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Le cas du Mausolée Ferdowsi en Iran

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Declaration

I certify that the thesis I have presented for examination for PhD degree of the Paris 13 University is solely my own work other than where I have clearly indicated that it is the work of others (in which case the extent of any work carried out jointly by me and any other person is clearly identified in it).

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In the name of the Lord of soul and of wisdom

To nothing sublimer can thought be applied

(Poet : Ferdowsi)

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Introduction

In this research, we have considered the literature on public goods and in particular historic sites as public goods. Considering historic sites and monuments as public goods demands different kind of planning as they are usually managed by administrative staff. As the cost of restoration and maintenance of the historic sites is high, it is important that a cost- benefit analysis be carried out for each project as resources are diverted away from other sources of value such as education which is opportunity cost of heritage (Navrud & Ready, 2002a). Moreover, from the point of view of efficiency, there has been overprovision of resources in countries such as France (Benhamou, 1996 & Benhamou, 1997) and justification of these costs has been under question.

Today many countries use cost-benefit analysis (CBA) in order to justify different policies, projects, investments and regulations. For instance, at EU level project appraisal in the framework of EU funds should be done by using a cost benefit analysis for major projects (EUROPEAN COMMISSION, 2008).

Regarding the historic sites, different methods have been used to assess the value generated from them. In general, these methods are classified into stated preference and revealed preference methods. Revealed preference methods are based on the observed behavior of the people while stated preference methods are survey based and use the responses of the people in a hypothetical market.

Stated preference methods that include contingent valuation and choice modeling are capable to measure the total value of a historic site. Contingent valuation method that seems to be the most proper method for measuring the total value (use & non-use values) has been used by environmental economists for measuring the value of the environmental services and goods. However, there are few studies that have applied this method for the measurement of the total value of historic sites. We have studied this method thoroughly in chapters 3 and 4. Non-use values are the values which are experienced by individuals but are not reflected in market processes such as option value, having the possibility of visiting a site whenever one decides and bequest value, value of preserving a site for the future generation and existence value which derives from the fact that people value the historic heritage just because they exist, etc. It is quite important that non-use values also be taken into account in CBA studies. Therefore, contingent valuation method can play an important role in cost-benefit analyses of historic sites

as a benefit assessment tool and make a great contribution to heritage policy and practice (Thorsby, 2007).

Research objectives and contribution:

The aim of this research is to contribute to the available literature on public goods by answering to the following problematic questions:

Could historic built heritage be considered as public goods?

What are the characteristics of a site to be considered as global public good?

Different scholars have categorized the values that are generated from the historic sites in different ways; therefore, in this thesis we have tried to contribute to the available literature by identifying all the types of values identified so far and answering to the following questions:

What are the values that are generated from the historic sites, buildings and city tissues?

And is it possible to develop a comprehensive value typology that entails all the types of values identified to be used as a reference?

Different methods have already been used for assessing the values that are generated from the historic sites each capable to measure different spectrum of values. Therefore, another problematic question that has been answered in this thesis is as follows:

Which method is the most appropriate to measure the total value (use and non-use values) of a historic site?

We have then used our findings to carry out an empirical study, being the value assessment of Ferdowsi (poet) mausoleum located in Tus historic area near Mashhad city in Iran. Cultural Heritage Organization has some plans to register Tus historic area that includes our site in the UNESCO world heritage list.

In our case study in addition to the assessment of the total value of the site we have made an effort to measure the sub-values generated from our selected site and therefore, this research has also answered to the following question:

Is there a way to measure the sub-values, in particular sub non-use values generated by historic sites and buildings?

Our contribution to research is study of public good characteristics of historic sites, values generated by historic sites, development of a value typology and value assessment of historic sites. Particularly, measurement of sub-values has been carried out for the first time for a historic site and therefore, it is completely original. The value assessment of the Ferdowsi mausoleum is also original as CVM has been used for the first time for a mausoleum and for a historic site in Iran.

