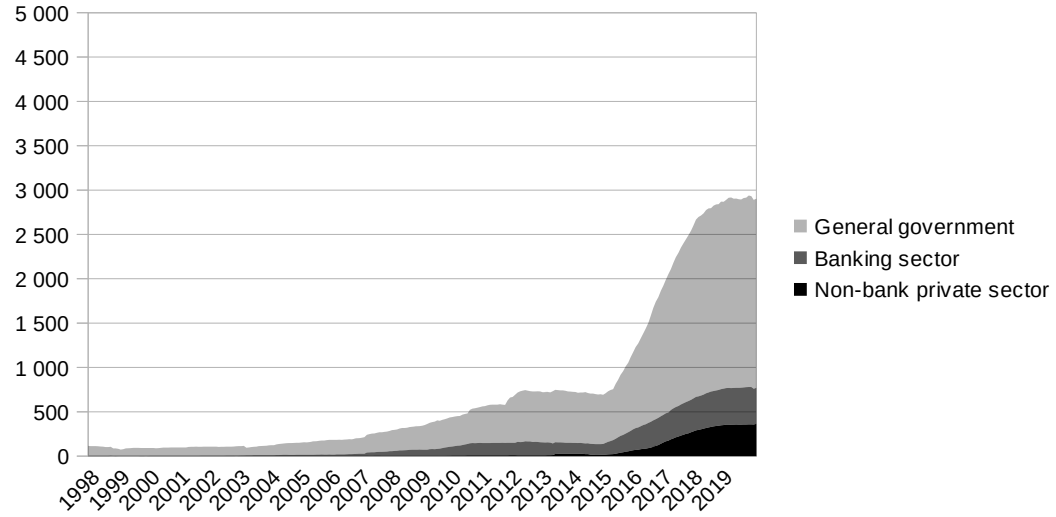
Asset purchases by the central bank do not seem to have had a significant direct impact on households' financial wealth, since they targeted debt securities. Figure 27 displays the evolution of the portfolio of debt securities held by the Eurosystem, which increased significantly

97 The last two ECB's Money Market Studies – 2018 and 2020 – differentiate between government and private collateral. However, figures are given on an aggregated basis and are not disclosed in the public dataset.

98 According to the national financial accounts, most of non-banks' debt securities portfolio was made up of securities issued by foreigners and the Spanish government.

between 2007-2012 to later explode between 2015-2018 and the covid-19 crisis. We can see how interventions focused on government debt, while the purchases of bank-related debt since the beginning of the GFC and of corporate debt from 2016 on have also been significant in relation to the size of the market – almost 10% by 2019 (Holm-Hadulla et al., 2022). Thus, its main effect would have been on households' intermediated holdings of government debt by pushing up prices. In any case, the Eurosystem's interventions were crucial in stabilising financial markets and avoiding larger liquidity spirals in the aftermath of the GFC.

Figure 27: Breakdown of Eurosystem's aggregated holdings of debt securities



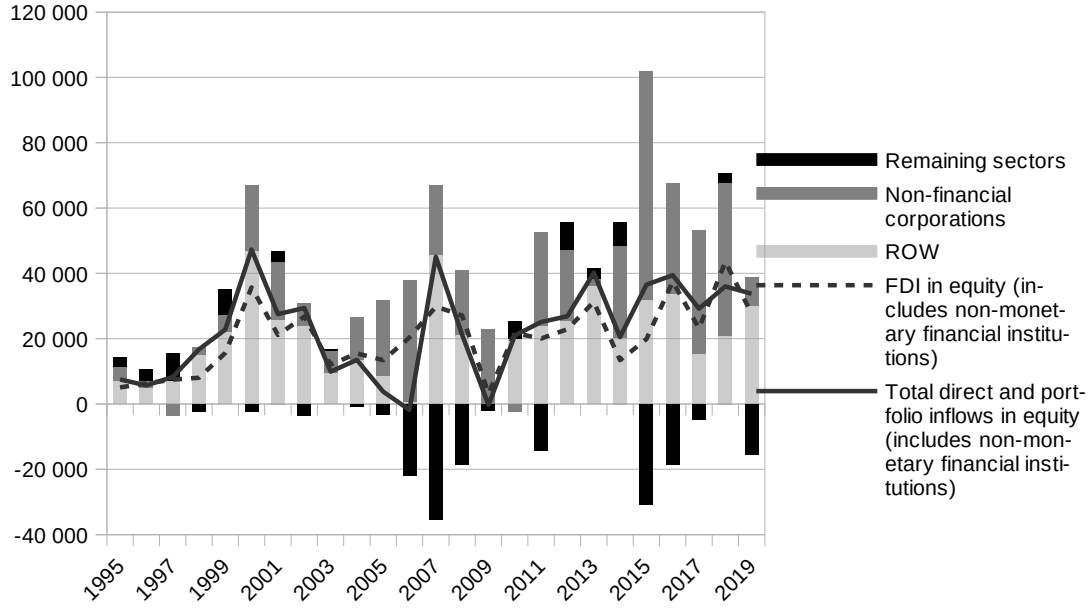
Source: ECB.

5.2.5. Foreign inflows

Foreign capital inflows into non-financial corporations' equity were sizeable throughout our period, slightly larger than the volume of acquisitions within the resident non-financial corporate sector. Acquisitions by the remaining sectors were smaller, as shown by figure 28, with net disinvestment between 2006-2008 and 2015-2016 driven by households. Foreign inflows seem to have corresponded mainly to direct investment. Although available data by functional category aggregates non-financial corporations and non-monetary financial institutions, we can see that the sum of foreign direct and portfolio investment roughly matched foreigners acquisitions of corporate equity. Nonetheless, if we

focus on publicly-traded companies, between 1998-2007, non-financial corporations increased their share in the market from 5% to 25%, while foreign investors' share remained stable at 37% . On the contrary, between 2007-2020, foreign investors increased their share to 50%, while non-financial corporations decreased to 21% (García Coto and Garrido, 2022). All in all, this suggests that foreign inflows may have exerted an upward pressure on Spanish stocks throughout all our period, appreciating the largest item of households' financial wealth (leaving bank deposits aside).

Figure 28: Financial transactions on resident non-financial corporations' equity by institutional sector (columns) and functional category (lines) (million of euro)



Source: Banco de España.

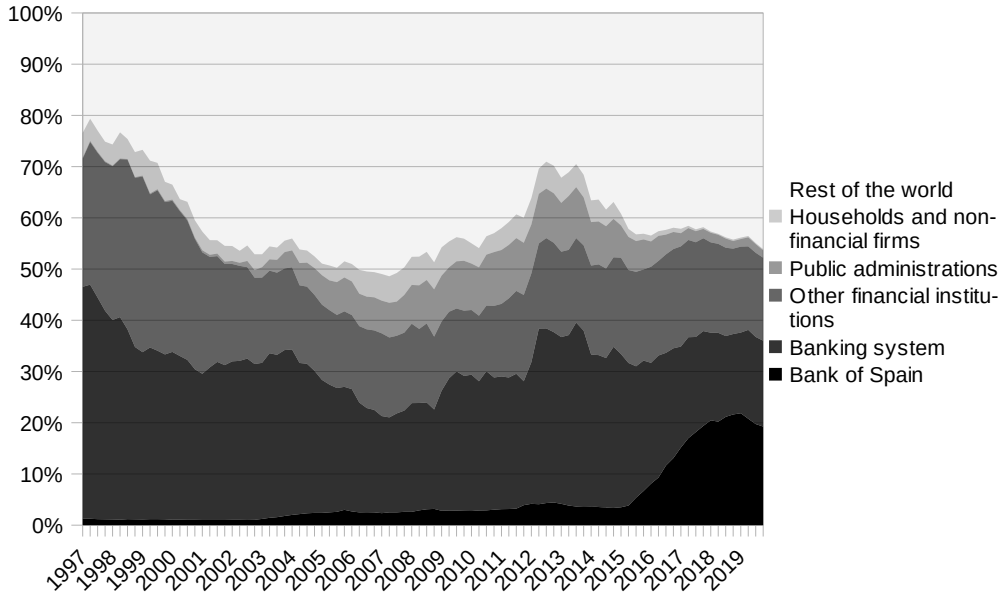
6. Public spending

The process of financial liberalisation was accompanied by an important transformation of states' financing and spending. Capital taxation was reduced, monetisation of fiscal deficits was ruled out and market debt financing became crucial for governments' funding, as well as an instrument to subdue fiscal policy to mandate of creditors (Théret, 2018, 2016). In this environment, '[f]inancial markets exercise discipline over government finances primarily through the impact of fiscal deficits on the credit risk premium on government debt' (IMF, 2007, p. 13). Thus,

it was established that '[r]eaping the benefits of globalization and financial deepening requires a commitment to fiscal discipline' (ibid, p. 3). Consequently, pro-cyclical fiscal policy and unsustainable deficits became a major concern, and fiscal rules, the solution (Ayuso-i-Casals et al., 2009, pp. 2–3). Fiscal policy was thus downgraded from an active role in managing economic growth into a passive role in smoothing cycles, a change that was backed theoretically by the orthodox 'new consensus'.

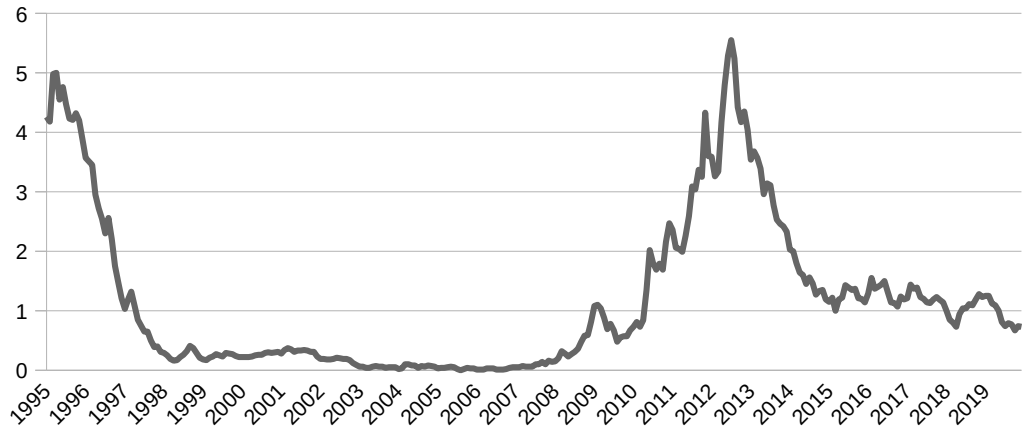
For Spain and other European countries the EU's project implied an explicit forego of fiscal autonomy against sizeable initial transferences from the EU's Cohesion Fund and the promises of economic convergence and cheaper funding from larger and deeper markets with the elimination of exchange rate risks and inflation uncertainty premia (Duisenberg, 1999). This was backed by the ECB's collateral framework, which treated any EMU-member government debt as equivalent (Gabor, 2016b, p. 18). Accession to the EMU did have a significant effect on Spanish government financing. The increase in foreign creditors' weight (figure 29) was accompanied by an outstanding narrowing of spreads against German government debt – which fell from 5 pp in 1995 to 0.2 pp in 1999 and 0.01 by 2006 (figure 30).

Figure 29: Composition of Spanish government debt holders by institutional sector



Source: Spanish national financial accounts (Banco de España).

Figure 30: Spanish government 10-year bonds spread vs. Germany (percentage points)



Source: ECB.

6.1. The EU and fiscal rules

The EU's Maastricht foundational Treaty, signed in 1992, set limits on government deficits and indebtedness – at 3% and 60% of GDP, with a period of convergence until 1997. That year, the Stability and Growth Pact (SGP) defined the mechanisms to ensure compliance with these limits. The Pact consisted of two elements, a 'preventive arm' – an objective of medium-term close-to-balanced budget in terms of primary balance, applying form 1998 – and a 'correcting arm' – the Excessive Deficit Procedure, which entered into force in 1999 – involving the design of a programme of fiscal adjustments and reforms to reduce fiscal deficits within a certain schedule, whose non-compliance can result in fines. The SGP's requirements were eased in 2005, after failure of several countries to meet its targets – notably France and Germany in 2002. The medium medium-term balanced-budget target was redefined in relation to potential GDP, the set of circumstances under which deficit targets could be breached was widened and it was allowed to extend deadlines to correct deficits, previously set at the following year after identification of the excessive deficit[99].

99 For example, a 'severe economic downturn' - one of the main cases exempting from abiding by the 3% deficit target – was redefined from a 2% drop in real GDP to encompass even positive but relatively low growth rates in relation to the trend.

Spain went however beyond the EU's fiscal rules introducing a more demanding fiscal law in 2001[100]. While the SGP defined a medium-term target of close-to-balanced budget for the government as a whole, the Spanish law obliged *every* administration to run a *current* balanced budget. In 2006, following the reform of the SGP's, Spain relaxed some of its fiscal rules, although not significantly, while tightened others. An extraordinary additional 0.5 pp deficit was permitted when used to finance productive investment and balanced budgets were redefined on a medium-term basis. Deficits up to 1% of national GDP were allowed when the economy was considered to be in a slow-growth period. However, if significant growth was forecasted, surpluses were mandatory.

During the first decade in the EMU, the Spanish public sector ran primary surpluses and even overall budget surpluses in the last three years (2005-2007), what left Spain with one of the lowest government debt-to-GDP ratio of the eurozone. This was facilitated by a considerable increase in tax revenue of 4 pp of GDP, which was to a great extent led by the real estate boom – responsible for about 50% of the increase according to the Bank of Spain's estimation (de Castro Fernández et al., 2008) and between 50%-75% following the European Commission's estimates (Martínez-Mongay et al., 2007).

However, the spending rules would become a more binding constraint when, the outbreak of the crisis in late-2008 was followed by a deficit hike to 11% in 2009 due to the combined effects of the automatic stabilisers, the loss of real estate tax revenue and the initial programme of fiscal stimulus. Therefore, the Excessive Deficit Procedure was activated, which by the end of that year would affect 20 out of the 27 EU members[101]. This marked a sharp reversal of fiscal policy towards towards austerity. Spain would remain under the Excessive Deficit

100 Ley 18/2001 General de Estabilidad Presupuestaria and Ley Orgánica 5/2001.

101 Meanwhile, the principle of budget stability was engraved in the Constitution in 2011 and, in 2012, a new budgetary law was enforced, superseding the previous ones. New fiscal rules were to apply from 2020 on, following a transition period to allow convergence to targets. In particular: i) a cap on budget deficits on structural terms, applying to all public administrations, but local ones and the social security, which have to comply to balanced budgets, ii) a cap on public debt (60% of GDP) and iii) a cap on non-financial spending (also excluding interest payments), which may not increase above the rate of growth of the medium-term GDP (Hernández de Cos and Pérez García, 2013).

Procedure until 2019 – when the 3% deficit target was finally met – and Brussels's tutelage would continue after that – interrupted by the covid crisis – to ensure the achievement of the medium-term balanced budget and the maximum debt-to-GDP ratio established by the SGP.

Nevertheless, the fiscal rules could not be applied as envisaged due to the harshness of the recession. The European Commission rescheduled several times the deadline for achieving the ultimate 3% deficit target – from 2012 to 2018 – thus, reassessing the year-by-year reduction objectives[102]. More leeway was provided in 2015, with an explicit movement of European authorities towards a more flexible application of fiscal rules (Council of the European Union, 2015; European Commission, 2015b). The easing of fiscal consolidation emerged from debate on austerity policies initiated with the deepening of the economic recession in the euro area, which was hindering efforts to reduce deficit and debt-to-GDP ratios while causing soaring social unrest. Main international organisations reconsidered the pace at which fiscal consolidation should be applied (Blanchard and Leigh, 2013; Sutherland et al., 2012).

6.2. The Eurosystem and government financing

With the entry into the euro, the Bank of Spain came under the command of the ECB, integrating along all other member countries' central banks the Eurosystem. Monetary sovereignty was thus relinquished to European authorities – the EcoFin and the ECB (Prates and Marques-Pereira, 2020) – in the sense that the government would no longer have power over defining the ultimate conditions of its financing and, hence, its spending capacity. This can be appreciated in three aspects. First, the official rate – which sets the reference for the government debt rate - became determined by the ECB on the basis of an inflation target – although we may note that the Bank of Spain was formally independent since 1994. Second, the ECB does not allow governments to resort to advances – short-term credit lines to match cash flows temporarily – from their respective national central banks, an

102 In April 2009, the deadline was postponed from 2012 to 2013, later to 2014 in July 2012, then to 2016 in June 2013 and, finally, 2018 in July 2016.

overdraft facility existing in most countries (Ryan-Collins and Van Lerven, 2018). Third, and most importantly, the Eurosystem establishes limits and conditions for indirect monetary financing through the purchase of government debt securities in secondary markets.

The latter has been the most determinant one. Before the 2008 crisis, it was not a constraint for government financing, since funding from financial markets was cheap and abundant, as we saw above. Neither during the very first stage of the crisis, during which foreign investors increased their portfolios of Spanish government debt securities[103]. However, tensions ended up arising. Spanish government's funding costs stepped up with each of its peers' bailouts – Greece in May 2010, Ireland in November 2010 and Portugal in May 2011. The latter marked an inflection point, it unleashed speculation about whether Spain would be the next one and foreigners started to reduce their portfolios of Spanish sovereign securities for the first time since early-2008.

The ECB had been trying to contain market distress by buying debt from Greek, Irish and Portuguese governments between May 2010 and March 2011 through the Securities Market Programme (SMP). In the middle of widening spreads, in August 2011, the ECB decided to relaunch the SMP and conditioned the inclusion of Spain and Italy into the programme on a commitment to a series of fiscal consolidation and structural reforms, which in some points went beyond those set by the European Commission through the Excessive Deficit Procedure and the European Semester recommendations. This was communicated through two confidential letters signed by the presidents of the ECB and each national central bank to the respective Prime Ministers on August 5. Two days later, after a positive response from both governments, the ECB announced the inclusion of Spain and Italy in the new round of the assets purchase programme (Viterbo, 2016, pp. 121–122).

Nonetheless, the ECB's support was said to be 'temporary' and 'limited in its amount' (Draghi and Constâncio, 2011)[104], what 'was hardly

103 The BIS consolidated bank statistics show that Italian, Japanese and US banks increased their claims on the Spanish government.

104 However, Draghi recognized during the press conference that the ECB does not communicate ex-post limits, but the amounts that have been purchased each week. During the year in which Spain was included in the programme a total of €44.3bn of Spanish government securities were

reassuring to investors' (Szczerbowicz, 2015, p. 102) and the increase of funding costs in financial markets did not stop. This pressure was temporarily eased in December 2011 and February 2012 by the two Eurosystem's long-term lending operations to banks. But it soon resumed and between March and July the spread against German debt jumped by more than 2 pp. This would only be stopped once the ECB explicitly committed to backstopping governments and to the irreversibility of the EMU in July 26, 2012, by standing 'ready to do whatever it takes to preserve the euro'. The statement would be later followed by the announcement of the Outright Monetary Transactions, a programme enabling the ECB to purchase government debt with no ex-ante quantitative limits, which replaced the previous SMP. Although no single security was purchased within the new programme, it did help to ease borrowing conditions, as figure 30 shows. The importance the ECB's decision had for investors is even more remarkable if we take into account that the decrease in interest rates on new Spanish government debt issues coincided with the approval, six days earlier, of a banking system bailout that could add to the government-debt-to-GDP ratio up to 10 pp – be the €100 billion credit line put forward by the European Stability Mechanism fully used.

We may also note that the following month, the government initiated a constitutional reform – the second since its adoption in 1978[105] – to try to calm financial markets by i) giving priority to the service of the debt over any other spending and ii) to introduce the principle of budgetary stability into the supreme law. The latter was made ahead of the recommendation of the Treaty on Stability, Coordination and Governance signed in March 2012. The reform was accompanied by a new budget law passed in April 2012 replacing the previous one, with a transitional period until 2020. On one hand, the new law eased previous spending constraints by establishing a balanced budget target defined on a structural basis using the European Commission methodology, less restrictive than the previous system of medium-term forecast. On the other hand, it tightened restrictions through a spending ceiling applied to

purchased.

105 The first one had the aim of enabling EU citizens residing in Spain to participate in the municipal elections, following the signing of the Maastricht Treaty.

every tier of government equal to the medium-term real GDP growth estimate, as well as a commitment to reduce the public debt-to-GDP ratio by at least 2 pp whenever real GDP or employment grow by 2% (Hernández de Cos and Pérez García, 2013). In addition, local administrations were forbidden from incurring in (structural) deficits in the exemption cases envisaged by the law – emergencies and recessions.

6.3. Market funding, repos and collateral policy

The EMU brought an additional institutional element affecting public spending: the collateral policy of the Eurosystem. Modern central banks typically lend to banks through repos against collateral. For most of the EMU countries the novelty of the Eurosystem's framework was the adoption of collateral valuation techniques – typical for private repo markets – that some central banks had started introducing in the early 1990s (Ban and Gabor, 2016). These involve the use of daily market valuation of collateral (mark-to-market accounting) and the adjustment of collateral on the basis of price fluctuations ('margin calls'), in addition to initial safety margins on the value of the collateral ('haircuts')[106]. Initially, government debt credit ratings were not taken into consideration neither to determine eligibility nor initial haircuts. However, in November 2005, the ECB established that any asset had to carry a minimum A- rating for being eligible as collateral (Orphanides, 2017, p. 7). The threshold was lowered in October 2008, amid mounting tensions in financial markets, to accept assets of lower quality (BBB+ to BBB-), although subjecting them to an extra 5 pp haircut (Nyborg, 2017, p. 69).

The combination of these rating thresholds with collateral management practices proved decisive during the EMU sovereign debt crisis, when the Eurosystem contributed to amplify market pro-cyclicality

106 The amount a bank can borrow against a certain eligible asset depends on the initial haircut defined by the Eurosystem's collateral framework. For example, with an eligible asset of €100 on which a 5% haircut applies, a bank can borrow €95. In turn, throughout the duration of the loan, the central bank apply variable margins adjusting the volume of collateral pledged to its current market value on a daily basis. For that it asks banks through margin calls to compensate for a drop in price with more collateral (whether in the form of securities or cash) or, in case of an increase in price, returning back the correspondent value of securities collateral to banks or crediting banks' accounts.

and to tighten peripheral countries' borrowing conditions (Gabor and Ban, 2015). Within the framework described above, the borrowing costs of a government whose debt is downgraded below A- can increase significantly due to the fact that: i) the Eurosystem will apply an extra 5 pp haircut for banks borrowing against it, ii) this will result in an increase of haircuts applied in private repo markets increasing investors' costs of financing the purchase of that debt, iii) the market price of these securities will fall, implying margin calls for any bank and financial entity using them as repo collateral, including vis-a-vis the Eurosystem. Hence, this can lead to the type of fire-sales liquidity spirals we referred to in previous chapters.

This is what happened to the Spanish government when its debt was downgraded to BBB+ by S&P's on April 26 2012. LCH.Clearnet, one of the main European central counterparties (CCPs), increased its haircuts by almost 3 pp (Armakolla et al., 2017, p. 19), the Eurosystem by 5 pp and the price of government debt plummeted, with spreads against German debt soaring by 2 pp in the next three months, as we noted above. This makes easier to understand how the €44 billion of Spanish government debt purchased by the Eurosystem between August 2011 and July 2012 under the SMP were not enough to stop the downward spiral.

Hence, despite the ECB uses a countercyclical eligibility policy – it increases the set of assets accepted as collateral in times of stress – its collateral risk management framework is pro-cyclical – it reduces the amount of funds that can be drawn against the same collateral. Following (Vestergaard and Gabor, 2020, p. 14): 'Such a strategy amounts to pushing in opposite directions at the same time'. Barthélemy et al. (2018, p. 2) have documented the sizeable effect that this can have showing that during the euro area sovereign debt crisis, despite collateral eligibility being expanded, the outstanding value of all accepted collateral did shrink substantially – this without taking into account the increase in haircuts for securities downgraded below the A- threshold.

7. Conclusions

In this chapter we have attempted to integrate the heterodox financial instability framework derived from shadow banking literature in chapter 4 into heterodox macro-financialisation literature to analyse the case of Spain (1998-2020). We have thus sought to fill two gaps. First, expanding the heterodox macroeconomic analysis of shadow banking (using an all-encompassing definition) that has so far been confined to the originate-to-distribute model, leaving aside other elements such as other forms of banks' regulatory arbitrage and market-based activities, non-banks and repos beyond the securitisation process. Second, tackle the little attention that the scant literature on the Spanish case of finance-dominated capitalism has given to both the government sector and financial instability dynamics affecting households' and public spending. Nevertheless, the ultimate goal of this chapter within the path of the thesis research plan is to provide an analytical background to interpret the results of applying the supermultiplier growth decomposition methodology to our study case in the next chapter.

We have focused on two components of the aggregate demand – households' and public spending – identifying the different ways in which financial dynamics may affect them through credit creation and market liquidity. Leaving aside the behaviour of investment in relation to financialisation (for the reasons above exposed), our study case has shown that Spain did feature the main macro trends identified by finance-dominated capitalism literature regarding households' and public spending, which have, in turn, been affected by some of the expanded financial instability sources identified in shadow banking literature.

First, the wage share contracted significantly all along the period, what we have attributed mainly to structural factors: i) trade unions' voluntary wage moderation ii) the liberalisation of the labour market, and iii) changes in the productive composition of the economy towards sectors with weaker unionisation. This have been compounded by the implementation of austerity policies during the crisis – the reduction in

unemployment benefits and cuts on public wages – as well as long-term unemployment.

Second, households' resorted to bank credit to finance their expenditures, notably during the only credit boom in our period that lasted until 2008 and was followed by a long period of deleveraging. Grounding on heterodox financial theory we have explained the boom as the result of i) heightened competition facilitated by the liberalisation of the banking sector, ii) the feed back effect on property collateral through mortgage credit and iii) on-balance sheet shadow banking regulatory arbitrage, through property over-appraisals.

Third, households' spending could have been affected by eventual wealth effects arising mainly from price dynamics in the housing market, but also non-financial corporate stocks and to a lesser extent, indirect holdings of Spanish government debt. House price dynamics during the bubble can be directly related to the bank credit boom, followed by its burst and a recovery accompanied by foreign capital inflows. Meanwhile, we did not find evidence of significant direct involvement of the domestic financial system on stock price dynamics, but we did observe sizeable foreign inflows throughout our period.

Fourth, as in many other countries, public spending has been subordinated to the principle of fiscal discipline. One one hand this was imposed internally, by committing to the EU's fiscal rules and establishing even more restrictive domestic rules. On the other hand, discipline was imposed externally by both financial markets – which were given a more prominent role in fiscal financing – and European institutions from 2010 on, through the Excessive Deficit Procedure and the ECB leveraging on its power to deter speculative pressures from markets. In turn, the relative leniency and stringency of markets' discipline was amplified by repos and the Eurosystem's pro-cyclical collateral risk management policy.

Hence, from the four forces of financial instability we introduced from shadow banking literature in chapter 4 – shadow banking, market-based banking, non-banks' risk-taking and repos – only two seem to have had

any important role in Spain. On one hand, on-balance sheet shadow banking activities of banks through over-appraisals of house collateral, which allowed for pushing competition beyond regulatory safety limits. On the other hand, repos, which had an important destabilising effect on the government debt market, amplifying liquidity dynamics, especially during the euro area sovereign debt crisis. Meanwhile, other forms of off-balance sheet forms of shadow banking were not at play due to the action of the regulator. Similarly, other forms of market-based banking do not seem to have been important beyond the purchase of government debt. Finally, non-bank lending has been negligible, although the asset management sector has grown in the wake of the crisis.

Chapter 6. A supermultiplier demand-led growth accounting analysis applied to the Spanish economy (1998-2019)*

1. Introduction

In the previous chapter we examined the main macro-structural changes of finance-dominated capitalism featured by Spain. We aim now at providing a quantitative assessment of the relative impact of these transformations on economic growth for our study case. For that we make use of the supermultiplier demand-led growth accounting (Freitas and Dweck, 2013; Bastos and da Silva Porto, 2016) – based on the supermultiplier model – a heterodox approach which has gained force in the last years (Haluska, 2021; Morlin et al., 2022; Passos and Morlin, 2022; Barbieri Goés, 2022). Supermultiplier theory establishes that growth is led by autonomous demand components with productive investment adjusting to the effective demand. This theory does not have to be understood as a substitute for other heterodox growth theories that build on the Keynesian/Kaleckian principle of aggregate demand, like the French Regulationist school and the post-Keynesian school and, more recently, comparative political economy (Baccaro and Pontusson, 2016). Indeed, a group of post-Keynesians has embraced theoretically the use of the supermulitplier mechanism in Kaleckian models (Lavoie, 2016; Allain, 2015; Dutt, 2019; Palley, 2019; Fazzari et al., 2020; Hein and Woodgate, 2021). We argue that the supermultiplier approach can also be compatible with regulationist theory.

In turn, the supermultiplier demand-led growth accounting can be understood as a complementary methodology to those used by the

* This chapter is an extended version of a paper with the same title co-written with Ricardo de Figueiredo Summa that has been submitted to the European Journal of Economics and Economic Policies: Intervention for the special issue 'Frontiers in Growth Regimes Research: Theoretical Perspectives and Country Cases'.

aforementioned schools. Campana et al. (2022) and Hein (2022) argue that it can be complementary to the post-Keynesian 'demand and growth regimes' and the 'growth drivers' approach. Meanwhile, (Morlin et al., 2022) also assess that the supermultiplier can provide a useful framework for the development of the demand-led growth comparative political economy (Baccaro and Pontusson, 2016). In that way, the supermulitplier methodology opens the door for interesting dialogues and synergies between different theoretical traditions that, as we argue, can also be extended to the regulationist school.

In this chapter, we aim to contribute to i) the literature on the use of the supermultiplier demand-led growth accounting methodology for the analysis of growth experiences and ii) to the debate on the determinants of the causes of the Spanish economy growth pattern since the late-1990s, with a focus on the macro-structural features of financialisation. We follow the methodology of Freitas and Dweck (2013) but with two modifications. First, we incorporate consumption out of public transfers, following the theoretical discussion in Haluska et al. (2021) and its application in demand-led accounting in Haluska (2021). Second, we incorporate consumption out of public wages as a source of autonomous demand, following the theoretical discussion in Serrano and Pimentel (2019). The introduction of the latter in demand-led growth accounting analysis is a specific contribution of this chapter. As we show below, the consideration of these two elements as public demand increases substantially the relative importance of public spending for growth.

We identify three different periods of growth – the economic expansion of 1998-2008, the great recession of 2008-2013 and the economic recovery of 2014-2019. We evaluate the role of both the induced and the autonomous components of demand and its importance to the growth patterns in each of these three periods. We compare our results with both the mainstream and heterodox/Post-Keynesian interpretation of Spanish growth patterns found in the literature, including literature on demand and growth regimes perspective and the drivers of growth (Hein and Martschin, 2021; Kohler and Stockhammer, 2022). We argue that our demand-led growth decomposition highlights

both the importance of public expenditures and exports as growth drivers, and the role of the changing supermultiplier in reducing the rates of growth of Spain.

Besides this introduction, the chapter is comprised of four more sections. In section 2 we briefly introduce supermultiplier theory and the supermultiplier demand-led growth accounting methodology, and we discuss its different applications. In section 3 we present our results. In section 4 we compare our results with both the mainstream and heterodox/post-Keynesian interpretation of Spanish growth patterns found in the literature. We make our final remarks in section 5.

2. Supermultiplier theory and demand-led growth accounting

2.1. Supermultiplier theory

Supermultiplier theory (Serrano, 1995a, 1995b) endorses the Keynesian-Kaleckian principle of aggregate demand and expands it to the long run, based on a conceptual separation of aggregate demand into autonomous and induced components. The latter include those expenditures that are systematically related to the production process, such as the capacity-generating investment by business firms and the part of consumption financed out of contractual wages. These induced expenditures are considered as systematically related to the production process since production generates contractual wages, which are (at least partially) spent by workers, and business investment is made to adapt the productive capacity to the expected level of demand, which depends on the actual levels of output and effective demand.

On the other hand, the autonomous expenditures are not systematically related to the production process and in general are determined by a wide range of diverse factors reflecting 'social, political and institutional settings of specific economies and [...] influenced by their particular economic policy framework' (Summa, 2021). Among these components typically categorized as autonomous in supermultiplier theory are households' expenditures financed out of

debt (i.e. residential investment and credit-financed consumption, especially influenced by credit conditions), discretionary consumption by the wealthy, government expenditures (determined by the economic policy stance) and exports (importantly driven by the income growth of the rest of the world). Moreover, we must include in the supermultiplier the tax burden and, in open economies, the import content of the demand.

Changes in the coefficients defining the value of the supermultiplier, such as the functional income distribution, propensity to invest, import coefficient and tax burden have a permanent effect on the level of output, as well as on the average growth rate during the time it takes the productive capacity to adjust to the new level of aggregate demand (Freitas and Serrano, 2015; Lavoie, 2016). On the other hand, the trend rate of economic growth is related to the growth rate of the autonomous components. Finally, supermultiplier theory considers functional income distribution 'as exogenously determined by social and historical factors affecting the bargaining power of the opposite classes, by customs and social norms concerning the fairness of remunerations and other social habits (Pariboni, 2016, p. 218).

2.2. The supermultiplier demand-led growth accounting

Recently, there has been several attempts to apply supermultiplier theory to analyse concrete experiences of growth both from advanced and developing economies. These attempts consist of adopting a demand-led growth accounting methodology, as an alternative to the well-known supply-side growth accounting based on the neoclassical theory of growth and distribution (Solow, 1957; Hulten, 2010). This demand-led growth accounting based on supermultiplier theory allows inspecting growth patterns by developing a 'theoretically informed decomposition' of economic growth on the basis of the autonomous and induced expenditures dichotomy (Morlin et al., 2021, p. 32). This methodology has been used by Freitas and Dweck (2013) and Haluska (2021) to analyse the Brazilian economy, Bastos and da Silva Porto (2016) for Portugal, Passos

and Morlin (2022) for Latin American countries, Morlin et al. (2022) for a set of OECD countries and Barbieri Goés (2022) for the US.

We will apply here the same methodology to the Spanish economy. We will start by rearranging the national accounts' aggregate demand components in accordance with supermultiplier theory. Based on that, we will decompose the economic growth rates and evaluate the aggregate effect of changes in each of the aggregate demand variables included in the specification. Our aggregate demand taxonomy will follow supermultiplier literature (Freitas and Dweck, 2013; Girardi and Pariboni, 2020, 2016), adding both the consumption out of transfers, following Haluska et al. (2021) and Haluska (2021), and the consumption out of public wages, based on the theoretical discussion of (Serrano and Pimentel, 2019), to the sources of autonomous demand. The latter is a specific contribution of the paper to supermultiplier demand-led growth accounting literature. We group autonomous components into: i) private demand, composed by credit-financed consumption, private residential investment and private investment in research and development[107]; ii) public demand, made up of public entities' demand (encompassing government consumption, government investment and public companies' investment[108]) and consumption out of public income (including consumption out of transfers and consumption out of government wages); and iii) external demand (exports)[109]. We should stress that the separation of induced and autonomous – for some specific components of demand – is somewhat arbitrary, and the results of the decomposition reflect the choices regarding this taxonomy.

According to this view, households' consumption out of public income is seen as autonomous as the income that finances it is not related to the production process but created institutionally. Also, our choice to

107 Deleidi and Mazzucato (2019) call attention that part of the business spending in R&D can be considered induced as it is important to innovation and productive capacity creation. To separate empirically the autonomous and induced parts of expenditures in R& D can be difficult in practice, and we thus consider this variable as part of the autonomous demand.

108 We consider public companies' investment as autonomous following Freitas and Dweck (2013, p. 185) because 'capitalist competition did not exert a major influence on its behaviour'. For a different interpretation see Campana et al (2022) who consider public companies' investment as an induced component of demand.

109 The grouping is similar to that of Haluska (2021), but splitting public expenditures into public entities' demand and consumption out of public income to make the effects of changes in the propensity to consume more visible.

include households' consumption out of public income as part of the public instead of private sector's demand is based on the idea that the purchasing power that finance it is generated by the public and not the private sector (although the expenditure is made by households)[110].

Accounting for households' consumption out of government wages as an autonomous expenditure requires, however, taking into account certain considerations. Following Serrano and Pimentel (2019), one unit of government spending in public services has a double impact on aggregate demand: as government consumption and as wage income spent by public servants on consumption. Nevertheless, only the latter leads to a multiplier effect, since the same wage cannot be spent twice. This particularity of government wages stems from the fact that they constitute both gross value added (public services) and demand (government consumption) at the same time[111]. The result is different when the government spends through transfers: this only affects the aggregate demand when the recipients spend that money. To properly account for the particularity of government wages, we define induced expenditures – induced consumption, induced investment and imports – as a function of aggregate income deducted from the public wage bill[112]. This variable can be understood as the demand for domestic products and services that generates induced spending.

The variables are defined as follows (see table 22 for a glossary and annex I for details on data sources). Aggregate supply, composed by GDP plus imports, is equal to aggregate demand, which is composed of consumption (C), investment (I) and exports (X) (equation 4). Consumption is made by households (C_H) and the government (C_G) (equation 5)[113]. We split households' consumption into an autonomous component (C_A) and an induced component (C_I). Autonomous

110 Our results considering alternatively consumption out of public income as part of the private sector's demand are shown in table 25 in annex III.

111 Contrary to the private sector's gross value added, the governments' gross value added is made up of wages. Hence, changes in government wages affect directly the government gross value added. In the private sector, which produces marketable output, gross value added depends also on sale prices. Hence, changes in wages only affect directly the distribution of the gross value added between wages and profits, but not the gross value added in itself.