Organization of the thesis:

In chapter 1, we have first considered whether historic sites and buildings could be considered as public goods. For this purpose, we have gone through the literature on public goods and studied if we can fit the historic built heritage into the category of public goods. We have then gone further and examined if some historic sites could be considered as global public goods and what are the criteria in this regard. Following that we have studied the case of biodiversity to learn about actions that have been taken place in the field of biodiversity and the attributes of biodiversity and study if we can use the same treatments for the historic sites as the question of public good and global public good has been discussed a lot for the biodiversity. Then, we have considered the possibility of the international cooperation and financing in terms of built heritage management.

Moreover in this chapter, we have studied different dimensions of value that could be generated from the historic built heritage. Researches so far have used different categorization of values by naming the categories differently or by dividing the total value in different ways.

In chapter 2, we decided to choose a site for the purpose of value assessment as a case study and to this mean, considered several prospective places and based on the data available and different criteria, finally we chose a site located near Mashhad City in Iran in Tus historic area

which is called Ferdowsi mausoleum. Furthermore, base on our review on different types of value that are generated from historic sites in chapter 1 we developed our own value typology that entails all the types of value identified so far to be used in our research and as a framework for the future studies to make the comparison between studies possible. We have then proceeded by studying different methods of value assessment of historic sites that are categorized into revealed preference methods and stated preference methods and tried to identify the spectrum of the values that each method is capable to measure and explain their advantages and disadvantages.

Following that in chapter 2, based on our target that was measuring the total value of our selected site (use and non-use values), we chose the most proper method to this mean which was contingent valuation method. This method is one of the stated preference methods. Stated preference methods are capable to measure total value (TEV). The other method that is capable to measure total value in this group is choice modeling but choice modeling method estimates the value of a good by describing it in terms of services and function that has not been the target in this study.

In chapter 3, we have studied different steps of designation and implementation of a contingent valuation (CVM) survey and have remarked the hints and important points regarding that. We have then explained the survey designation process of our own survey for our case study, Ferdowsi mausoleum and have explained about its different parts that included basic information part and question part. Question part in turn included attitudes part, value assessment part and socioeconomic data part.

In chapter 4, we have studied contingent valuation method more in detail. We have first studied history of contingent valuation. We have devoted a particular part to the application of contingent valuation method for of historic sites. Following that as CV measures the economic concept of value we considered economic theory of contingent valuation method. Utility theoretic model of consumer preference, statistical analysis of the CV responses and statistical model of CV responses have been presented in this part. Next, we have studied validity and reliability of contingent valuation that is one of the important issues that need to be discussed. The weak points and limitations of the contingent valuation method is another issue that has been addressed in this chapter. Biases in CVM have been explained in this part. There are many types of bias that can occur in CVM study but can be eliminated or minimized by proper survey

designation and implementation. Finally, we have considered the role of CVM studies in policy making process and explained about instances in different countries.

In chapter 5, we have proceeded our analysis which comprises of 4 main parts: First part: Descriptive Statistics, Second Part: Attitudes, Third part: Value assessment of the Ferdowsi mausoleum, Fourth part: Inferential statistics (Regression and correlation analysis).

In the first part, descriptive statistics about the demographic variables in our survey including age, sex, occupation, number of household, level of education and monthly expenditure has been provided. In the section about attitudes, some questions have been set to find out about the opinion of the people on the poet, Ferdowsi and his mausoleum, restoration of historic sites and monuments in Iran and visit habits of the respondents, in general for the historic sites and particularly for the Ferdowsi mausoleum site, yearly expenditures on the visits of the historic sites and buildings, etc.

In the third part which belongs to the value assessment, we have done a vast analysis including calculation of the mean willingness to pay (WTP) of the people in our sample for the maintenance and revival of the Ferdowsi mausoleum and aggregation of that for our total population, people and tourists of Mashhad city to obtain the total value for our population.