112 The standard supermultiplier specification defines these variables as a function of aggregate income.

113 Consumption by households includes consumption by non-profit institutions serving households.

consumption encompasses credit-financed consumption (C_{Cr}) and consumption out of public income (C_{pub}) (equation 6). On the one hand, credit-financed consumption is equal to the volume of new consumption credit (Cr), once we consider the (average effective) tax on value added (t_{VA}) (equation 8)[114]. On the other hand, consumption out of public income corresponds to the part induced by public transfers (Tr) and the public wage bill (W_{pub}). This is obtained by multiplying public transfers and government wages by the propensity to consume (out of wages and transfers) (c) after deducting the corresponding taxes. For consumption out of transfers, only the tax on value added applies (t_{VA}), whereas for consumption out of public wages we also consider the tax on wages (t_w) (equation 9).

$$Y = C + I + (X - M) \quad (4)$$

$$C = C_H + C_G \quad (5)$$

$$C_H = C_A + C_I \quad (6)$$

$$C_A = C_{Cr} + C_P \quad (7)$$

$$C_{Cr} = (1-t_{VA})\, Cr \quad (8)$$

$$C_P = c\,(1-t_{VA})\, Tr + c\,(1-t_{VA})(1-t_w)\, W_{pub} \quad (9)$$

$$C_I = c\,(1-t_{VA})(1-t_w)\, \omega'\, (Y - W_G) \quad (10)$$

$$C_G = C_{GPGS} + W_G \quad (11)$$

In turn, induced consumption (or consumption out of private wages) is defined as the part of the after-taxes private-wage income spent in consumption of goods and services (equation 10), obtained by multiplying the private wage bill deducted from taxes by the propensity to consume[115]. The private wage bill (W_{Priv}) is obtained as the product of the private (adjusted) wage share (ω') and the aggregate income deducted from government wages (W_G)[116]. We argued in the previous chapter that an accurate estimation has to deduct only government

114 Unlike Freitas and Dweck (2013) and Bastos and da Silva Porto (2016) we do not proxy credit-financed consumption through the consumption of durable goods and we rely instead on the volume of new consumer credit. Our choice is motivated by the fact that credit was also widely used to finance the consumption of non-durable goods and services. Nevertheless, consumer credit is still an inaccurate indicator since it does not encompass other forms of credit that were also used for consumption, as credit card overdrafts and some part of mortgage loans, as we describe below.

115 To disaggregate the volume of households' consumption given by the national accounts, we rely on the estimation of the propensity to consume as defined below in equation 13. Hence, autonomous consumption out of public income and induced consumption (out of private wages) are determined at the same time, knowing the volume of consumer credit, transfers and wages, and the average taxes on value added and wages.

116 The private adjusted wage share is the ratio of wages to gross value added in the private sector.

wages from the denominator, not the whole government consumption, as in Stockhammer (2013). Government consumption also includes purchases of goods and services from the private sector (C_{GPGS}), as shown in equation 11, which involves private wages and profits[117]. Therefore, we estimate the adjusted private wage share as shown in equation 12, where ω represents the adjusted wage share.

$$\omega' = \frac{W_{Priv}}{Y - W_G} = \frac{\omega Y - W_G}{Y - W_G} \tag{12}$$

The (average) propensity to consume is estimated residually as the ratio of households' income (wages and transfers) spent on consumption, deducted from taxes, as shown below in equation 13. Our specification of households' consumption differs from the one typically used in supermultiplier literature since it takes into consideration both the propensity to consume and the wage share[118]. This allows for the differentiation of the effect of changes in the functional income distribution from other factors. In turn, as described above, we have also introduced two different taxes in order to account consistently for changes in taxation in our consumption decomposition (see equations 8, 9 and 10).

$$c = \frac{C_H - (1 - t_{VA})Cr}{(1 - t_{VA})[Tr + (1 - t_w)\omega Y]} \tag{13}$$

Investment is decomposed into a public (autonomous) component, made up of government investment (I_G) and public companies' investment (I_{PC}), and a private one. The latter is split into autonomous private investments (I_A), made up of private residential investment (I_R) and other autonomous private investment (I_{OA}) (private investment in research and development[119], and net acquisitions of valuable objects),

117 Government consumption is also made up of capital depreciation, which, for the sake of simplicity we included within government consumption of private goods and services, as noted in chapter 5.

118 Typically, induced consumption is defined as a function of the propensity to consume and aggregate income or aggregate disposable income (Cesaratto et al., 2003; Freitas and Dweck, 2013; Morlin et al., 2022; Bastos and da Silva Porto, 2016).

119 Deleidi and Mazzucato (2019) call attention that part of the business spending in R&D can be considered induced as it is important to innovation and productive capacity creation. To separate empirically the autonomous and induced parts of expenditures in R& D can be difficult in practice, and we thus consider this variable as part of the autonomous demand.

and induced investment (I_I), which estimates residually the volume of capacity generating investment (equation 16). Private residential investment is estimated by subtracting the government's residential investment and adding investment in non-residential constructions by the real estate sector from total residential investment. The latter is introduced as it constitutes an extension of residential investment and does not contribute to increase productive capacity. In line with supermultiplier theory, productive investment keeps a certain relation to GDP captured by the (average) propensity to invest (h) (equation 16). Since the payment of public wages does not constitute demand for the private sector – only their later spending on consumption – we deduct such wages from GDP[120]. Therefore, the propensity to invest is defined in relation to the demand for domestic goods and services that generates induced spending, and estimated as shown in equation 17. Following supermultiplier theory, this variable is considered to be determined by technical conditions (the normal capital-output ratio) and the expected rate of growth of future aggregated demand, based on past experience. If aggregate demand grows faster, investment will respond by growing at a higher rate to re-establish the normal degree of capacity utilisation, implying an increase in the share of investment over aggregate output[121].

$$I = I_G + I_{PC} + I_A + I_I \tag{14}$$

$$I_A = I_{Res} + I_{OA} \tag{15}$$

$$I_I = I - (I_G + I_{PC}) - I_A = h\,(Y - W_G) \tag{16}$$

$$h = \frac{I_I}{Y - W_G} \tag{17}$$

Aggregate demand (D) may be, hence, rearranged as the sum of autonomous components (Z) and induced components (C_I and I_I) (equation 18). Autonomous expenditures encompass autonomous consumption and autonomous investment (as defined above), public expenditures (G) and exports (X) (equation 19). Public expenditures are made up of government consumption, government investment and

120 An increase in the provision of public services may or may not involve an increase in public investment. In any case, the latter has been defined as an autonomous component of demand.

121 Since investment represents a small part of the already installed stock of productive capacity, in order to restore the capital-to-GDP ratio, investment will have to grow at a higher rate than Y.

investment by public companies (equation 20). Imports (M) are defined in relation to the demand that generates induced spending – i.e., the aggregate demand minus government wages (equation 21). This relation is captured by the import content (of the demand that generates induced spending) (m), estimated through equation 22. Hence, replacing each term in equation 18 by its respective expression and operating we obtain the ultimate definition of aggregate output (Y) as the product of the supermultiplier (α) and autonomous demand deducted from government wages, plus government wages (equation 23).

$$D = Y + M = Z + C_I + I_I \tag{18}$$

$$Z = C_A + I_A + G + X \tag{19}$$

$$G = C_G + I_G + I_{PC} \tag{20}$$

$$M = m(D - W_G) \tag{21}$$

$$m = \frac{M}{D - W_G} = \frac{M}{Y + M - W_G} \tag{22}$$

$$Y = \left(\frac{1-m}{1-(1-m)[c(1-t_{VA})(1-t_w)\omega' + h]}\right)(Z - W_G) + W_G = \alpha(Z - W_G) + W_G \tag{23}$$

Hence, we can see that changes in public wages affect output through the 'supermultiplication' of its spending in consumption by households, and as public value added in itself, which is not 'supermultiplied' (equation 24) – in line with Serrano and Pimentel's (2019) theoretical proposal. Meanwhile, the value of the supermultiplier depends positively on the propensity to consume out of wages, the private wage share, and the propensity to invest. On the other hand, it depends negatively on the import content of the demand and the effective average tax rates on value added and wages.

$$\frac{dY}{dW_G} = \alpha\left[c(1-t_{VA})(1-t_w)\right]dW_G + dW_G \tag{24}$$

With the above specifications, we may express the rate of growth of GDP ($\dot{Y}$) in terms of the rate of growth of autonomous expenditures and $(\dot{B}, \dot{Tr}, \dot{W}_G, \dot{I}_{Res}, \dot{I}_{OA}, \dot{G}, \dot{X})$ the parameters $(\dot{c}, \dot{\omega}', \dot{t}_w, \dot{t}_{VA}, \dot{h}, \dot{m})$ multiplied by their corresponding coefficients (β) (specified in annex IV) and the supermultiplier – except for public wages – as shown in the expression

below. Subscript *o* denotes previous year, while subscript *1* denotes end of current year. The obtention of this expression is detailed in annex IV.

$$\dot{Y} = \alpha_1 \left[\beta_{Cr} \frac{Cr_0}{Y_0} \dot{Cr} + \beta_{Tr} \frac{Tr_0}{Y_0} \dot{Tr} + \beta_{W_{Pub}} \frac{W_{G0}}{Y_0} \dot{W}_G + \frac{I_{Res0}}{Y_0} \dot{I}_{Res} + \frac{I_{OA0}}{Y_0} \dot{I}_{OA0} + \frac{G - W_G}{Y_0} (\dot{G} - \dot{W}_G) \right.$$
$$\left. + \frac{X}{Y_0} \dot{X} + \beta_c c_0 \dot{c} + \beta_\omega \omega'_0 \dot{\omega}' - \beta_{t_w} t_{w0} \dot{t}_w - \beta_{t_{VA}} t_{VA0} \dot{t}_{VA} + h_0 \dot{h} - \beta_m m_0 \dot{m} \right] + \frac{W_{G0}}{Y_0} \dot{W}_G \quad (25)$$

Table 22: Glossary of variables

Demand components		**Main aggregates**	
C	Consumption	Y	Income
C_G	Government consumption	D	Aggregate demand
C_{GPGS}	Government consumption of private goods and services	Z	Autonomous expenditures
C_A	Autonomous consumption	**Other aggregate variables**	
C_{pub}	Consumption out of public income	W	Wage bill
C_{Cr}	Credit-financed consumption	W_{priv}	Private wage bill
C_I	Induced consumption (out of private wages)	W_G	Public wage bill
I	Investment	Tr	Transfers
I_G	Government investment	Cr	Consumer credit
I_{PC}	Public companies' investment	**Coefficients**	
I_A	Private autonomous investment	α	Supermultiplier
I_{Res}	Private residential investment	ω	Adjusted wage share
I_{OA}	Other private autonomous investment	ω'	Private adjusted wage share
I_I	Induced investment (productive investment)	c	(Average) propensity to consume (out of wages and transfers)
G	Public entities' demand	h	(Average) propensity to invest
M	Imports	t_w	(Effective average) tax rate on wages
X	Exports	t_{VA}	(Effective average) tax rate on value added
		m	Import content of the demand (that generates induced spending)

2.3. Theoretical dialogue, critiques and synergies of the supermultiplier

Some authors have recently pointed to the theoretical utility of the supermultiplier approach for theories that endorse the Keynesian/Kaleckian principle of effective demand for the long run. Many post-Keynesians have used it to explore theoretically growth led by each of the main autonomous expenditures typically defined in the

supermultiplier demand decomposition: exports (Nah and Lavoie, 2017), government spending (Hein, 2018) and credit-financed dwelling investment (Fiebiger and Lavoie, 2019). Meanwhile, Cesaratto and Di Bucchianico (2020) have elaborated on the complementarities of supermultiplier theory with endogenous money theory[122]. Moreover, we consider that complementarities can also be found between the supermultiplier approach and French regulationist theory.

Post-Keynesian and French regulationist growth theories share three basic points that are compatible with the supermultiplier approach. First, both consider the Keynesian/Kaleckian principle of effective demand relevant in the long run. Second, both agree that growth is a phenomenon critically shaped by institutions, which has to be located both temporally and geographically – contrary to the neoclassical one-model-fits-all approach that assumes that pro-growth policies are fundamentally universal. Third, as a result of that, both heterodox theories elaborate on some notion of 'growth regime' that describes different institutional settings compatible with economic growth.

For regulationists a growth/accumulation regime describes a particular combination of five main 'institutional forms' (the monetary regime, the capital-labour balance, the form of capitalist competition, the international regime and the state)[123]. This involves both the specific shape of these institutional forms and the way in which they interact through a 'mode of regulation' that ensures the coherence of individual agents' actions to enable growth (Boyer and Saillard, 2002, p. 341). Virtuous institutional interactions enabling growth rely thus on the 'complementarity of institutional forms' (ibid, p. 335). Nevertheless, following regulationist theory, any growth regime eventually shows incapable to continue dealing with capitalist contradictions, its institutions become no longer complementary but incompatible, and it enters into a major crisis in the Marxian sense. Only after institutions and

122 The supermultiplier do not neglect the impact of functional distribution for growth, but considers that its effect on the growth rate is confined to the short-term, while, in the long run, it only affects the level of output (Freitas and Serrano, 2015; Lavoie, 2016).

123 The concepts of 'accumulation regime' and 'growth regime' or, at least, 'long-term growth regime' are often used interchangeably in the regulationist literature, so are they here. Nevertheless, sometimes 'growth regime' is used as a more flexible concept than 'accumulation regime' to stress certain instability problems that may prevent a growth regime from reproducing itself in the medium or long run (see for example Clévenot, 2008).

the mode of regulation are consistently overhauled, a new regime can emerge enabling the resumption of durable growth. In that way, the regulationist's notion of accumulation regime has a fundamental historical dimension. Several historical regimes have been identified, typically departing from the US experience, with different national varieties – notably, the post-war Fordist regime that fell in disgrace in the 1970s (Aglietta, 1976), followed by the finance-led or financialised regime (Aglietta, 1998b; Boyer, 2000).

Meanwhile, the post-Keynesian notion of growth regime applies to shorter temporal scopes, building in more rigid models than the regulationist ones, notably post-Kaleckian models of growth and distribution. Bhaduri and Marglin (1990) established the initial popular 'wage-led'/'profit-led' regime dichotomy: depending on the specific value of the model's parameters, growth is fostered by income redistribution in favour of either labour or capital. Some authors developed another level of analysis to better account for the stylised facts associated to financialisation or finance-dominated capitalism (Hein, 2011, 2012; Stockhammer, 2015). These authors identified two complementary growth regimes on the basis of the particular source of demand offsetting the depressing effects inherent to financialisation (the falling wage share and the weaker relation between investment and profits). On the one hand, 'debt-led regimes' driven by credit-financed demand and, on the other hand, 'export-led regimes' pulled by foreign demand. Recently, Kohler and Stockhammer (2022) have put forward the notion of 'growth drivers' that comes closer to the supermulitiplier approach (Morlin et al., 2022, pp. 7–8).

Thus, we may argue that the supermultiplier approach could be positioned in between post-Keynesian and regulationist approaches as a compromise involving, on the one hand, a universal but basic mechanism (the flexible accelerator) and, on the other hand, an open question regarding the determination of the remaining variables, whose answer has to be found outside the model (in institutional configurations and sociopolitical forces). In that way, supermultiplier theory is compatible with the regulationists' claim that '[t]he macroeconomic dynamic is not subject to a general law; the laws of a country at any given time depend on

the existing institutions' (Billaudot, 2002). This is also the reason why Morlin et al. (2022, p. 2) argue that the supermultiplier growth-decomposition methodology can be a 'powerful framework' for comparative political economy to advance the demand-led growth agenda initiated by Baccaro and Pontusson (2016). According to the former, while 'the proximate causes of growth are to be found in the evolution of the autonomous demand components', '[t]he ultimate causes of growth [...] have to be searched in the social and political underpinnings of each autonomous demand component' (Morlin et al., 2022, p. 18). Therefore, based on Baccaro and Pontusson's (2022) 'politics of growth models', Morlin et al. (2022) advocate for the development of a 'political economy of autonomous demand'. Some authors have joined this call, exploring complementarities between the supermultiplier and other approaches that may lead to potentially mutually beneficial synergies between different theoretical traditions, as well as to more complete analyses combining the results drawn from different methodologies. This research agenda has been initiated for the case of the comparative political economy growth regimes, the post-Keynesian growth regimes and the post-Keynesian growth drivers approach (Campana et al., 2022; Hein, 2022).

While these authors see the basic supermultiplier's deliberate indeterminacy of the drivers of autonomous demand as a plus, others consider it a drawback, interpreting the supermultiplier approach as an attempt to go back to an exogenous theory of growth (Blecker and Setterfield, 2019, p. 366). Supermultiplier theory is also criticised arguing that no demand component can be fully autonomous in the long run (Nikiforos, 2018; Skott, 2019). This has led to an unsettled debate in which, however, the purposes and assumptions of the supermultiplier approach have been clarified. Supermultiplier advocators have stressed that 'autonomous' does not mean a complete detachment from income dynamics, but describes the fact that autonomous components are not simply determined by the circular flow of income, but crucially influenced by factors that do not directly emerge from the latter. Some of these authors have proposed to better use the term 'semi-autonomous' expenditures (Fiebiger and Lavoie, 2019, p. 5; Fiebiger, 2018).

Allain (2022) has recently explored different analytical ways of 'endogeneising' semi-autonomous expenditures to account for i) the different ways in which they can be affected by income and ii) their mutual interactions and their capacity to generate path dependency during certain periods. For example, we could consider the different ways in which credit-financed expenditures are affected by income: determining agents' access to credit, their willingness to borrow, as well as their debt service capacity. Income may also affect other autonomous expenditures that are significantly endogeneised as a result of political decisions – such as the imposition of balanced budget rules on the government. Meanwhile, Allain (2022, pp. 98-100) suggests that the second form of endogeneisation can emerge out of complementary dynamics between autonomous expenditures in which the pertinent demand components alternate their growth cycles, shaped by financial constraints, in such a way that growth is possible.

Alternatively, we consider that this case can be also approached from an institutional perspective, making use of the aforementioned regulationist concepts of 'institutional complementarity' and 'mode of regulation'. These concepts can help comprehending the different ways in which autonomous expenditures interact between them through income, creating feedback effects that can offset depressing effects on the demand or reinforce expansionary dynamics. We may think on expansionary fiscal policy to facilitate private sector's deleveraging after a credit bust – Minsky's (1986) 'Big Government' – or in public transfers facilitating households' access to credit. Moreover, this approach can be applied not only to the dynamics of autonomous expenditures, but also of the parameters affecting induced expenditures that are exogenous to the supermultiplier model. That can be the case of the counteracting effects of a falling wage share and an increase in households' credit-financed spending pointed in macro-financialisation literature.

Hence, on the one hand, making use of the regulationist concepts of 'mode of regulation' and 'institutional complementarity'/'institutional incompatibility' we can build a bridge between supermultiplier and regulationist theory, as suggested in passing by Pariboni (2016, p. 221). In turn, the supermultiplier growth decomposition methodology can provide

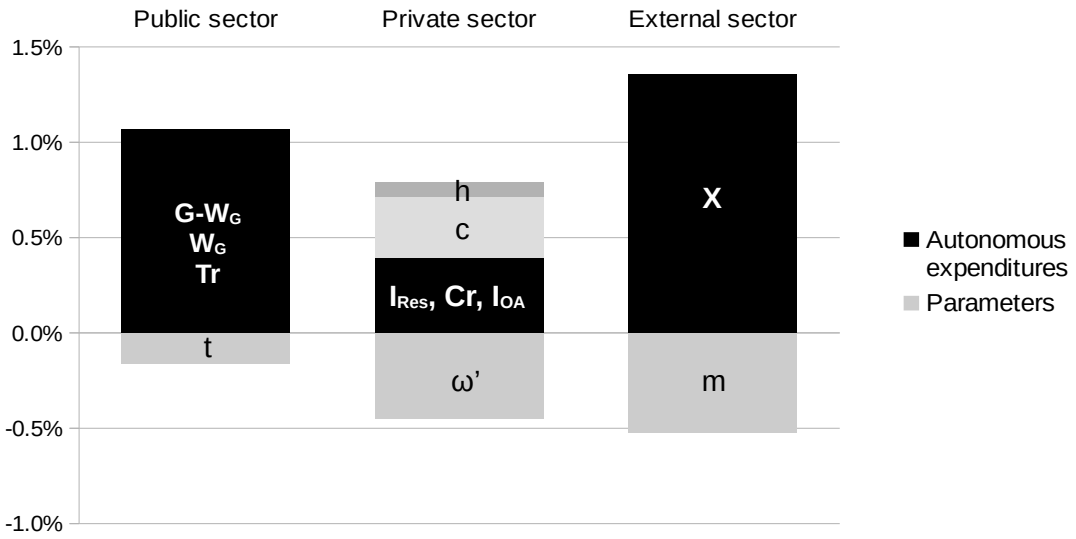
a quantitative estimation on the impact of these effects and interactions on growth, calculating the contributions to growth of the changes in the corresponding variables (autonomous expenditures and model parameters). This can provide a simple and clear overview that can be used to identify regularities in growth regimes. Institutional complementarity/incompatibility and the mode of regulation has to be thus assessed both during phases of growth and, especially, during recessions in which the institutional coherence is tested, i.e. whether it allows restoring growth or not. We will apply this approach to our case, building upon the institutional analysis we developed in chapter 5 on the labour-capital relation and functional income distribution, the liberalised financial system and credit and wealth dynamics, and the public spending framework.