In this part, we have also tried to assess the use and non-use value of the sample as well as the sub non-use values. Sub non-use values that have been measured in a way in this part include: existence value, bequest value, option value, beneficial externalities and collective values which have been measured for the first time for a historic site. These are values defined in our value typology except the quasi option value that exists in our value typology but has not been applied for Ferdowsi mausoleum as it is concerning sites that might not be valuable now but in future they might gain value. As our site was already famous and of high value this was not concerned to our site, Ferdowsi mausoleum. Collective values consist of the values such as cultural identity and cultural continuity. [Cultural continuity means continuation of culture in passage of time. The term has been used by Kling and Sable (2001) in introducing the double public good model.] Beneficial externalities are the positive spill over from historic built heritage and include aesthetic, symbolic, spiritual and historic values. Existence value derives from the fact that people value the historic heritage just because it exists. Option value is generated from the fact that people are interested in the preservation of the historic built heritage in order to have the option to consume it in the future and bequest value means that people are interested to pass on their built heritage to the next generation.

Moreover, a least square regression analysis has been done to find out which variables in our model have a meaningful impact on WTP and to see if the model itself is meaningful. The results of regression of the dependent variable WTP and some demographic variables age, sex, education level, occupation, number of households and monthly expenditure has been shown in this part. Besides, we have studied the correlations among different independent variables in our model and all these together, have been used to verify the validity of the model.

The results of our empirical study of the Ferdowsi mausoleum has provided us valuable information about Ferdowsi mausoleum in particular and people interest and opinion about the historic sites in Iran in general and the result of our CVM study could be helpful in the decision-making processes and for crafting the policy. Application of CVM for the policy purposes is growing and this study is also aligned with this improvement.

Chapter1: Could historic Built Heritage be considered as Global Public good?

Introduction

As an important part of the cultural heritage, architectural heritage of the countries can play an important role in the well-being and prosperity of the people of the societies. It can empower people of a country by giving them a sense of cultural identity and differentiation. By studying different characteristics of the built heritage, we investigate whether historical buildings, sites and tissues could be considered as public goods. We will then study different types of values that could be derived from the built heritage which helps us in prioritization of our preservation and restoration goals and proves the public characteristics of these historic places. We will consider if some of these historic monuments could be determined as global public goods and if and to what extent uniformity in heritage administration and international cooperation for the preservation of the valuable historical monuments would be possible in action.

1.1 Historic built heritage as public goods

Culture is one of the essential elements that form the identity of the nations. Different definitions have been used so far to define culture. Culture could be defined as "the complex of spiritual, material, intellectual and emotional features" that form a unique identity for the society and encompasses elements such as historical, political, legal, technological and artistic aspects (Serageldin, 1999).

Given that culture brings with itself uniqueness and specificity, there is a need for continuous planning for maintaining and strengthening the culture as there are many advantages in cultural specificity for the nations. Cultural distinctiveness can act as an engine for further development as it creates a strong motivation for the people of a country to improve the quality of their activities and induces nationalism. People that live in a same geographical location with its specific characteristics and have common historical background entail a common

culture that forms their cultural identity. The stronger the elements of a culture are, the greater is the amount of nationalism. On the other hand, due to the globalization, we are moving toward unification of the cultures. The concept of global village has emerged due to this fact. The definition of a global village is the idea that people are connected by easy travel, mass media and electronic communications, so that the geographical distance has been narrowed down and various people become members of a single community. The extensive use of social networking sites, internet, mobile phones and different media is breaking down cultural barriers and allowing people to share different cultures and knowledge. In doing so, our capacity for a global culture will increase. Cultural unification will make people accepting more, and increase our sense of togetherness via the shared cultures. While globalization has had so many advantages in economic terms, it has also had its disadvantages. This reminds us about the necessity of establishing a well-developed plan to maintain a balance between the movements in these two opposite directions.

Cultural heritage of a country which is named its cultural capital includes a wide range of material and immaterial items. In this chapter, we are focus on the built heritage which includes historical buildings and sites, historical tissues and areas as an important part of the cultural goods that have a remarkable role in the formation of the cultural identity of the society as well as in its economic development.