3. Results

3.1. General results

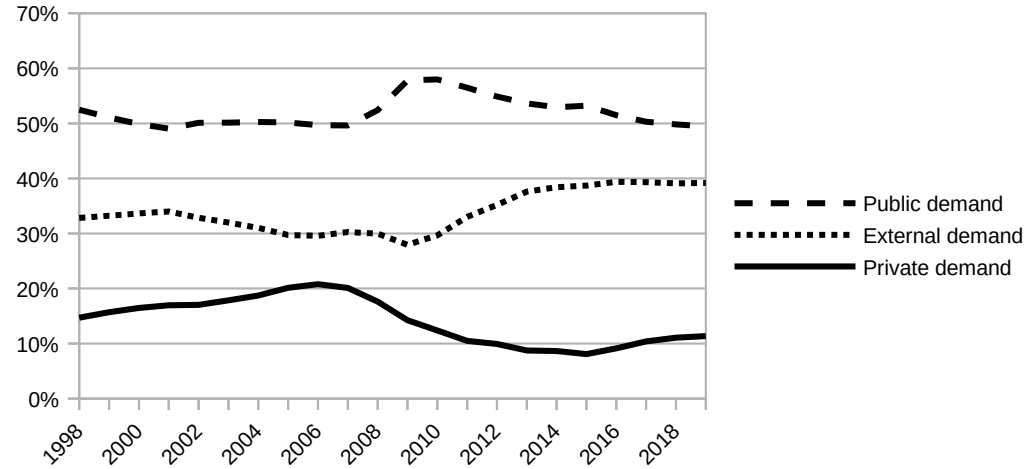
Our demand-led growth accounting points to some structural features and long-term trends in the Spanish economy. First, considering the whole period (1998-2019), public expenditures and exports are the most important drivers of growth, while the contribution of private autonomous expenditures is much smaller (figure 31). This result also holds when we calculate the net contribution of each sector adding the contributions of the supermultiplier parameters (taxes for the public sector, the wage share and the propensities to consume and to invest for the private sector, and the import content of demand for the external sector).

Figure 31: Average contribution to real GDP growth by sector (1998-2019)



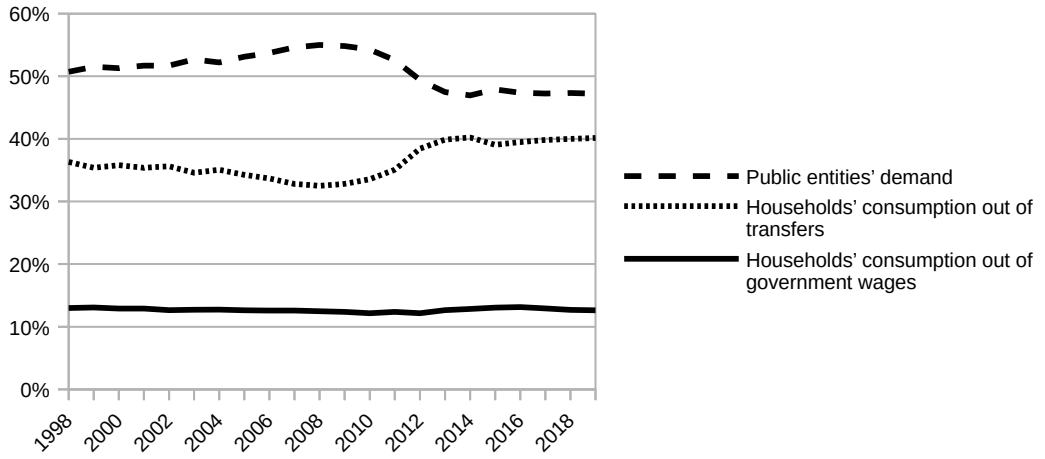
The importance of public expenditures and exports stems from the fact that the public sector's and the exports' share in autonomous demand is much higher than the private sector's share, as shown in figure 32.

Figure 32: Participation on autonomous demand



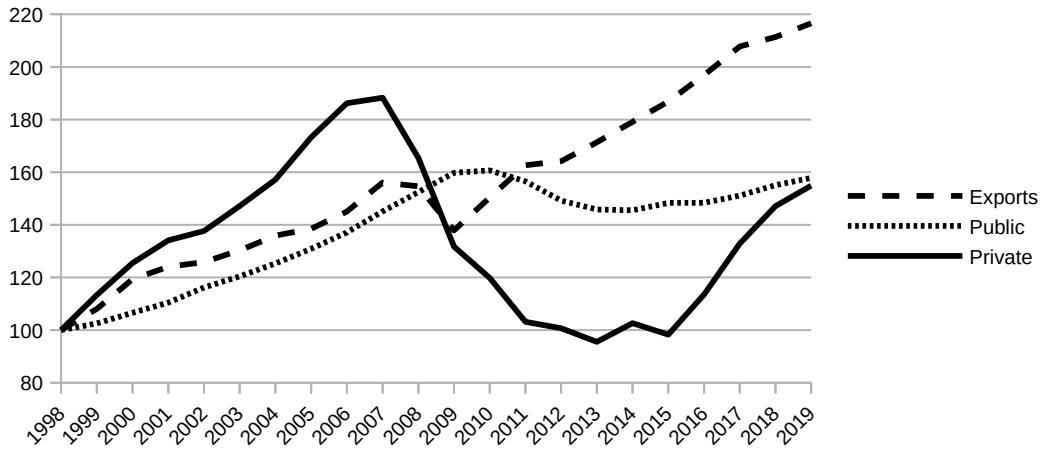
This result is conditioned by our assumption that households' consumption out of public income makes up part of public autonomous demand. As can be seen in figure 33, this roughly doubles the size of public autonomous demand, notably due to the weight of consumption out of transfers.

Figure 33: Composition of public demand



Second, the only component of the autonomous demand that has maintained its pace of growth over the period of analysis is exports, as figure 34 shows. The upward growth trend of public spending was interrupted in 2010, when austerity programmes where initiated, while private autonomous demand suffered a huge and long slump in the recession, between 2007-2013. The latter did not resume growth until 2016 and ended the period far below its pre-GFC level. These divergent growth dynamics explain the autonomous demand's composition changes observed in figure 32.

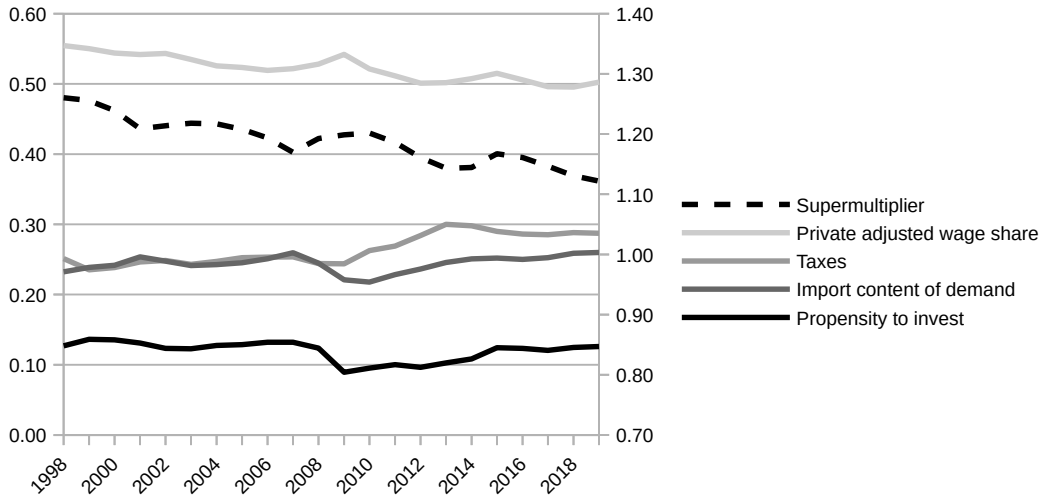
Figure 34: Growth of autonomous demand components (1998=100)



A third noteworthy point regards the behaviour of the estimated supermultiplier, which has followed a downward trend and contributed negatively to growth in the whole period. This pattern resulted mainly from two long-term trends: i) a continuous shrinkage of the private wage

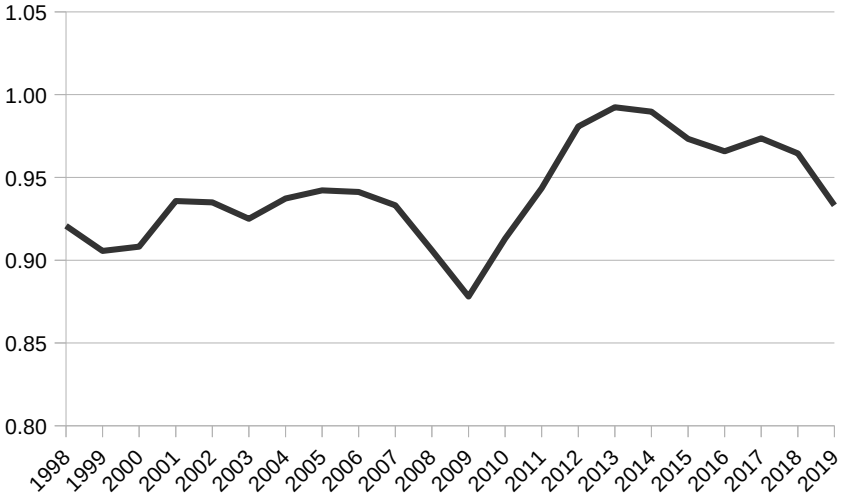
share and ii) the upward trend of the import content of the demand. Figure 35 details the trend of the supermultiplier and each of its components in the whole period, apart from the propensity to consume, which is displayed apart in figure 36 to facilitate the interpretation of the graphs.

Figure 35: Model parameters (left axis) and the supermultiplier (right axis)



Left and right *y* axes have the same scale.
The variable *t* approximates for the combined effect of wage and value added taxation in the following way: $(1-t)=(1-t_w)(1-t_{VA}) \quad \Rightarrow \quad t=t_{VA}+t_w-t_w t_{VA}$

Figure 36: Propensity to consume



The private wage share decreased from 56% in 1998 to 50% in 2018[124], a fact that we attributed in chapter 5 to structural factors: i) trade unions' voluntary wage moderation ii) the liberalisation of the labour market, and iii) changes in the productive composition of the economy towards sectors with weaker unionisation. These have been compounded by the implementation of austerity policies during the crisis – the reduction of unemployment benefits and cuts in public wages – as well as the persisting long-term unemployment. According to our results, the private wage share squeeze's depressing effects on growth were not that significant, as shown below in table 23. For example, the negative contribution of the increase in the import content of the demand was much larger.

The upward trend of the import content of the demand may be explained by changes in the composition of the aggregate demand, as well as by an increase in the import intensity of certain components of the demand. Exports, the component with the highest import content (Gandoy, 2017), increased their relative weight on the aggregate demand. Also exports increased their import content throughout the whole period, a fact typically attributed to the deepening in the integration of global value chains (Myro, 2018). The import content also increased for private consumption and productive investment (Bussière et al., 2013; Banco de España, 2017b, p. 93, 2020b, pp. 28–29). Another key factor which might help to explain the structural increase in the import content of the demand is the membership in the EMU, which brought a certain exchange rate and transformed Spain's insertion into the global economy[125]. On the one hand, imports from other EMU countries became denominated in domestic currency, so resident banks could easily refinance the deposit outflows associated with the payments. On the other hand, the downward pressure of imports on the exchange rate – even though we know that fundamentals may not be the most decisive factor in exchange rate markets (Tordjman, 1997) – was offset by the surpluses of other EMU countries (the aggregate current

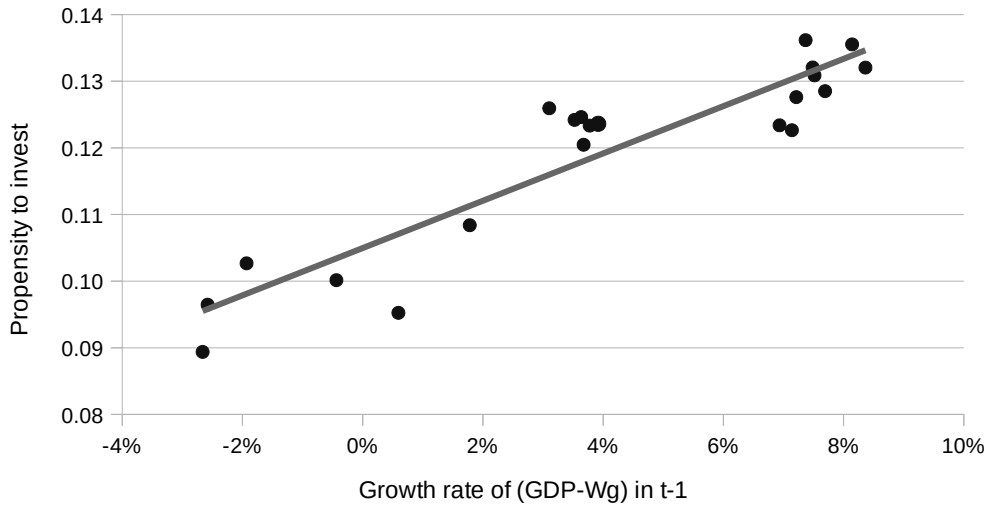
124 In 2019 there was a slight recovery that can be attributed to the significant increase in the minimum wage implemented that year.

125 The largest increase in the import content of the demand coincided with the last years of the accession process and the first years of membership: from 0.16 in 1995 to 0.22 in 2000.

account was roughly balanced) and foreigners' demand of euro assets for reserve and transaction purposes. Finally, the cyclical behaviour of the import content of the demand can be in part explained by cyclicality of the propensity to invest (see figure 35), since productive investment is the demand component with the second highest import content.

Finally, the behaviour of the investment share seems to be consistent with the flexible accelerator mechanism advocated by supermultiplier theory. From this theoretical perspective, induced investment moves with GDP although with greater volatility. As mentioned above, restoring the normal capacity of utilisation requires productive investment to overreact to changes in GDP; since the investment flow is much smaller than the stock of already installed capital, investment must grow at a higher rate than GDP[126]. Consequently, we must expect the investment share in GDP to be positively correlated to the rate of growth of GDP. This result can be observed in figure 37, which plots the propensity to invest against the rate of growth of GDP[127].

Figure 37: Propensity to invest v. (GDP-W_G) growth rate



126 Similarly, when GDP decreases, investment will decrease at a higher rate to bring down the capital-to-GDP ratio to its normal value, resulting in a decrease of *I/GDP*.

127 For evidence in favor of the accelerator effect for OECD countries, including Spain, see Girardi and Pariboni (2020) and Pérez-Montiel and Manera (2020).

3.2. The three phases of growth

The Spanish economy went through three growth periods between 1998-2020. The first one, 1998-2007, was a phase of economic expansion, the largest experienced since democracy was re-established in 1975. Spain grew faster than all its euro partners but Ireland (Spain's average real GDP growth was 3.83% vs. 2.15% for the Euro Area-12). The second period, 2008-2013, was a double-dip recession which coincided with two international financial shocks – the GFC in 2008 and the contagion of the euro area sovereign debt crisis in 2011-2012. Real GDP shrank by almost 10% during this five-year recession. The third period, 2014-2019, marked the recovery of the Spanish economy, initiated in the first quarter of 2014. Growth was weaker than in the first period, with an average rate of 2.6% v. 3.6%, and decelerated progressively since 2016. Table 23 displays the results of the contribution of each autonomous expenditure and each supermultiplier parameter to economic growth, following our methodology, for each of these three economic periods. Table 25 in annex III shows alternative results considering households' consumption out of public income as part of private, instead of public, sector's autonomous demand.

Table 23: Contribution to economic growth through the supermultiplier decomposition

	1998-2007	2008-2013	2008-2009	2010-2013	2014-2019	1998-2019
GDP	**3.83%**	**-1.32%**	**-1.44%**	**-1.26%**	**2.60%**	**2.09%**
Public expenditures	**1.92%**	**-0.21%**	**3.01%**	**-1.83%**	**0.94%**	**1.07%**
Public entities' demand (exclu	1.02%	-0.22%	1.06%	-0.86%	0.08%	0.43%
Government wages	0.45%	-0.23%	0.80%	-0.75%	0.33%	0.23%
Transfers	0.45%	0.24%	1.14%	-0.22%	0.52%	0.41%
Private expenditures	**1.35%**	**-1.61%**	**-3.06%**	**-0.88%**	**0.80%**	**0.39%**
Consumer credit	0.43%	-0.52%	-1.12%	-0.21%	0.41%	0.17%
Private residential investment	0.87%	-1.08%	-1.98%	-0.63%	0.35%	0.20%
Other autonomous investment	0.05%	-0.01%	0.05%	-0.04%	0.04%	0.03%
Exports	**1.73%**	**0.55%**	**-1.80%**	**1.73%**	**1.55%**	**1.36%**
Supermultiplier parameters	**-1.17%**	**-0.05%**	**0.41%**	**-0.28%**	**-0.68%**	**-0.73%**
Private wage share	-0.37%	-1.02%	0.22%	-1.64%	0.00%	-0.45%
Propensity to consume	0.45%	1.15%	-1.66%	2.56%	-0.72%	0.32%
Propensity to invest	0.25%	-0.62%	-2.28%	0.22%	0.47%	0.08%
Import content of demand	-1.47%	1.12%	3.74%	-0.20%	-0.59%	-0.52%
Wage taxation	0.01%	-0.15%	0.09%	-0.28%	0.11%	0.00%
Value added taxation	-0.04%	-0.53%	0.30%	-0.94%	0.03%	-0.16%
Net contributions						
Public sector	1.89%	-0.90%	3.40%	-3.05%	1.08%	0.91%
Private sector	1.68%	-2.09%	-6.78%	0.25%	0.55%	0.35%
External sector	0.25%	1.67%	1.94%	1.53%	0.96%	0.83%

3.2.1. The pre-crisis economic expansion (1998-2007)

The results show that in the first economic expansion (1998-2007) the autonomous demand growth was driven mainly by public spending and external demand, and then private demand (mainly residential investment), while the supermultiplier contributed strongly to reducing growth. Public spending expansion was mainly due to the increase in public entities' demand, although also the contribution of transfers and public wages was not negligible, but much more in line with the average. We may stress the fact that the boost in public spending during this period took place despite the public sector running primary surpluses and even overall budget surpluses in the last three years (2005-2007). This was facilitated by the sizeable increase in tax revenue (4 pp of GDP) which was, up to an important extent, caused by the real estate boom (Martínez-Mongay et al., 2007; de Castro Fernández et al., 2008), since, as we showed in the previous chapter, Spanish public administrations were subject to stringent balanced budget rules – even more than the EU's ones. Considering our theoretical discussion in

section 2.3 on the interrelations of autonomous expenditures, this can be interpreted as an institutional complementarity, at play during this period, between the liberalised financial system and the fiscal rules that led to higher growth.