The spectrum of the goods could be distinguished by two main characteristics, namely, non-rivalrousness of consumption (or in another term indivisibility of benefits) and excludability of benefits. Purely private and purely public goods are two ends of this spectrum. In-between points across this spectrum present impure public goods. Two important sub-classes of these kinds of goods are club goods with the characteristics of excludable benefits and partially non-rivalrous and common pool resources with the characteristics of mostly nonexcludable and rivalrous in consumption.

Samuelson (1954, P.387) assumed two categories of goods: “ordinary private consumption goods which can be parcelled out among different individuals according to relations and collective consumption goods which all enjoy in common in the sense that each individual’s consumption of such a good leads to no subtraction from any other individual’s consumption of that good.” Collective consumption goods equals to public good and its characteristic defined by Samuelson equals to non-rivalry characteristic.

Richard Cornes and Todd Sandler (1996, pp.8-9), define non rivalry and excludability as follows: “A good is non-rival or indivisible when a unit of the good can be consumed by one individual without detracting, in the slightest, from the consumption opportunities still available to others from that same unit.” Moreover, they indicate that “benefits that are available to all once the good is provided are termed non-excludable”. They also define public goods, especially pure ones, as special cases of externalities.

However, from the point of view of the Inge Kaul (2006), having the features of non-rivalrousness and non-excludability just show the potential of a good for being public in consumption. He indicates that a good is public if it be de facto non-exclusive. Therefore, it is the nature of the benefits of a good that determines its degree of publicness. Non-excludable and non-rivalrous properties of the goods are subject to change and move across private and public boundaries (Kaul, 2006). Besides, the degree of the publicness of a good is mostly a matter of choice and could be shaped by policy (Kaul, Conceiçao & Mendoza, 2003).

1.1.1 Fitting historic monuments into the category of the public goods

Some of the historical buildings and sites have an entrance fee; therefore, at first glance they might seem partly excludable. However, whether they have an entrance fee or are open to the public, passers can still enjoy from their views. This is also true about the buildings that are used for instance as governmental offices and therefore, ordinary people do not have access to them and privately owned buildings. People can benefit from the historical façades of these buildings and existence of these buildings has an important impact on the urban views and city texture. In case that the owners of the privately-owned building open their buildings into people in return of receiving subsidies for renovation or benefiting from tax-reductions, these buildings will show more the non-excludable property. Historic city tissues are completely non-excludable.

Therefore, historical monument, sites and tissues could be considered as de-facto non-excludable and base on the definitions mentioned in the previous section for the public goods, they could be defined as public goods.

Some of the historical monuments and sites are non-rival while others show different levels of rivalness. Those which absorb so many visitors might get very crowded and this will lessen

the enjoyment that people receive from visiting them and might also destruct the monument itself. This is known as carrying capacity problem which has been applied also for the environmental goods. Notably, Congestion might happen for the monuments with or without entrance fee and therefore, it will become necessary to control the number of incoming visitors. Therefore, the level of rivalness totally depends on the location and value of the monuments and sites.

Base on what was considered, historical monuments and sites could be assigned to somewhere within the range of the pure public goods and impure public goods. However, some researchers have considered all types of the historical buildings and sites as pure public goods and have ignored the issue of congestion. For instance, Sable and Kling in modeling social welfare have considered built heritage as pure public good though they have remarked that congestion might make historic monuments partly rivalry (Kling, 2001).

By assigning historical buildings and sites into the public goods category, they are disposed to the one of the problems of the public goods, free rider problem, as tax-payers are those who are going to pay for the cost of preservation of the built heritage. However, it depends on the priorities and value system of the people of the countries which needs to be further studied. For instance, a survey carried out in UK by MORI for Heritage Counts 2003 proves that people of UK have a high level of concern about historical sites and their preservation (IPSOS MORI, 2000). This is mainly due to the externalities that are generated from these assets that we will consider in depth later.

Considering built heritage as public goods and taking into account externalities that are generated from them affects cost-benefit analysis of preservation of architectural heritage. However, from the point of view of efficiency, there has been overprovision of resources in countries such as France (Benhamou, 1996 & Benhamou, 1997). Benhamou (2012) remarks this as patrimonial inflation. Due to the high cost of restoration and maintenance of the historical buildings and sites and increasing governmental subsidies on that, arguments have been raised about justifiability of these costs and efficiency of resource allocations. The question would be then what and how to preserve. Although Rizzo (1997) mentions that the final decision to preserve a site is result of a sophisticated game by many actors, we need to set priorities for the restoration of the historical monuments and sites as by expending on cultural heritage, resources are diverted away from some other sources of value for the society such as education and health care (Navrud & Ready, 2002a).

Preservation of built heritage creates market value through job creation, increasing the value of the properties and gains in the economic growth and non-market values such as aesthetic, cultural, option, bequest and existence values. (Kling & Sable, 2001) It is then important to determine the total economic value of the built heritage, decompose it into categories of value and identify its beneficiaries. This helps us to shed light on the characteristics of the built heritage, determines its degree of publicness and prioritizes preservation of the historical monuments.

1.1.2 Values driven from the architectural heritage

Different scholars have already worked on the values driven from the historic built heritage. They have categorized the total value into sub-values. Kling and Sable (2001) introduced a double public good model in the general equilibrium model of social welfare which takes into account both market and non-market values. The model which is built base on households' utility functions depends on private consumption of the private goods, private consumption of preserved built heritage which in turn depends on the stock of preserved historic resources and access activity which represents all the activities that make direct and indirect consumptions of historic capital possible (direct visiting and indirect experience via media,… in fact includes all the activities that help "to transform an historic asset into an historic experience"(Kling and Sable 2001, P.80), the collective use of the historic places by other members of the population which creates symbolic meanings such as cultural identity and other possible additional non-use values which are individualistic non-use values, not generated by consumption or sharing, for all the households by the existence and magnitude of the preserved historic capital such as option value, bequest value and existence value.

The label double public good in this model derives from the publicness of the historic built heritage and the fact that access activity of the people that is applied to the historic heritage creates public externality of the shared experience. As in this thesis we are going to find out about the factors affecting the economic value which could be extracted from historic built heritage, it would be of interest to identify the factors that affect the choice variable access. In the double public model, access variable depends on private incentives as well as on public programs (Kling and Sable, 2001). Bergstrom and Goodman (1973) have determined the factors that impact demand function of the individuals for the municipal public services. They have

found out that demand depends on price and income as well as on demographic characteristic of the people and the location they live in.

Both demand and supply sides have been considered in this model. Notably, this model reveals that market solution leads to under-provision of the historic resources as on the demand side, individuals do not consider shared externalities in their choices and on the supply side those who provide historic built heritage experience find little incentives in the market (inadequate profit or underfunding due to free rider issues in case of non-profit organizations) and this under-supply of historic resources impacts in turn access activity of individuals. As a result, historic built heritage in the same way as other public goods which have supply problem could be referred as market failure.

David Throsby has more precisely studied different types of values related to the historic built heritage and has introduced different classifications in this regard. These classifications are as follows: individual/collective value and private/public value (Throsby, 2007).

Individual value includes use value, non-use values and beneficial externalities. Throsby defines use value as "the value that accrues to individuals, households, or firms through the direct consumption of heritage services" which is accounted as actual or imputed rental value of heritage in market processes and non-use or passive use values as "values which are experienced by individuals but are not reflected in market processes since they are derived from those attributes of cultural heritage that are classifiable as non-rival and non-excludable public goods" (Throsby 2007, p.3).

Non-use values have been categorized into existence value which derives from the fact that people value the historic heritage just because they exist, option value which is generated from the fact that people are interested in the preservation of the historic built heritage in order to have the option to consume them in the future and bequest value which means people are interested to pass on their built heritage to the next generation.