In turn, these findings are also in line with Serrano and Pimentel's (2019) extension of Haavelmo's take on fiscal policy, according to which 'even if a primary surplus has to be obtained, an increase in government expenditures financed by taxes can be expansionary, provided the primary surplus target' is 'smaller than the marginal propensity to save of the private sector' (ibid, p. 4, our translation). In our case, we know that a large part of public revenue stemmed from the taxation of real estate capital gains. Assuming that consumption induced by capital income is not significant and considering that primary surpluses were relatively small, we can conclude that the income redistribution led to a higher propensity to spend for the economy as a whole[128]. Moreover, as Serrano and Pimentel (2019) claim, the expansionary effect is amplified by the increase in the supermultiplier stemming from the reaction of the propensity to invest to larger demand.

Meanwhile, although private autonomous expenditures' contribution to growth was less significant, it was higher than the average, stemming from the contribution of private residential investment. Also, it should be noticed that the role of credit for consumption is underestimated. Our data does not account for the part of mortgage credit that was used for consumption, since banks did usually grant loans in excess of the purchase value of the houses (Bover et al., 2019). In turn, this means that the increase in the propensity to consume during this period would be overestimated in our results[129]. The behaviour of private autonomous expenditures during this period has to be linked to the credit boom that we attributed in chapter 5 to the following factors: i) heightened banking competition through credit

128 This still holds when the government pays salaries, since the propensity to consume out of wages is higher than out of capital income.

129 Since we have split the part of households' consumption non-funded by public revenue into that funded by private revenue and that financed by credit, other things equal, an increase in the latter implies a reduction in the propensity to consume.

origination – expanded beyond regulatory safety limits through mortgage collateral over-appraisals, ii) the feedback effect between house collateral prices and credit creation and iii) increasing credit demand stemming from socio-demographic factors and speculative motives driving households' demand for houses.

Finally, regarding to the complementarity between liberalised lending and the decreasing wage share identified in financialisation literature, we can observe in table 23 that the expansion in consumer credit did roughly offset the contractionary effect of the decrease of the wage share. In turn, the propensity to consume increased substantially during this period, which may indicate some wealth effect, notably from the appreciation of property as we saw in chapter 5. While, as mentioned above, the propensity to consume might be overestimated in this period, we may note that contrary to other estimations, ours is calculated residually by excluding the part of consumption financed by credit. Considering the combined effect of the propensity to consume and consumer credit, the contribution to growth was significant, but still far from that of the public sector.

If we consider the net contribution of each institutional sector, the initial results change. From this perspective, the public sector is still the most important source of demand but followed closely by the private sector – which benefited from the increase in the propensity to invest in a period of above-average growth – and then by the external sector – affected by the outstanding increase in imports, both for structural reasons and for the increase in the propensity to invest. However, it is important to stress that the three sectors contributed positively to growth in the period.

3.2.2. The recession of 2008-2013

According to our results, the economic recession (2008-2013) was led by a strong negative contribution of private autonomous demand followed by a negative but moderate contribution of public expenditures to autonomous demand, and it was not worse because exports contributed positively. The supermultiplier had a neutral contribution to growth: the

decrease in the import content of demand, caused by the fall of investment and consumption (the components with the greatest import content), was offset by the fall of propensity to invest and the private wage share, and the increase in the tax burden. The results in terms of institutional sectors' net contribution to growth point to a strong negative impact of the private sector, followed by the public sector. The latter resulted from the combined effect of the crisis in the housing market and the financial sector together with a subsequent austere fiscal policy. Even with a strong contribution of the external sector (because of positive contribution of growing exports and falling imports), the final result was contractionary to output. The recession, however, can be divided into two phases.

The first phase (2008-2009) was led by the collapse of private expenditures (especially, in residential investment), following the burst of the housing bubble, and external demand, with the slump in global trade coinciding with the onset of the GFC, accompanied by a drop in the propensity to consume. The latter may however be overestimated and should rather be attributed, to some extent, to the contraction of consumption financed by mortgage credit, for the reasons outlined above. As we showed in chapter 5, the bust of the housing bubble has to be explained by the its exhaustion with the accumulation of unsold dwellings. This started to be evident from the dynamics of new mortgage credit in early 2006 . The end of the credit boom crystallised through a combination of tightened credit conditions and a decrease in the demand for credit. To counteract these negative developments, fiscal policy acted counter-cyclically, not only because of automatic stabilisers, but through extensive public consumption and investment as part of a fiscal-stimulus programme – the 'Plan E'. In addition, this helped the private sector to start deleveraging.

In contrast to that, the second phase of the recession (2010-2013) was mainly driven by a contraction in public spending coupled with an increase in wage and value-added taxation, following the implementation of austerity policies, while the external demand recovered. As we described in the previous chapter, the shift in the direction of fiscal policy was led by European authorities through the

Excessive Deficit Procedure and backed by the ECB's (confidential) conditionality to its sovereign debt purchases to contain pressures from financial markets during the euro area sovereign financial crisis. According to our results, this had a decisive effect of prolonging the recession. In 2010, austerity policies had just started and public expenditures had a neutral contribution to growth. Together with the recovery of exports, this made the economy grow at a negligible although positive rate that year. However, in 2011, austerity policies led to a strong negative contribution of the public sector. This highlights the incompatibility between the liberalised credit market and the fiscal spending rules during recessions in which the private sector is deleveraging from the previous debt overhang and, on top of that, the government might have to carry the burden of recapitalising the banking sector. The austerity policies consisted in: i) cuts in public consumption and investment, ii) the reduction of the public wage bill, which accounted for one-third of the total wage bill contraction between 2010-2013, through a combination of wage cuts, pay freezes and a reduced replacement rate, iii) the reduction in the quantity and scope of unemployment benefits and transfers[130] and iv) the increase in general value added tax by 5 pp between 2010-2012 (from 16% to 21%), as well as the increase in the wage income tax in 2010.

3.2.3. The economic recovery (2014-2019)

In the following third period of economic growth (2014-2019), GDP growth was led mainly by the external demand, together with a moderate recovery of public and private autonomous demand. Exports contributed to growth almost the same as in the first boom, as well as consumption out of public wages and transfers did. These were accompanied by a partial recovery of private spending, with a smaller increase in residential investment. As we noted in chapter 5, households did continue deleveraging during this period.

130 Unemployment allowances after 6 months of welfare were reduced from 60% to 50% of the regulatory base, while restricting access to the minimum assistance benefit (*renta mínima de inserción*) to unemployed citizens with a previous employment record. We may note that, at the same time, an increasing share of long-term unemployed workers were no longer enjoying them, in a period when the unemployment rate hiked from 19% to 26%.

The role of direct public spending (excluding transfers and public wages) was also much more modest than in the previous boom. This can be attributed to two factors. First, to the fiscal consolidation programmes that would continue throughout this period, as described in chapter 5 – Spain remained under the Excessive Deficit Procedure until 2019. Second, this was compounded by the fact that the tax burden – the tax revenue over GDP – fell considerably as a result of: i) the bust of the housing bubble and the collapse of tax income related to the real estate market, which had previously provided a virtuous complementarity between liberalised credit and fiscal rules, and ii) an increase in the weight of exports in the aggregate demand, which are subject to a lower average tax than the domestic demand (Banco de España, 2013, p. 62). In any case, the positive contribution of public expenditures to growth was enabled by the easing of austerity policies that we described in the previous chapter (section 6.1). In 2015, public spending grew for the first time since 2009, which could have also been fostered by the approval of extra spending programmes by the different government administrations due to the national and regional elections[131].

The supermultiplier again contributed negatively, with the increase in the import content of the demand and a decrease in the wage share more than offsetting the recovery of the propensity to invest. In terms of net contributions, the modest but positive contributions of the public, external, and private sectors explain the moderate recovery.

4. A debate with the literature

We compare now our results for each period with prior literature on the Spanish economic growth. We leave aside neoclassical supply-led growth accounts, focusing on demand-led analyses from both mainstream New Keynesians (for the short/medium run) and heterodox authors.

131 The 2015 expansion of Spain's public expenditures was led by investments, which was implemented in the framework of the EU's Investment Plan for Europe (Gobierno de España, 2015, p. 89). One of the main points of the European authorities easing of austerity measures was the exclusion from deficit targets of certain investment spending and in particular that co-financed through the Investment Plan (European Commission, 2015b, p. 5). Regarding the hypothetical impact of the electoral cycle on the fiscal expansion, we may note that the breach of fiscal deficit target set by the European Commission in 2015 was the largest one since 2011.

4.1. The pre-crisis economic expansion of 1998-2007

Our results show that public spending and exports were more important for growth than private demand during the economic expansion of 1998-2007. In contrast to that, prior literature has attributed a central role to residential investment and consumption, paying a great deal of attention to the credit boom. We may identify three main views on the causes of the latter. Mainstream economists have attributed it to low interest rates which boosted households' demand (Banco de España, 2004, pp. 15, 24, 2007, pp. 35–36; Malo de Molina, 2005)[132] and resulted from two factors. On the one hand, the common monetary policy would have been too expansive for Spain (Andrés Domingo et al., 2009; Banco de España, 2017, p. 30, 2006, p. 15, 2009a, p. 4; Malo de Molina, 2009, 2014)[133]. This has been also noted by some heterodox authors (Storm and Naastepad, 2016; Hein and Martschin, 2021, p. 513; Febrero and Bermejo, 2013). On the other hand, the exchange rate stability brought by the euro combined with a 'regime of of macroeconomic stability' – the commitment of fiscal policy to balanced budgets and of monetary policy to low inflation – which would have improved domestic growth prospects perceived both by domestic borrowers and foreign creditors (Banco de España, 2004, pp. 15, 24, 2007, pp. 35–36; Malo de Molina, 2005). In addition, the demand push would have overheated the economy creating inflationary pressures through nominal wage increases which fed back into lower real interest rates (Banco de España, 2013, p. 34).

Other authors, including some heterodox economists, have stressed the role of exchange stability within the euro area combined with financial liberalisation, which enabled large capital inflows into Spain and other European peripheral countries looking for higher returns. Whether these inflows went directly into the Spanish real estate market (Rodríguez

132 Low rates fostered residential investment directly and consumption indirectly, by pushing up the value of households' wealth, creating a wealth effect (Banco de España, 2007, p. 72).

133 While the Bank of Spain does hold the single monetary policy of the ECB responsible for the lax financing conditions (according to the Taylor rule), it deems that it is the Spanish government the one to be blamed for not having cooled down domestic demand, offsetting buoyant private demand with a tighter fiscal stance (Banco de España, 2013, p. 34).

and Bustillo, 2008; Stockhammer, 2016)[134] or through the domestic banking system (Aglietta, 2012; Brunnermeier and Reis, 2019, p. 15; Cesaratto, 2013) the result would have been the property boom experienced by Spain in the 2000s (Tilford and Whyte, 2011, p. 5).

Finally, the third interpretation assesses that the main driver of credit was the Spanish domestic banking system's willingness to endogenously expand credit for households, as put forward by some post-Keynesian authors (Febrero and Dejuán, 2009; Febrero et al., 2019; Febrero and Bermejo, 2013). Following certain demand pressures on the housing market, a credit-financed speculative process set off, with housing price increases feeding back into more credit through the revaluation of collateral, in the way we described in previous chapters. In their account, capital inflows would have been the result and not the cause of the credit boom. Hence, while they acknowledge that the favourable external funding conditions enjoyed by Spanish banks may have played some role, they are not considered to have been a decisive factor (Febrero et al., 2019, p. 1135).

According to our results, residential investment and credit-financed consumption grew more during this period than other components of the autonomous demand (see figure 34). However, since the share of private expenditures on autonomous demand is much lower than that of the public sector and exports, in the end, the direct contribution of the former was small relative to the others. This stems from our choice of considering consumption out of public income and public companies' investment as part of the public demand. Considering the net contribution to growth of each sector, we noted that the public sector had the largest contribution. This stems from the fact that we assumed no contractionary effect on the taxation of the real estate gains (nor firms' profits). Nevertheless, although our results show a relatively small direct contribution of residential investment to growth, we pointed above to a feedback effect on public spending that may expand

134 Rodríguez and Bustillo (2008, p. 354) assess that direct real estate foreign investment 'exerted an important macroeconomic effect maintaining a long lasting housing bubble'. Stockhammer (2016, p. 6) also seems to support this view when, from an endogenous money perspective, he claims that while massive flows from the European core to the periphery 'initially fostered manufacturing investment (as in the case of Spain and Ireland), it soon fuelled an unsustainable property boom'.

the overall impact of this variable on the economy. This operated through the increase in tax revenue related to the real estate market that gave more leeway for public spending by increasing the limitations set by balanced-budget rules. However, since the share of private expenditures on autonomous demand is much lower than that of the public sector and exports, in the end, the direct contribution of the former was relatively smaller compared to the others. Nevertheless, although our results show a relatively small direct contribution of residential investment to growth, we pointed above to a feedback effect on public spending that may expand the overall impact of this variable in the economy. This operated through the increase in tax revenue related to the real estate market that gave more leeway for public spending by increasing the ceiling set by balanced-budget rules.

The prominent role that our results give to the public sector, in contrast to prior literature, is explained by two facts. First, our taxonomy considers consumption out of public income and public companies' investment as public and not private demand as is typically assumed. When the latter is assumed, the private sector becomes the main contributor to growth, although the contribution of the public sector continues being sizeable (see table 25 in annex III). Second, the supermultiplier approach treats the expansionary effects of public spending separately from the contractionary effects of increased taxation, which, in turn, we confined to wage and value added taxes. On the contrary, in the literature, the public sector's impact on growth has been typically analysed by looking at budget balances, reaching opposite conclusions. For example, Kohler and Stockhammer (2022, p. 16) assess the fiscal stance through the average cyclically adjusted fiscal balance for the period 2000-2007, concluding that it was contractionary. Meanwhile, the Bank of Spain uses the change in the cyclically adjusted primary balance as an indicator of fiscal impact, which followed an upward trend (from decreasing deficits to increasing surpluses) until 2007, assessing the fiscal policy stance of this period as restrictive (Banco de España, 2017a, p. 35; Malo de Molina, 2014; Ortega and Peñalosa, 2012, p. 28). The same indicator is used by Hein and Martschin (2021, pp. 511, 513) drawing similar conclusions. An exception in the

literature is the IMF (2006), which estimates separately the effects of government spending and of taxation. According to its results, the IMF argued that, in 2005, despite the government running a cyclically adjusted (overall) fiscal surplus, fiscal policy contributed positively to economic growth. This resulted from 'public spending increases [having] a significantly larger expansionary impact on demand and the current account than the contractive impact of equivalent revenue gains' (ibid, pp. 13-14).

Finally, our results show a small but positive net contribution of the external sector that contradicts prior literature. This result emerges from the supermultiplier approach that considers separately the direct expansionary effects of exports on demand from the contractionary effects of imports, which constitute a leakage of demand. On the contrary, prior literature has privileged the current account balance as indicator of the external sector's contribution to growth (Hein and Martschin, 2021; Banco de España, 2007, p. 106)[135]. Since Spain increasingly ran deficits, it was assessed that the external sector's contribution was negative. Following our results, the import content increased in this period, having a strong negative contribution to growth (-1.5%). Nevertheless Spanish exports performed relatively well or at least not worse than the main advanced economies besides Germany (Myro, 2018)[136]. Exports contributed 1.7% to growth, more than compensating for the negative effect of the increase in imports.

There is ample evidence supporting the hypothesis that exports were not affected by the loss of competitiveness in the form of relatively higher inflation and growth rates of unit labour costs. For example, despite Spain's decreasing share in world exports from 2004 on, it did actually increase when considering the period as a whole (Febrero and Bermejo, 2013). In the same vein, Gros (2012) highlights that the shares in overall EU-27 exports of Greece, Ireland, Portugal and Spain remained quite stable. Indeed, among GIIPS countries, only Italy, the country with

135 For a comparison of the results of contribution of the external and public sector to growth using the methods of national income and financial accounting decomposition, following the demand and growth regimes perspective with the autonomous demand (or supermultiplier) demand-led growth decomposition for the BRICS countries, see Campana et al. (2022).

136 Despite Spain's share in world exports decreased from 2004, it increased when considering the whole period (Febrero and Bermejo, 2013).

the lowest loss of competitiveness, did lose market share. These facts have been also noted by main international organisations. For example, the OECD (2008, p. 32) assessed that 'export performance has held up relatively well, for example in comparison with G7 countries, except Germany, demonstrating that relatively high inflation [had] not undermined competitiveness excessively to this point'. Similarly, the European Commission (2010a, p. 69), analysing the weaker performance of exports between 2005-2007, concluded that Spain 'seems to have lost relatively little in market shares when compared with the deterioration of competitiveness'. According to Felipe and Kumar (2014), the disconnection between competitiveness and exports performance is explained by the fact that analyses often encompass countries which have different baskets of exports and, hence, do not compete substantially with each other, as it is the case for the GIIPs v. Germany.

Finally, regarding the credit boom driving private demand, we argued in the previous chapter that it can be explained within the heterodox theory, in line with Febrero et al. (2019), as an endogenous credit boom, instead of as a result of foreign financial inflows. We also noted that this interpretation is more consistent with the facts observed during the end of the boom, between 2006-2008, that we will recall later. Meanwhile, the importance some authors have given to direct real estate foreign investment inflows (Rodríguez and Bustillo, 2008, p. 361) is biased by the fact that they have identified housing demand with housing investment. As we noted in the previous chapter, investment only accounts for a relatively small part of total transactions in the market. Moreover, we showed that data for this period might have been overestimated and that, contrary to this hypothesis, the volume of transactions increased way more once the bubble had burst and prices were falling substantially.

4.2. The recession of 2008-2013

The Spanish recession (2008-2013), in which GDP contracted by almost 10%, is generally interpreted as a double-dip recession with a first phase initiated with the GFC and the burst of the housing bubble, and a second phase coinciding with the euro area debt crisis. Our results

suggested that, overall, the main cause was the strong contraction in private expenditures, but that fiscal austerity was the decisive factor explaining the second phase of the recession. While the literature tends to agree in pointing to the private demand, the diagnoses are diverse.

Some economists attribute the crisis to balance-of-payments problems accumulated during the previous period in the form of current account deficits and external indebtedness (Banco de España, 2013, 2017a; Higgins and Klitgaard, 2014; Ferreiro et al., 2016), with some of them highlighting the role of financial liberalisation (Aglietta, 2012; Caldentey and Vernengo, 2018). The first shock, the GFC, is typically interpreted as a sudden capital stop which especially affected banks' large external funding, leading to a credit crunch and the burst of the housing bubble (Banco de España, 2017a, p. 65; IMF, 2009, p. 4; Peñalosa Ruiz, 2012; Banco de España, 2008, p. 27; Malo de Molina, 2009, p. 9; Caldentey and Vernengo, 2018, pp. 320–321; Ferreiro et al., 2016, pp. 109–110). The second shock, the euro area debt crisis is assessed as a capital flight led by contagion in which foreign creditors expressed their concerns about the solvability of Spanish borrowers affecting also the government, enforcing a reversal of the fiscal policy stance, as well as banks' second credit tightening (Caldentey and Vernengo, 2018; Banco de España, 2017a, p. 142; Aglietta, 2012, p. 23). In both cases, the domestic supply of funds was limited by an increase in interest rates that led to a contraction in private sector's investment.

Alternatively, Febrero et al. (2019), put forward a heterodox credit crunch interpretation, in which the credit tightening did not follow from the restriction in external wholesale funding but from banks reversing their risk-taking stance. Hence, although they acknowledge that money and capital markets liquidity may have affected credit conditions, the determinant factor stemmed from endogenous dynamics emerging from inherently unstable dynamics of banks' credit cycles. Meanwhile, the second shock would only have had a significant impact on public spending, as a catalyser for austerity policies. The latter would have emerged from a combination of banks' creditors pressuring the government to bail out the Spanish banking system and the ECB's reluctance to backstop sovereign debt markets (ibid, p. 1143). Uxó et al.,

(2016) also note the negative impact of public servants pay cuts and freezes on consumption, while Álvarez et al. (2018) stress the negative impact of the internal devaluation strategy, and its three corresponding labour reforms of 2010, 2011 and 2012 (especially the last one). The crucial role of fiscal consolidation in the second phase of the recession is also highlighted by other heterodox authors as Hein and Martschin (2021).

In addition, many authors have supported Koo's (2013) view of the crisis as a 'balance-sheet recession', resulting from the private sector's deleveraging process following the burst of the bubble (Torrero Mañas, 2014; Febrero and Bermejo, 2013; Febrero et al., 2019; Hein and Martschin, 2021). According to this hypothesis, it became the goal of households and firms to bring down their level of indebtedness in line with the now depreciated assets. For that, they cut their spending resulting in a generalised contraction of income in which lower interest rates are unable to stimulate the demand. Deleveraging may thus continue lowering aggregate demand indefinitely – perpetuating the recession – unless there is a sector increasing its expenditures enough to offset the contractionary inertia until balance sheets have been cleaned up. For that reason, the fiscal austerity policies implemented from 2010 would have compounded the recession.

Regarding the debate on the causes of the credit crunch, we already advanced that the heterodox interpretation is better suited to explain available evidence. As we saw in chapter 5, the end of the credit boom has to be attributed to the exhaustion of the bubble, which preceded the GFC. Although the latter is not neglected by mainstream economists, they assess that it was just 'a relatively slow pattern of adjustment' until it was abruptly interrupted by the problems in international financial markets (Banco de España, 2009a, p. 8). Beyond questioning the feasibility of a soft landing, we pointed in the previous chapter to two facts that do not fit with this hypothesis. First, banks had access to the ECB's lender-of-last-resort facilities, as has been stressed by Febrero et al. (2019). Second, according to the results of the ECB's bank lending surveys, the main reasons reported by Spanish banks for tightening credit conditions were 'the general economic activity' and 'housing market prospects', whereas 'costs of funds and balance sheet constraints' played

a marginal role. Meanwhile, the important negative impact of the business investment share seems to be explained by the accelerator mechanism, as discussed in section 3.1. We do not exclude that financial developments may have been important in the short run. However, considering the whole recession, the drop in private business investment seems to be compatible with the adjustment of productive capacity to a much lower growth rate of expected effective demand.

Additionally, the reduction in private induced consumption seems to be much more related to the fall in private wage share and income (as induced component) than the fall in the propensity of consumption itself. The latter effect, which would be expected by the balance-sheet recession thesis, is not supported by our results. However, our propensity to consume is calculated as a residual, and we must interpret these results with some caution. We may note that there were two factors that facilitated households' deleveraging. On the one hand, the expansionary fiscal policy and the automatic stabilisers allowed levelling off households' disposable income and, hence, the debt-to-income ratio, during the first years of the recession. On the other hand, households had borrowed mostly at variable rates and therefore benefited from the ECB's successive interest rate cuts (from late 2008 to mid-2009 and from mid-2012 to mid-2014)[137]. Thus, households' debt-service-to-disposable-income ratio decreased significantly throughout the crisis[138]. This suggests that when variable-rate lending dominates, the negative contribution of deleveraging to growth may be lower than expected, provided that the central bank reacts to the credit bust by lowering the official rate. Nevertheless, the latter may not be enough in the absence of another sector expanding its spending, as stated by the balance-sheet recession thesis, especially at the beginning of the deleveraging process.

Meanwhile, as noted above, our results support the importance of the public sector consolidation to reduce the growth rate of the economy. This was especially significant between 2010-2013 when it became the only driver of the recession. Finally, our results show that the external

137 Most of households' debt consisted in mortgage loans typically indexed to the one-year Euribor.

138 According to the BIS data, the debt service ratio of households decreased from 11.7% in 2008 to 9.6% in 2010, and 8.2% in 2014. The estimation does not take into account extraordinary principal repayments.

sector contributed strongly to growth in the period. This stemmed from both the slump in imports resulting from the contraction in aggregate demand (with an important role of the fall in business investment share) and the positive contribution of exports in the second phase of the recession. But that for an economy like Spain, in which the domestic demand and, especially, public expenditures have a large weight, the external sector alone does not seem to be able to lead a growth regime.

4.3. The economic recovery of 2014-2019

Following our results, the recovery resulted from the continuation of exports' growth followed by a slight expansion in public and private autonomous spending. Prior literature agrees that the recovery was driven by exports, although there is a debate on the role played by external competitiveness. Some authors believe in the positive effect of the labour reforms (Banco de España, 2015, p. 23). Hein and Martschin (2021) state that the external demand push did not only result from price competitiveness gains, but also from the recovery of economic growth in foreign countries. Other authors are more critical towards the importance of wage moderation and price competitiveness to exports and reject the hypothesis that wage moderation had any relevant effect on stimulating exports (Cárdenas et al., 2020; Villanueva et al., 2020; Bilbao-Ubillos and Fernández-Sainz, 2019)[139].

While our results do not shed any light on this debate, we may note that many empirical studies conclude that wage moderation was not an important factor explaining the exports recovery, such as Cárdenas et al. (2020), but also the Banco de España (2017a, p. 90)[140]. There is some further evidence that suggests the same: First, as noted by Villanueva et al. (2020), the reduction in unit labour costs did not fully translate into export prices since it was partially offset by an increase in profit margins. Second, the average growth rate of exports was higher in the decade preceding the recession (1998-2007) than in the decade that

139 According to the Bank of Spain's (2017a) estimations, price competitiveness had even a lower contribution to the expansion of exports in the years following the 2012's labour market reform than in the years that preceded it.

140 Furthermore, according to the Bank of Spain's (2017a) estimations, price competitiveness had even a lower contribution to he expansion of exports in the years following the main labour market reform (2012) than in the years that preceded it.

followed the first internal devaluation policies (2010-2019) – 5.4% vs. 4.6%. This was the case despite of the fact that, during the former period, unit labour costs increased by almost 40%, while in the latter they decreased by 3%.

What our results do show is that, compared to the first phase of economic expansion (1998-2007), the contribution of exports to growth during the second one (2014-2019) was slightly smaller: 1.55% vs. 1.75% (see table 23). Thus, the larger importance of exports for the economic recovery has to be attributed to the slower growth of other expenditures, in particular, of public spending (see figure 34). Similarly, if we consider the net contribution of the external sector, we can observe that, although it was higher than in the first growth period, this stemmed from imports growing at a slower pace as a result of sluggish consumption. This led some authors to use the term 'weak export-led' for Spain's experience of the recovery (Hein and Martschin, 2021). Others have question whether or not the pre-GFC growth regimes taxonomy – debt-led vs. export-led regimes – is still informative to address the new juncture (Kohler and Stockhammer, 2022).

Another important factor explaining the recovery is the return of the positive contribution of the autonomous consumption and residential investment and, especially, of the public sector, which was smaller than in the previous boom but positive, in contrast to the recession period. The latter is also noted by Cárdenas et al. (2020, p. 568) who, focusing on the rate of growth of public demand and not on the budget balance, argue that the fiscal stance turned expansionary in 2015 when austerity policies were eased. Finally, business investment also contributed positively to growth, as expected due to the accelerator mechanism.

5. Conclusions

In this chapter we analysed the pattern of economic growth in Spain from 1998 to 2019 from a demand-led growth perspective, based on supermultiplier theory. We contributed to the supermultiplier growth-decomposition methodology by accounting for the role of public

wages and transfers as part of the autonomous public demand and not the private induced one. This choice considerably changes the conclusions regarding the public sector's importance for growth. In turn, we suggested potential synergies between supermultiplier and regulationist theory by making use of the latter's concepts of 'mode of regulation' and 'complementarity of institutional forms'.

Our general findings show that, first, public expenditures have an important contribution to autonomous demand in the Spanish economy, with public wages and public transfers acting as an important stable component of demand growth. Second, exports also have a significant contribution to autonomous demand in the Spanish economy. Third, residential investment and credit-financed consumption were important for the economic expansion of 1998-2008, because of both their direct effect and their indirect effect, consisting of an increase in public revenue and discretionary public spending, with expansionary results to growth. Fourth, the private productive investment share is positively correlated to output growth, as predicted by the supermultiplier approach. Fifth, there is a downward trend of the supermultiplier during the whole period, mainly attributed to the continuous shrinkage of the private wage share, higher import content and lower private productive investment share (as a result of lower growth).

Regarding the impact of the main macro-structural changes caused by financialisation on the Spanish economy, our results suggest that, first, more attention has to be paid to its implications regarding public spending, which was the domestic demand's largest contributor to growth, whose behaviour was highly conditioned by fiscal rules, EU's authorities' guidance and financial markets' pressures. Second, credit dynamics have also played an important role, both directly through private autonomous expenditures – less significant for growth than public spending – and indirectly through the latter, by boosting real estate tax revenue and thereby raising government spending ceilings. Third, meanwhile, the downward trend in the wage share had a negative, though relatively small, effect on growth. Fourth, similarly, the eventual wealth effect on households' consumption was also reduced, assuming that it can be captured within our propensity to consume variable.

Annex I – Data sources

Variable	Source
Main aggregates	
Aggregate income	Spanish national accounts (INE)
Consumption by households and non-profit institutions serving households	Spanish national accounts (INE)
Investment	Spanish national accounts (INE)
Government consumption	Spanish national accounts (INE)
Government investment	Operaciones no financieras de las Administraciones Públicas (IGAE)
Public companies' investment	Cuentas de las empresas públicas (IGAE)
Exports	Spanish national accounts (INE)
Imports	Spanish national accounts (INE)
Auxiliary - investment	
Total residential investment	Spanish national accounts (INE)
Government residential investment	Operaciones no financieras de las Administraciones Públicas (IGAE)
Investment in non-residential constructions by real estate services sector	El stock y los servicios del capital en España y su distribución territorial y sectorial (BBVA-IVIE)
Private investment in R&D	Spanish national accounts (INE)
Net acquisition of valuable objects	Spanish national accounts (INE)
Auxiliary - consumption	
Consumer credit	Bank of Spain's Statistical Bulletin
Transfers to households	Spanish national accounts (INE)
Public wage bill	Spanish national accounts (INE)
Parameters	
Average effective tax rate on wages	AEAT's tax collection statistics
Average effective tax rate on value added	AEAT's tax collection statistics
Adjusted wage share	AMECO Database (European Commission)

INE: Spanish National Institute of Statistics
IGAE: Intervención General de la Administración del Estado
AEAT: Agencia Estatal de Administración Tributaria
IVIE: Instituto Valenciano de Investigaciones Económicas

Annex II – Estimation of incomplete and real series

Incomplete series

There are two series for which data is not available either in the first years and/or in the last years of our period (consumption credit and investment by public companies). Missing values have been filled by extrapolating these series using other series that are both economically and statistically correlated as reference, as mentioned below. Statistical correlation is check on growth rates for the years data is available for both series, at a level of confidence of 0.95. Denoting *A* the incomplete series and *B* the complete and correlated series, we run a linear regression of the growth rate of the incomplete series ($\dot{A}$) on the growth rate of the complete one ($\dot{B}$), as specified below (equation 26), where dots denote growth rates. The nomenclature is clarified in (equation 27). Finally, we use the coefficient *b* obtained in the regression to extrapolate recurrently the incomplete series backwards (equation 28) and/or forwards (equation 29).

$$\dot{A} = a + b \cdot \dot{B} \tag{26}$$

$$\dot{A}_t = \frac{A_t - A_{t-1}}{A_{t-1}} \tag{27}$$

$$A_{t-1} = \frac{A_t}{\left(1 + b \cdot \dot{B}_{t-1}\right)} \tag{28}$$

$$A_{t+1} = \left(1 + b \cdot \dot{B}_{t+1}\right) A_t \tag{29}$$

For consumption credit, data previous to 2003 is not available. We have extrapolated the series backwards using consumption of durable goods as reference (R^2=0.82). In the case of investment by public companies data is only available between 2002-2017. We have, hence, extrapolated the series both backwards and forwards with the values of government investment (R^2=0.53).

Estimation of real series

To estimate series in real terms we use, when available, the volume indices at constant euros of 2015. For the remaining series, we use the deflators specified in table 24 below. The durable goods deflator is obtained by calculating the weighted average of volume indices for the following items, according to the Classification of Individual Consumption According to Purpose (COICOP): 4.3 Maintenance, repair and security of the dwelling; 5.1 Furniture, furnishings, and loose carpets; 5.3 Household appliances; 7.1 Purchase of vehicles; 9.1 Recreational durables; and 9.2 Other recreational goods. In turn, the deflator for non-durable goods and services is calculated in the same way using the remaining items.

Table 24: Deflators used for the estimation of real series (in euros of 2015)

Variable	Deflator	Source
Government investment	Gross fixed investment	REMSDB Macroeconomic Database of the Spanish Economy (Spanish Ministry of Finance)
Investment by public companies	Gross fixed investment	REMSDB Macroeconomic Database of the Spanish Economy (Spanish Ministry of Finance)
Public residential investment	Residential investment	Spanish national accounts (INE)
Private investment in R&D	Investment in R&D	Spanish national accounts (INE)
Consumer credit	Consumption of durable goods	Own calculation from Spanish national accounts (as described above)
Transfers	Consumption of non-durable goods and services	Own calculation from Spanish national accounts (as described above)
Public wages	Consumption of non-durable goods and services	Own calculation from Spanish national accounts (as described above)

Annex III – Alternative growth decomposition results

If we considering households' autonomous consumption out of public income as part of the private sector, we obtain the following results.

Table 25: Alternative growth decomposition

	1998-2007	2008-2013	2008-2009	2010-2013	2014-2019	1998-2019
GDP	**3.83%**	**-1.32%**	-1.44%	-1.26%	**2.60%**	**2.09%**
Public expenditures[1]	**1.26%**	**-0.35%**	1.50%	-1.27%	**0.27%**	**0.55%**
Private expenditures	**2.01%**	**-1.48%**	-1.55%	-1.44%	**1.47%**	**0.91%**
Consumer credit	0.43%	-0.52%	-1.12%	-0.21%	0.41%	0.17%
Government wages[2]	0.21%	-0.11%	0.36%	-0.34%	0.15%	0.11%
Transfers[2]	0.45%	0.24%	1.14%	-0.22%	0.52%	0.41%
Private residential investment	0.87%	-1.08%	-1.98%	-0.63%	0.35%	0.20%
Other autonomous investment	0.05%	-0.01%	0.05%	-0.04%	0.04%	0.03%
Exports	**1.73%**	**0.55%**	-1.80%	1.73%	**1.55%**	**1.36%**
Supermultiplier parameters	**-1.17%**	**-0.05%**	0.41%	-0.28%	**-0.68%**	**-0.73%**
Private wage share	-0.37%	-1.02%	0.22%	-1.64%	0.00%	-0.45%
Propensity to consume	0.45%	1.15%	-1.66%	2.56%	-0.72%	0.32%
Propensity to invest	0.25%	-0.62%	-2.28%	0.22%	0.47%	0.08%
Import content of demand	-1.47%	1.12%	3.74%	-0.20%	-0.59%	-0.52%
Wage taxation	0.01%	-0.15%	0.09%	-0.28%	0.11%	0.00%
Value added taxation	-0.04%	-0.53%	0.30%	-0.94%	0.03%	-0.16%
Net contributions						
Public sector	**1.23%**	**-1.03%**	1.90%	-2.49%	**0.41%**	**0.39%**
Private sector	**2.34%**	**-1.96%**	-5.28%	-0.30%	**1.22%**	**0.86%**
External sector	**0.25%**	**1.67%**	1.94%	1.53%	**0.96%**	**0.83%**

[1] Includes government wages as government consumption, but not as income financing households' consumption.
[2] Contribution to growth through their spending by households in consumption.