Beneficial externalities are the positive spill over from historic built heritage such as aesthetic value and spiritual value. Collective values on the other hand are the values that are generated from the historic built heritage for all the people of the society such as creation of an identity and in order to account them, we need to put aside neoclassical economic model in which value is defined as individual utility (Throsby, 2007).

The second classification private/Public value refers to the distinction between private and public interest. For instance, owner of a private built heritage might be dissatisfied by the listing of his property in the national list of preserved heritage. On the other hand, authorities consider his property as a public good with externalities for the people and therefore, try to preserve it.

The double public good model reflects the values determined by Throsby and indicates how these values impact utility function of each household. However, it also expresses that there is a value which is generated from the stock of preserved historic resources. As mentioned before there is a relation between this stock and access activity of the household. Therefore, the more the amount of this stock be, the more would be the access activity (or use value and beneficial externalities).

Ismail Serageldin has used following categories of values: Extractive use value, non extractive use value and non use value. Extractive use value refers to the values that could be extracted from the historical buildings and sites by reusing them in different ways (renting, trading…). Non extractive use value is derived from services that are provided through the historical sites. Aesthetic and recreational values are two important types of value that belong to this category. In this classification, non-use value has been disaggregated to the following components: Existence value, Option value and quasi-option value. Existence and option values were explained before. Quasi option value is related to the sites and buildings that might seem unimportant now but their value might change for us by re-evaluating them (Serageldin, 1999). People may begin to pay attention to them and some historical memories might be reminded by them or for instance city hall might make some changes in other buildings around a specific site and as the result, the site becomes more remarkable.

Different methods have been applied for the valuation of the historical monuments and sites. Among all, contingent valuation method which is based on the consumers' willingness to pay (WTP) is very common and we have studied this method thoroughly in chapters 3 and 4. In this method, a survey is carried out to find out the willingness of the consumers to pay for an environmental good. By using this method for an historical building, we can find out about the relative size of the use and non-use components of value (Navrud & Strand, 2002)

Although different scholars have used different terminologies and slightly different classifications, in general they have classified values into the two categories of use and non-use values. These different types of values that is delivered to the people of a society proves the

strong public characteristic of the built heritage and reveals a strong need for effective management of these assets as well as development of proper policies in this regard.

Although all the historic sites and buildings could be regarded as public goods for a society, due to the high cost of the preservation and the burden that would be on the taxpayers, we need to select among the available buildings and sites to avoid loss of resources. For a socially efficient resource allocation, we need to apply a proper selection mechanism base on the full spectrum of values (private market values and social non-market values) as by taking into account just the market value of the historic heritage other values that affect household's utility and by consequence, well being of the people of a country would be ignored. Focusing just on market values might lead to the policies that target at maximizing the number of visitors while this can affect the quality of the experience of the visitors and lead to congestion. Another disadvantage of focusing on the market value is that decision makers might prefer to invest on other projects with higher benefits than on restoration of the historic buildings and sites (Serageldin, 1999). By considering the full spectrum of value, historical buildings, sites and city tissues could be graded in terms of their total value and priority for preservation would be given to those with high grades. Therefore, in this way historical places would be better and more efficiently preserved and we can also plan for extracting different types of value from them to reach the optimal level.

1.2 Historic places as global public goods

As national borders of democratic countries have become increasingly open and we observe high rate of travels, the provision of a public good not only depends on the national policies but also on the global policies and events (Kaul, Conceiçao & Mendoza, 2003). In this section, we go further and investigate whether outstanding historical buildings and sites of a nation could be considered as global public goods. Other questions to be answered would be which buildings and sites have the characteristics of a global public good. To what extent, the existence value of the distinct buildings and sites of a country is meaningful to other countries?

Kaul, Grunberg and Stern (1999), have determined two criteria for identifying global public goods: First, they should have general characteristics of the public goods (non rivalry and non-excludability) and second, their benefits should be quasi universal in terms of countries (more

than one group of countries), population (at least several population groups) and generations (for both current and future generations).