Annex IV – The supermultiplier growth decomposition formula

The supermultiplier growth accounting methodology (Freitas and Dweck, 2013) consists of decomposing the rate of growth of GDP on the basis of the supermultiplier theoretical framework. The rate of growth of GDP is expressed in terms of the supermultiplier and the rate of growth of each variable. To reach that expression, we use an iterative process, based on rearranging the basic decomposition of GDP in increments of each variable. We depart from the basic decomposition of GDP between autonomous and induced demand minus imports:

$$Y = D - M = (1-m)D + mW_G = (1-m)(Z + C_I + I_I) + mW_G$$

Defining $Y' = Y - W_G$ and $Z' = Z - W_G$ we obtain:

$$Y' = (1-m)(Z' + C_I + I_I)$$

In turn, we define $\gamma = c(1-t_{VA})(1-t_w)\omega'$ and express each component but the autonomous one in terms of Y':

$$Y' = (1-m)(Z' + \gamma Y' + hY')$$

Hence, we can express the increase in Y' as:

$$\Delta Y' = (1-m_1)(Z'_1 + \gamma_1 Y'_1 + h_1 Y'_1) - (1-m_0)(Z'_0 + \gamma_0 Y'_0 + h_0 Y'_0)$$

We rearrange the expression as

$$\begin{aligned}\Delta Y' = &\left[(1-m_1)Z'_1 - (1-m_0)Z'_0\right] \\ &+ \left[(1-m_1)\gamma_1 Y'_1 - (1-m_0)\gamma_0 Y'_0\right] + \left[(1-m_1)h_1 Y'_1 - (1-m_0)h_0 Y'_0\right]\end{aligned}$$

and we operate to express each of the three elements on the right side of the equation in terms of increases in Z' and Y' by adding and subtracting $(1-m_1)Z'_0$, $(1-m_1)\gamma_1 Y'_0$ and $(1-m_1)h_1 Y'_0$:

$$\begin{aligned}\Delta Y' = &\left[(1-m_1)\Delta Z' - Z'_0 \Delta m\right] + \left[(1-m_1)\gamma_1 \Delta Y' + ((1-m_1)\gamma_1 - (1-m_0)\gamma_0)Y'_0\right] \\ &+ \left[(1-m_1)h_1 \Delta Y'_0 + ((1-m_1)h_1 - (1-m_0)h_0)Y'_0\right]\end{aligned}$$

Solving $\Delta Y'$:

$$\Delta Y' = \frac{1}{1-(1-m_1)}(\gamma_1 + h_1)\big[(1-m_1)\Delta Z' - Z'_0 \Delta m + [(1-m_1)\gamma_1 - (1-m_0)\gamma_0 + (1-m_1)h_1 - (1-m_0)h_0]Y'_0\big]$$

We add and subtract $(1-m_1)\gamma_o Y'_o$ and $(1-m_1)h_o Y'_o$ inside the right-sight parenthesis to express the two last elements in terms of $\Delta\gamma$ and Δh. Regrouping we obtain:

$$\Delta Y' = \frac{1}{1-(1-m_1)(\gamma_1 + h_1)}\big[(1-m_1)\Delta Z' + (1-m_1)Y'_0 \Delta\gamma + (1-m_1)Y'_0 \Delta h - (Z'_0 + \gamma_0 Y'_0 + h_0 Y'_0)\Delta m\big]$$

Rearranging the expression in terms of the supermultiplier $\alpha = \frac{(1-m)}{1-(1-m)(\gamma+h)}$ we obtain:

$$\Delta Y'_0 = \alpha_1 \left[\Delta Z' + Y'_0 \Delta\gamma + Y'_0 \Delta h - \frac{1}{(1-m_1)}(Z'_0 + \gamma_0 Y'_0 + h_0 Y'_0)\Delta m\right]$$

Adding ΔW_G on both sides and dividing by Y_o we can express the equation in terms of the growth rate of Y:

$$\frac{\Delta Y}{Y_0} = \dot{Y} = \alpha_1 \left[\frac{\Delta Z'}{Y_0} + (1 - \frac{W_G}{Y_0})\Delta\gamma + (1 - \frac{W_G}{Y_0})\Delta h - \frac{1}{(1-m_1)}[Z'_0 + (\gamma_0 + h_0)(1 - \frac{W_G}{Y_0})]\Delta m\right] + \frac{\Delta W_G}{Y_0}$$

We replace γ for its expression:

$$\dot{Y} = \alpha_1 \left[\frac{\Delta Z'}{Y_0} + (1 - \frac{W_{G0}}{Y_0})[c_1(1-t_{VA1})(1-t_{w1})\omega'_1 - c_0(1-t_{VA0})(1-t_{w0})\omega'_0] + (1 - \frac{W_{G0}}{Y_0})\Delta h - \frac{1}{(1-m_1)}[\frac{Z'_0}{Y_0} + (1 - \frac{W_{G0}}{Y_0})(c_0(1-t_{VA0})(1-t_{w0})\omega'_0 + h_0)]\Delta m\right] + \frac{\Delta W_G}{Y_0} \qquad (30)$$

We develop the second term inside the big brackets repeating iteratively the same strategy used previously to express it in terms of increases in ω', t_w, t_{VA} and c. First, adding and subtracting $c_1(1-t_{VA1})(1-t_{w1})\omega'_0$:

$$c_1(1-t_{VA})(1-t_{w1})\omega'_1-c_0(1-t_{VA0})(1-t_{w0})\omega'_0 \\ =c_1(1-t_{VA1})(1-t_{w1})\Delta\omega'+\left[c_1(1-t_{VA1})(1-t_{w1})-c_0(1-t_{VA0})(1-t_{w0})\right]\omega'_0 \quad (31)$$

Adding and subtracting $c_1(1-t_{VA1})(1-t_{w0})$, taking into account that $\Delta(1-t_w)=(1-t_{w1})-(1-t_{w0})=-\Delta t_w$ we obtain that:

$$c_1(1-t_{VA1})(1-t_{w1})-c_0(1-t_{VA0})(1-t_{w0}) \\ =-c_1(1-t_{VA1})\Delta t_w+\left[c_1(1-t_{VA1})-c_0(1-t_{VA0})\right](1-t_{w0}) \quad (32)$$

Adding and subtracting $c_1(1-t_{VA0})$:

$$c_1(1-t_{VA1})-c_0(1-t_{VA0})=-c_1\Delta t_{VA}+(1-t_{VA0})\Delta c \quad (33)$$

Replacing 33 in 32, 32 in 31 and 31 in 30 we obtain:

$$\dot{Y}=\alpha_1\left[\frac{\Delta Z'}{Y_0}+c_1(1-t_{VA1})(1-t_{w1})(1-\frac{W_{G0}}{Y_0})\Delta\omega'\right. \\ -\omega_0'c_1(1-t_{VA1})(1-\frac{W_{G0}}{Y_0})\Delta t_w-\omega'_0(1-t_{w0})c_1(1-\frac{W_{G0}}{Y_0})\Delta t_{VA} \\ +\omega_0'(1-t_{w0})(1-t_{VA0})(1-\frac{W_{G0}}{Y_0})\Delta c+(1-\frac{W_{G0}}{Y_0})\Delta h \\ \left.-\frac{1}{(1-m_1)}[\frac{Z_0}{Y_0}+(1-\frac{W_{G0}}{Y_0})(c_0(1-t_{VA0})(1-t_{w0})\omega'_0+h_0)]\Delta m\right]+\frac{\Delta W_G}{Y_0} \quad (34)$$

We develop now the increase in Z' in the first term inside the brackets:

$$\Delta Z'=\Delta C_{Cr}+\Delta C_{Tr}+\Delta C_{W_G}+\Delta I_{Res}+I_{OA}+\Delta(G-W_G)+\Delta X \quad (35)$$

We use the same iteration to develop each of these components.

$$\Delta C_{Cr}=(1-t_{VA1})Cr_1-(1-t_{VA0})Cr_0=(1-t_{VA1})\Delta Cr-Cr_0\Delta t_{VA} \quad (36)$$

$$\Delta C_{Tr}=c_1(1-t_{VA1})Tr_1-c_0(1-t_{VA0})Tr_0 \\ =c_1(1-t_{VA1})\Delta Tr+[c_1(1-t_{VA1})-c_0(1-t_{VA0})]Tr_0 \\ =c_1(1-t_{VA1})\Delta Tr-c_1Tr_0\Delta t_{VA}+(1-t_{VA0})Tr_0\Delta c \quad (37)$$

$$\Delta C_{W_G}=c_1(1-t_{VA1})(1-t_{w1})W_{G1}-c_0(1-t_{VA0})(1-t_{w0})W_{G0} \\ =c_1(1-t_{VA1})(1-t_{w1})\Delta W_G+[c_1(1-t_{VA1})(1-t_{w1})-c_0(1-t_{VA0})(1-t_{w0})]W_{G0} \quad (38)$$

Taking into account that $\Delta(1-t_w)=(1-t_{w1})-(1-t_{w0})=-\Delta t_w$, we continue the iteration by adding and subtracting $c_1(1-t_{VA1})(1-t_{wo})$:

$$
\begin{aligned}
\Delta C_{W_G} &= c_1(1-t_{VA1})(1-t_{w1})\Delta W_G \\
&\quad +\left[-c_1(1-t_{VA1})\Delta t_w+[c_1(1-t_{VA1})-c_0(1-t_{VA})](1-t_{w0})\right]W_{G0} \\
&= c_1(1-t_{VA1})(1-t_{w1})\Delta W_G \\
&\quad +\left[-c_1(1-t_{VA1})\Delta t_w+[-c_1\Delta t_{VA}+(1-t_{VA0})\Delta c](1-t_{w0})\right]W_{G0} \\
&= c_1(1-t_{VA1})(1-t_{w1})\Delta W_G - c_1(1-t_{VA1})W_{G0}\Delta t_w \\
&\quad -c_1(1-t_{w0})W_{G0}\Delta t_{VA}+(1-t_{VA0})(1-t_{w0})W_{G0}\Delta c
\end{aligned} \tag{39}
$$

Introducing 36, 37, 38 and 39 in equation 35, and 35 in 34 we obtain:

$$
\begin{aligned}
\dot{Y} = \alpha_1 \Bigg[& (1-t_{VA1})\frac{\Delta Cr}{Y_0} - \frac{Cr_0}{Y_0}\Delta t_{VA} + c_1(1-t_{VA1})\frac{\Delta Tr}{Y_0} - c_1\frac{Tr_0}{Y_0}\Delta t_{VA} \\
& +(1-t_{VA0})\frac{Tr_0}{Y_0}\Delta c + c_1(1-t_{VA1})(1-t_{w1})\frac{\Delta W_G}{Y_0} - c_1(1-t_{VA1})\frac{W_{G0}}{Y_0}\Delta t_w \\
& -c_1(1-t_{w0})\frac{W_{G0}}{Y_0}\Delta t_{VA} + +(1-t_{VA0})(1-t_{w0})\frac{W_{G0}}{Y_0}\Delta c + \frac{\Delta I_{Res}}{Y_0} + \frac{\Delta I_{OA}}{Y_0} \\
& +\frac{\Delta(G-W_G)}{Y_0} + \frac{\Delta X}{Y_0} + c_1(1-t_{VA1})(1-t_{w1})(1-\frac{W_{G0}}{Y_0})\Delta\omega' \\
& -\omega'_0 c_1(1-t_{VA1})(1-\frac{W_{G0}}{Y_0})\Delta t_w - \omega'_0(1-t_{w0})c_1(1-\frac{W_{G0}}{Y_0})\Delta t_{VA} \\
& +\omega'_0(1-t_{w0})(1-t_{VA0})(1-\frac{W_{G0}}{Y_0})\Delta c + (1-\frac{W_{G0}}{Y_0})\Delta h \\
& -[\frac{Z'_0}{Y_0} + (c_0(1-t_{VA0})(1-t_{w0})\omega'_0 + h_0)(1-\frac{W_{G0}}{Y_0})]\frac{1}{(1-m_1)}\Delta m \Bigg] + \frac{\Delta W_G}{Y_0}
\end{aligned}
$$

Grouping terms in terms of increases in each variable:

$$
\begin{aligned}
\dot{Y} = \alpha_1 \Bigg[& (1-t_{VA1})\frac{\Delta Cr}{Y_0} + c_1(1-t_{VA1})\frac{\Delta Tr}{Y_0} + c_1(1-t_{VA1})(1-t_{w1})\frac{\Delta W_G}{Y_0} \\
& +\frac{\Delta I_{Res}}{Y_0} + \frac{\Delta I_{OA}}{Y_0} + \frac{\Delta(G-W_G)}{Y_0} + \frac{\Delta X}{Y_0} + c_1(1-t_{VA1})(1-t_{w1})(1-\frac{W_{G0}}{Y_0})\Delta\omega' \\
& +[(1-t_{VA0})\frac{Tr_0}{Y_0} + (1-t_{VA0})(1-t_{w0})(\frac{W_{G0}}{Y_0} + \omega'_0(1-\frac{W_{G0}}{Y_0}))]\Delta c \\
& -c_1[(1-t_{VA1})(\frac{W_{G0}}{Y_0} + \omega'_0(1-\frac{W_{G0}}{Y_0}))]\Delta t_w \\
& -[\frac{Cr_0}{Y_0} + c_1\frac{Tr_0}{Y_0} + c_1(1-t_{w0})(\frac{W_{G0}}{Y_0} + \omega'_0(1-\frac{W_{G0}}{Y_0}))]\Delta t_{VA} + (1-\frac{W_{G0}}{Y_0})\Delta h \\
& -\frac{1}{(1-m_1)}[\frac{Z'_0}{Y_0} + (c_0(1-t_{VA0})(1-t_{w0})\omega'_0 + h_0)(1-\frac{W_{G0}}{Y_0})]\Delta m \Bigg] + \frac{\Delta W_G}{Y_0}
\end{aligned}
$$

Finally, we can express each element in terms of the growth rate of the corresponding variable by multiplying and dividing them by that variable in time=0, obtaining the full supermultiplier growth-decomposition

formula. Time=0 corresponds to the previous year's value at current prices and time=1 to the current year's value at previous year's prices.

$$\begin{aligned}\dot{Y}=\alpha_1\Bigg[&(1-t_{VA1})\frac{Cr_0}{Y_0}\dot{Cr}+c_1(1-t_{VA1})\frac{Tr_0}{Y_0}\dot{Tr}+c_1(1-t_{VA1})(1-t_{w1})\frac{W_{G0}}{Y_0}\dot{W}_G\\&+\frac{I_{Res0}}{Y_0}\dot{I}_{Res}+\frac{I_{OA}}{Y_0}\dot{I}_{OA}+\frac{(G-W_G)}{Y_0}(\dot{G-W_G})+\frac{X}{Y_0}\dot{X}\\&+(1-t_{VA0})[\frac{Tr_0}{Y_0}+(1-t_{w0})(\frac{W_{G0}}{Y_0}+(1-\frac{W_{G0}}{Y_0})\omega'_0)]c_0\dot{c}\\&+c_1(1-t_{VA1})(1-t_{w1})(1-\frac{W_{G0}}{Y_0})\omega'_0\dot{\omega}'-c_1(1-t_{VA1})(\frac{W_{G0}}{Y_0}+(1-\frac{W_{G0}}{Y_0})\omega'_0)t_{w0}\dot{t}_w\\&-[\frac{Cr_0}{Y_0}+c_1\frac{Tr_0}{Y_0}+c_1(1-t_{w0})(\frac{W_{G0}}{Y_0}+(1-\frac{W_{G0}}{Y_0})\omega'_0)]t_{VA0}\dot{t}_{VA}+(1-\frac{W_{G0}}{Y_0})h_0\dot{h}\\&-\frac{1}{(1-m_1)}[\frac{Z_0-W_{G0}}{Y_0}+(c_0(1-t_{VA0})(1-t_{w0})\omega'_0+h_0)(1-\frac{W_{G0}}{Y_0})]m_0\dot{m}\Bigg]+\frac{W_{G0}}{Y_0}\dot{W}_G\end{aligned} \tag{40}$$

Defining:

$$\beta_{Cr}=\beta_{Tr}=(1-t_{VA1})$$

$$\beta_c=(1-t_{VA0})\left[\frac{Tr_0}{Y_0}+(1-t_{w0})(\frac{W_{G0}}{Y_0}+(1-\frac{W_{G0}}{Y_0})\omega'_0)\right]$$

$$\beta_{\omega'}=c_1(1-t_{VA1})(1-t_{w1})(1-\frac{W_{G0}}{Y_0})$$

$$\beta_{t_w}=c_1(1-t_{VA1})\left[\frac{W_{G0}}{Y_0}+(1-\frac{W_{G0}}{Y_0})\omega'_0\right]$$

$$\beta_{t_{VA}}=\frac{Cr_0}{Y_0}+c_1\frac{Tr_0}{Y_0}+c_1(1-t_{w0})\left[\frac{W_{G0}}{Y_0}+(1-\frac{W_{G0}}{Y_0})\omega'_0\right]$$

$$\beta_m=\frac{1}{(1-m_1)}\left[\frac{Z_0-W_{G0}}{Y_0}+(1-\frac{W_{G0}}{Y_0})[c_0(1-t_{VA0})(1-t_{w0})\omega'_0+h_0]\right]$$

and replacing in equation 40, we obtain the version of the growth-decomposition formula presented in section 2 (equation 25):

$$\begin{aligned}\dot{Y}=\alpha_1\Bigg[&\beta_{Cr}\frac{Cr_0}{Y_0}\dot{Cr}+\beta_{Tr}\frac{Tr_0}{Y_0}\dot{Tr}+\beta_{W_{Pub}}\frac{W_{G0}}{Y_0}\dot{W}_G+\frac{I_{Res0}}{Y_0}\dot{I}_{Res}+\frac{I_{OA0}}{Y_0}\dot{I}_{OA0}+\frac{G-W_G}{Y_0}(\dot{G-W_G})\\&+\frac{X}{Y_0}\dot{X}+\beta_c c_0\dot{c}+\beta_\omega\omega'_0\dot{\omega}'-\beta_{t_w}t_{w0}\dot{t}_w-\beta_{t_{VA}}t_{VA0}\dot{t}_{VA}+h_0\dot{h}-\beta_m m_0\dot{m}\Bigg]+\frac{W_{G0}}{Y_0}\dot{W}_G\end{aligned}$$

Conclusion

We initiated this thesis with a main question: **what are the implications of 'shadow banking' for the analysis of finance-dominated capitalism within heterodox traditions?** It was clear from the beginning that the challenge of the question did not solely lie within the analytical or the empirical dimension, but especially within the characterisation one. Therefore, we needed to solve literature's puzzle of polysemy and polymorphism. Once this hurdle was cleared, at the analytical level the task consisted mainly in re-organising prior contributions to facilitate its use. Finally, despite empirical challenges being major, especially regarding the limits of publicly available data, we have foregone precision and favoured an institutional and overarching approach, building on the super multiplier growth decomposition methodology and insights from regulationist theory. In short, this thesis has provided the following answer:

i) 'shadow banking' can seriously hinder heterodox research since it is flawed by a radical problem of polysemy and polymorphism, whose expertise is structurally shaped by the political goals of orthodox economists, policy-makers and market practitioners, but

ii) 'shadow banking' can be useful *if* the different phenomena that it so far encompasses are reframed within a more consistent heterodox analytical framework to account for amplifying sources of basic financial instability dynamics,

iii) whose macroeconomic implications depend fundamentally on the prevailing institutional framework, and may be more important for public, not private, spending.

Below we elaborate on these points, highlighting the contributions of this thesis. Finally, we conclude identifying some of its limitations as well as questions it opens for future research avenues.

1. ‘Shadow banking’ in hindsight: a look into the mirror of ‘financialisation’

Shadow banking became a fashionable topic in the wake of the GFC. Considering its many similarities with another buzzword, ‘financialisation’, which gained momentum after 2008, it makes sense to present our remarks pinning them face to face.

1.1. Symmetries

Faced with an exuberant financialisation literature, Christophers (2015) suggested a pause to take a breath and reflect about several fundamental issues for the research programme. The first of them concerned the very meaning of ‘financialisation’:

> For a variety of reasons, however, not least unchecked and promiscuous conceptual reiteration, the idea of financialization has by now largely lost any coherence (ibid, p. 184).

We may note that the sentence would be equally true if we replaced ‘financialisation’ with ‘shadow banking’. At the introduction of this thesis we noted that, despite the FSB’s release of an official definition for ‘shadow banking’ in 2011, the literature grew wider to encompass a variety of different phenomena. In chapter 1 we identified that amongst the most influential publications of literature, we can find up to four different characterisations of shadow banking. This has, without a doubt, undermined the utility of the concept for analytical purposes. Paraphrasing Christophers again:

> So stretched—sometimes discriminately, sometimes indiscriminately—has it become that there is a very real risk of it falling apart, no longer able to tolerate the accumulated weight of the myriad meanings loaded onto it. (ibid, p. 186)

Concerning its theoretical value, Christophers raised a second open question about financialisation:

> To what extent, most materially, do the insights and arguments contained in these studies depend upon the/a theorization of financialization—is such theorization essential to, or even, less onerously, facilitative of, the generation of those insights and arguments? Relatedly, are the propositions and conceptual generalizations that constitute such 'theory' really novel propositions and generalizations, and worthy, as such, of the neologism that financialization represents? Or, conversely, do they merely dress up existing theoretical claims in new terminological clothes? In sum, we might ask, where does financialization in its various manifestations sit on the spectrum between powerful and innovative theory at one extreme and superficial and redundant label at the other? Inevitably, the answer in all cases is probably 'somewhere in between'. But in most cases the specifically theoretical contribution of financialization per se is, at best, debatable. (ibid, p. 187)

The same could be said of shadow banking. Many of the issues addressed in shadow banking literature are not new at all. The debate on universal banking in the aftermath of the 1929 crash – later revived in the early 1990s – already dealt with the risks of interweaving banks and financial markets. Minsky (1957, p. 180) had already warned about the fire-sales problems associated to repos. The growth of non-banks and market-based finance was the object of so-called 'financial disintermediation' literature since the early 1970s. Similarly, securitisation had already started to attract scholars' attention in the mid-1980s.

Unsurprisingly, we showed in chapter 2 that many of the analyses developed in shadow banking literature could be done without the concept of 'shadow banking'. This was the case among heterodox economists and orthodox authors that found no problem in explaining the GFC within their paradigm. 'Shadow banking' was only essential for orthodox authors who used it as a theory fix, explaining the dysfunctionality of financial markets by the presence of non-banks running 'maturity transformation'. With that being said, shadow banking literature brought together a series of heterodox authors to the analysis of structural changes resulting from financial liberalisation. It can be seen that heterodox authors apprehended these phenomena as 'amplifiers' of

financial instability–affecting either a bank's credit creation incentives or a financial market's liquidity dynamics.

Putting forward a comprehensive reading guide, part 1 has attempted to make sense of a cumbersome literature. This revisitation has built upon two frameworks: First, a semantic approach to assess shadow banking's definitions as combinations of different meanings of 'shadow' and 'banking' (which showed to be more informative than the traditional entity-based v. activity-based taxonomy). Second, is our theoretical taxonomy, which has allowed us to complete the previous heterodox review of literature (Bouguelli, 2019). Together, these two frameworks allowed us to put forward an explanation to shadow banking's characterisation problem.

1.2. Asymmetries

Notwithstanding their similarities, 'financialisation' and 'shadow banking' had a rather different genesis. While the former emerged from a prudent analysis of structural changes, 'shadow banking' was born out of a pressing attempt to put forward a coherent narrative of the events that marked the beginning of what would become the GFC. The beginning of troubles in the subprime segment of the US mortgage market in late 2006-early 2007 were followed by an acceleration of events between late July-early August 2007. Within a few days, the German bank IKB had to receive support due to its ABCP conduit's losses on subprime mortgages, the French bank BNP Paribas had to suspend redemptions in three of their funds unable to assess the value of their mortgage-related investments, the interbank market of the US and the eurozone came under stress and central banks had to intervene injecting liquidity into the banking system. Less than one month later, central bankers, economics scholars, and financial practitioners were gathered at the Annual Jackson Hole symposium on the (beforehand unexpectedly) pertinent topic of 'Housing, Housing Finance, and Monetary Policy'. It was there, amid a discussion to make sense of the developments, that 'shadow banking' was considered to have been pronounced for the first time by PIMCO's Paul McCulley, when supporting the hypothesis of a run on banks' off-balance sheet vehicles.

Moreover, ‘shadow banking’ would play a crucial role in the crisis that saw the demise of Lehman Brothers in September 2008, and generalised a call for the profound reform of the financial system. The shortly followed diagnoses of the causes of the GFC were thus accompanied by different regulatory proposals. Between 2009-2010, ‘shadow banking’ flourished within these diagnoses and its pejorative connotation became established as a marker for the direction of regulatory action. This would become more clear when, in the late-2010’s, the G20 mandated the FSB to head the regulation of shadow banking as the piece to complete the regulatory reform initiated with Basel III—leading to the FSB’s definition of shadow banking’s ‘regulatory perimeter’. In chapter 3, we examined that the analysis of ‘shadow banking’ as a regulatory perimeter, demarcated differently by competing political projects, was not only crucial to understand the meaning of the concept, but also its future prospects. This was the first contribution of part 2.

Going back to our original thread, ‘financialisation’ and ‘shadow banking’ also had rather different lineages. ‘Financialisation’ emerged first within the Marxist tradition in the late 1980s, expanding later to other branches of heterodox economics and, more recently, even to mainstream economics (Rabinovich, 2019, p. 27). On the contrary, ‘shadow banking’ was born at the elitist Jackson Hole symposium, among top central bankers, economic scholars and market players. As Greenspan once stated: ‘One thing that you can say about the Jackson Hole symposium [...] is that we all put the symposium on our calendar each year and then adjust everything else’ (Farber, 2012). Thus, ‘shadow banking’ was bred in a cradle rocked by central bankers (Adrian and Shin, 2009; Pozsar et al., 2010), orthodox economics scholars (Gorton, 2010b; Gorton and Metrick, 2009) and market practitioners (McCulley, 2009; Pozsar, 2008) to later emancipate within the economics heterodoxy (Nersisyan and Wray, 2010; Aglietta and Scialom, 2010) and other disciplines (Ricks, 2011; Thiemann, 2012). Therefore, its DNA is clearly orthodox (Bouguelli, 2019). Despite an uneven access to data and in light of new evidence, heterodox economists' theories seem to have provided a guide for understanding the financial system’s transformations addressed in shadow banking literature, bringing attention to the fact

that banks' roles will continue to be central. Nevertheless, this came with the cost of reproducing certain misconceptions – e.g. that most securitisation was short-term funded – and of letting political arbitrariness – the conception of 'shadow banking' between 2007-2011 and its fall into disuse from 2017-2018 on – permeate the heterodox research agenda.

'Financialisation' and 'shadow banking' also followed different life trajectories. 'Financialisation' grew to became a prolific, although sometimes unfocussed, youngster facing a life altering decision. Christophers (2015, p. 184) shows that the number of publications on the subject followed a protracted geometrical growth along different research fields and different uses, and that, now, it is time to reconsider what is worth keeping and what not, before carrying on with research. Meanwhile, the more exploding trajectory of shadow banking publications – which increased remarkably during its first decade of existence and then followed by an apparent sudden demise – looked more like the doomed life of a subculture rock-star: intense, confusing and short. However, if the thesis presented in chapter 3 proves right, we may instead compare it to the career of a puppet ruler, sacrificed by its godfathers once it has fulfilled its role.

Taking into account shadow banking's characterisation problem, chapter 4 extends a re-definition of 'shadow banking,' accompanied by a reorganisation of the analytical categories used in the literature, with the aim of valorising the heterodox authors' contributions. Elaborating on the analysis of Scialom and Tadjeddine (2014) and Tadjeddine (2021), we proposed to redefine shadow banking – with a heterodox view of banking – as 'money creation outside any social contract': on the one hand, banks' regulatory arbitrage, and on the other, central banks' asset purchases, are isolated from any democratic process or in exchange of no regulation. We believe these two forms of (our definition of) 'shadow banking' constitute forms of abuse of sovereigns' delegation of money creation. In turn, we borrowed Hardie and Howarth's (2013) concept of 'market-based banking' confining it to interactions between banks and markets: proprietary trading, credit lines to asset managers, and the originate-to-distribute model. These interactions create amplifying dynamics between

banks' credit creation and market liquidity instability. Meanwhile, we argued against the arbitrariness of splitting non-banks between safe traditional intermediaries (pension funds and insurance companies) and risky intermediaries (such as hedge funds or MMFs) since risk-taking is nowadays endemic to the system as a whole. This analytical framework, which we later used for assessing the Spanish case, constituted the second contribution of part 2.

1.3. Going macro

At the macro level, both 'financialisation' and 'shadow banking' do benefit from a more structured and solid analysis. This has thus enabled the literature to thrive through meaningful exchanges and theoretical developments, which we briefly reviewed at the beginning of chapter 5. 'Financialisation' has been described as a set of macro-structural changes related to the increasing role of finance, it affects the effective demand, which was first identified for the US economy in the 1980s. This literature has been developed by French regulationists and post-Keynesians from the late-1990s, building on the notion of growth regimes to assess the particular features of each country's experience. On the other hand, shadow banking has been defined in terms of what we referred to in chapter 1 as the first characterisation (SB1),the short-term funding of banks' securitisation with risk transfer, i.e. the originate-to-distribute model. Its analysis has mainly been built upon post-Keynesian theory and elaborated on macro-financialisation literature. These works have identified links between increasing households (bank-financed) indebtedness and financial wealth accumulation driven by increasing inequality.

Nevertheless, the reasons behind the consistency of both concepts in the domain of macroeconomics are quite different. In the case of 'financialisation', the multidimensionality of the concept was recognised, but it was narrowed down to its effects on the effective demand. The fact thatbases of the macro framework had already been laid by the time financialisation became a buzzword may have helped. Meanwhile, in the case of shadow banking, analytical clarity did indeed stem from the implicit denial of the polysemy of the concept, coupled with the fact that

the authors that developed it at the macro level belonged to a certain community – post-Keynesian macroeconomics and, notably, SFC modelling – sharing one particular view of shadow banking (the post-Keynesian view of SB1 described in chapter 2).

Thus, in chapter 5 we sought to widen this analysis to encompass the broader set of issues addressed in shadow banking literature, while preserving the analytical consistency by using the conceptual framework we presented in chapter 4. Based on this, we analysed the Spanish case (before and after the GFC) from the lens of the macro-financialisation literature and elaborated on financial instability developments. We showed that: i) the wage share decreased in parallel with profound transformations in wage policies, labour market regulation and the sectoral composition of the economy, ii) households relied substantially on credit, whose provision was fostered by the competition in the banking system enabled by the liberalisation of the sector and on-balance sheet shadow banking strategies, iii) the two main items of households' wealth (property and shares) experienced bubble-like dynamics, iv) fiscal policy was critically shaped by fiscal rules and discipline imposed by financial markets – with repos playing an important role – in combination with European authorities.

In chapter 6 we provided a quantitative assessment of the relative impact of these issues on the pattern of growth of the Spanish economy. For that, we relied on the supermultiplier demand-led growth accounting methodology, which we argued is compatible with both post-Keynesian and regulationist theoretical approaches. Chapter 6 had two contributions: First, to growth regimes literature, constituting the first study case of Spain using the supermultiplier methodology. Second, to the supermultiplier methodology in itself, by putting forward a solution to separate households' consumption into a public-financed component (through transfers and government wages) and a private-financed component (by credit and private sector wages). We showed that this separation can lead to significantly different conclusions regarding the relative importance of contributions from the public and the private sector of growth. Our results suggested that i) the direct contribution to growth of households' credit-financed spending has been so far

overestimated, although ii) it had an indirect contribution by stretching public spending capacity, limited by balanced budget rules, by boosting real-estate related tax revenue, and iii) the behaviour of public spending was determinant for growth patterns throughout all the period and that repo-amplified market discipline may play some important role in defining the relative tightness of fiscal leeway.

In the light of these results, if we have to ask ourselves whether or not the macro-structural transformations of financialisation have been decisive for Spain's growth pattern we may answer: yes, the behaviour of public spending (constrained by balanced-budget rules and market discipline) and households' credit-financed spending (subject to financial instability dynamics) has been crucial; on the other hand the depressing effects of the falling wage share seem to have been less significant. In turn, if the question concerns the shadow banking literature's novelties our answer is less clear. On one hand, repos did condition public sector's funding conditions – amplifying unstable market liquidity dynamics – and, thus, spending, while shadow banking (following our definition) may have contributed to amplify credit creation dynamics by luring banks into competition beyond prudential regulation's safe margins. However, assessing to which point both of them were decisive is not straightforward. On the other hand, the role of market-based banking and non-banks do not seem to have been important.

2. Implications

We may highlight five implications of the results reached in the thesis. First, since shadow banking literature lacks a single common object of study, often different analyses and size estimations of shadow banking are not directly comparable. Therefore, more attention has to be paid to how each author *characterises* 'shadow banking', instead of how she *interprets* it.

Second, heterodox authors have to radically reassess their approach to shadow banking if they want to pursue any meaningful research agenda. On top of the old characterisation problem, in the last years, orthodox economists have redefined the term either as 'efficient

non-bank finance' (in countries with liberalised financial systems) or as 'the scape valve to financial repression' (in emerging countries with stricter financial regulation, such as China). None of these characterisations of 'shadow banking' have much to do with those used by heterodox authors, such as banks' securitisation (Botta et al., 2020), repo-based finance (Dafermos et al., 2020) or the banking-market hybrid form of finance (Tadjeddine, 2021). Thus, not only internal consistency is needed within the heterodox programme, but awareness that any possibility of debate with the orthodox camp based on 'shadow banking' is being severed. Nevertheless, the sources of financial instability have not been properly tackled in the post-GFC and, hence, we believe that they will play an important role in the future. Therefore, heterodox economists must stand ready for future debate. So far, stability has relied upon extensive central bank interventions, which are now colliding, at least ideologically, with central banks' hardwired commitment to low inflation targets – where the compromise will be found still remains unknown.

Third, the etymology of the term 'shadow banking' described in the thesis warns about the dangers of adopting any analytical concept defined by economists, policy-makers or market practitioners with thoretical backgrounds and political goals in conflict with the heterodox programme. On the one hand, this can lead to important misconceptions – we saw evidence that, contrary to what is often believed, shadow banking as short-term funded securitisation was relatively small in size. On the other hand, importing alien concepts can subject the heterodox research programme to external arbitrary political designs. We have seen how heterodox authors adopted an analytical concept ('shadow banking') that was not properly defined partly due to conflictual political projects and whose use was confined to the achievement of these goals.

Fourth, the supermultiplier demand-led growth decomposition methodology may constitute a promising avenue to strengthen the complementarities between the post-Keynesian and regulationist approaches. On the one hand, post-Keynesians have already embraced the supermultiplier theoretically and, recently, they have also expressed an interest in its growth decomposition methodology. On the other hand, we showed that the supermultiplier growth decomposition brings to the

forefront of the analysis of growth regimes the type of institutional analysis long-time practised by the French regulationist school.

Fifth, our results suggest that the role of public spending in driving economic growth might have been underestimated in the current methodological approaches of both heterodox and orthodox economists. On the one hand, this has theoretical implications: we consider that more attention should be paid to the macroeconomic analysis of public spending and the impacts that financial instability dynamics and balanced-budget rules have on it. On the other hand, this has political implications: the results provide renewed support for the use of public policies based on the expansion of public services and against ideological fiscal spending rules.

3. Limitations and avenues for future research

The scope of the issues and topics covered in this thesis has been quite ambitious. Therefore, it goes without saying that the results and conclusions drawn here are subject to limitations that, on the other hand, can constitute the object of future research.

First, in chapter 2 we examined the theoretical problems within the orthodox community of economists facing the GFC. However, our analysis was confined to shadow banking literature. Therefore it involved two limitations. On the one hand, we did not inquire about the theoretical roots of the ideas in which those orthodox authors that broke with the prevailing consensus built upon. We believe that their distinct interpretations of the GFC did not come out of the blue. Tracing back these ideas would provide a more complete picture of the rationale of the emergence of 'shadow banking' as an analytical category. On the other hand, we did not take into account the broader debate that took place within orthodox theory in the wake of the GFC. However, shadow banking literature did not develop independently of it. Therefore, it would be desirable to integrate and verify our account of the emergence and use of 'shadow banking' in light of the latter.

Second, parts 1 and 2 did not differentiate within heterodox approaches to shadow banking in order to emphasise the points of disagreement with orthodox authors. Nevertheless, there is a diversity of heterodox analyses of shadow banking – both between different schools and within them – that merits attention. Analysing the points of agreement and disagreement among them can help to improve our understanding of the contemporaneous transformations of the financial system and their consequences. In addition, the usefulness of the analytical framework of the instability amplifiers put forward in chapter 4 has to be assessed in light of this heterogeneity. In particular, can it be used to synthesise the heterodox analyses of the GFC and the Covid-19 crisis?

Third, parts 1 and 2's critical approach to shadow banking literature mixed together interpretations developed by economics scholars, academics from other fields, market practitioners and regulators, whose thinking can be shaped by different drivers. We believe that this was necessary to explain the genesis of 'shadow banking' as a concept, as well as our current understanding of the phenomenon, which resulted from the interactions of these groups. However, this came at the risk of oversimplification and overlook relevant differences between these communities. Therefore, a more thorough analysis should be done on this question. The examination of the proceedings of key international gatherings of these communities, such as the aforementioned Jackson Hole Symposium, can provide a better clue as to how these ideas are shared and spread between communities. In addition, an in-depth study of the internal debates within the community of regulators, which as we saw in chapter 3 did not hold a unified position, could also shed light on the emergence and characterisation of shadow banking (especially, of SB4). Last but not least, we think that historical comparative analyses, notably with the crash of 1929, are can also provide valuable insights for better understanding the political economy of 'shadow banking' and its role in the relatively weak regulatory momentum that followed the GFC. We may recall that many of the forms of finance encompassed by 'shadow banking' were already present in the 1920s (universal banking, repos and margin lending, and certain sort of securitisation).

Fourth, the results presented in part 3 on the Spanish case showed that the macroeconomic implications of the effects of financial instability on public spending can be sizeable. Nevertheless, it remains to be assessed whether these results can be generalised. To that purpose, the methodology used here could be applied to other countries and to develop comparative case studies. Particularly interesting are cases in which the government may be more exposed to financial instability dynamics: On the one hand, those featuring housing bubbles and their corresponding expansionary effect on tax income, especially when the government is subject to spending rules. On the other hand, countries in which the government can be more sensitive to financial markets' instability, as it can be the case in developing countries, countries borrowing in foreign currency or countries in which there are institutional constraints to the central bank to backstop the government.

Fifth, our examination of the financialisation macro-structural transformations of the Spanish economy in chapter 5 was confined to providing the basis to interpret chapter 6's supermultiplier growth-decomposition results. In that way, it has several limitations that can be tackled in future research. On the one hand, the period under analysis was too short to properly observe and assess long-term transformations. Therefore, we consider important to extend our case study backwards in time. In addition, we left aside of our analysis the behaviour of firms' investment. The estimation of a longer term series of the productive investment as defined in chapter 6 could provide a good starting point to determine whether or not there has been any significant long-term change. In turn, this could allow elaboration on the relation between supermultiplier theory and the trend towards sluggish investment identified in macro-financialisation literature. Moreover, our analysis left aside two important dimensions that we consider relevant to understand the pattern of growth of the Spanish economy: its inscription in the global economy, and its productive structure. These two dimensions can be associated from a French regulationist perspective with the institutional forms 'international regime' and 'form of competition'. Last but not least, we devoted little attention to the implications of the debt service for households' and government spending. We consider the importance of

completing our analysis drawing on the findings of heterodox economists through SFC models on this matter, in particular the advances done building on the supermultiplier model.

Sixth, although we contributed to some methodological advances in the supermultiplier growth decomposition methodology, we consider that there is still room for improvement in future works. In particular, the use of one single aggregate variable to account for the effects of imports – the share of imports on aggregate demand – does not allow assessing demand composition effects. For example, if households increase their consumption of imported goods, this results in a positive contribution to growth of households' spending, which is offset by the negative contribution of the share of imports on the aggregate demand. However, it is clear that households' consumption had no contribution to the demand of domestic products and services. Thus, exploring ways to deal with data limitations to account for a more disaggregated estimation of import effects could contribute to providing more meaningful results. Nevertheless, this comes with a caveat. Any attempt to enhance the explanatory power of the supermultiplier methodology by increasing the level of detail of the aggregate demand's disaggregation comes at the cost of hindering the use of the methodology for comparative or country-groups analysis. Lack of complete standardisation in data collection between countries implies that the more we elaborate on the level of data detail, the less comparable data becomes.

Finally, in chapter 6 we proposed exploring the complementarities between the supermultiplier demand-led growth accounting approach and regulationist theory. In particular, we used two key regulationist concepts to the interpretation of the growth-decomposition results: the 'mode of regulation' and the 'complementarity/incompatibility of institutional forms'. We argued that these concepts can be useful for describing the interaction dynamics between demand on which the coherence of a particular growth regime may rely on. At the same time, these two concepts can also be helpful in advancing the analysis of the determinants of autonomous expenditures and how they can become endogenous by institutional design in certain cases. We consider it

worthwhile for the research agenda on growth regimes to continue exploring this path.

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