Some of the historic buildings and sites of the countries have global value as they are part of the history of the human or in other words, human identity and people are curious to learn about it and historic buildings and sites are main alive remains of the past. UNESCO's world heritage list has been created to save the outstanding sites which are considered as heritage of our world. On the other hand, as mentioned earlier, historic resources give people of a country cultural identity and foreign visitors are also interested to learn about cultural distinctions that are revealed through the architecture of a country and feel the identity that is produced by these places.

In order to identify historic resources that should be considered as global public goods we need to use specific criteria. Kaul, Grunberg and Stern (1999) have noted that one of the main criteria for determining whether a public good is a global one or not is examining the publicum or beneficiaries of a public good and mention that due to the disparities and divisions in the world, determining the degree of the publicness of a public good to be accounted as global is not an easy job. They suggest that a global public good should cover more than a group of countries as well as a broad spectrum of global population and meet the needs of the current population without jeopardizing those of future generation.

We use these criteria to investigate whether outstanding historic built heritage of a country could be considered as a global public good. Tourism surveys indicate that people of the world are in general interested in visiting historic places of other countries when visiting a country, especially when a country has a valuable architectural heritage. However, the proportion of the tourists from different countries visiting a historic site might be different due to economic and/or political condition of some countries. Base on the UNWTO's Tourism Highlights 2014 report, international tourist arrivals grew by 5% in 2013 reaching a record of 1087 million arrivals worldwide. Europe had 563 million tourist arrivals (5% growth), Asia and Pacific 248 million tourist arrival (6% growth), Africa 56 million tourist arrivals (5% growth), Americas 168 million tourist arrivals (3% growth) and Middle East 52 million tourist arrivals (0% growth). As it shows, Europe has the lead in international tourism, followed by Asia and Pacific. Although not all cultural tourists, these numbers can shed light on the condition of tourism by region and shows a high demand which has exceeded expectations. Surveys about number of visitors of the historic sites are country specific and are usually provided by statistical agencies

of different countries. Option value is valid for the people of the other countries as well. For instance, a person living in Peru would like to have the option of visiting Notre-Dame cathedral in Paris whenever he decides to. Existence value would be true at the global scale as well since people of the world feel impoverished if find out that valuable historic buildings and sites have been destroyed. When the Buddhas of Bamyan, two monumental statues of standing Buddha carved into the side of a cliff in the Bamyan valley in the Hazarajat region of central Afghanistan, destroyed in 2001, many people around the world were shocked as in fact one of the valuable historical heritages of our world was destroyed.

People from different social and economic classes usually visit the historic places and preserved historic places could deliver different types of values already discussed to the current generation while by preservation, historic built heritage of the countries remain for future generations and would be source of value generation for the next generations as well.

We could see that outstanding built heritage of the countries could be considered as global public goods. In order to identify the monuments that could be determined as global public goods, we need to use some criteria. Usually those monuments and sites which are registered in the national list of the preserved built heritage are of high value and have the potential of being determined as a global public good. However, the available literature suggests that listing process has been followed without careful selection that has led to high cost for Governments and therefore, this criterion should be used by caution (Benhamou, 2003).

Number of foreign tourists that have visited significant historic places of the countries and their choices for visiting (as it reveals what kind of historic places they are interested in) could be a key to answering our question. For instance, scale of the building (It seems that tourists mostly visit large scale buildings), architectural value and location of the historic places are determinative factors for visiting. These factors could be identified and applied for assessing whether a historic place could be considered as a global public good or not. UNESCO has already taken some positive steps for identifying and registering world cultural heritage.

1.3 Financing of historic sites

In this part, first we consider whether assessment of the total value is enough as a criterion for making decision about financing conservation of historic sites and buildings and to this mean a comparison has been made with the case of biodiversity. Next, possible market for the historic sites has been considered and again a comparison with the case of biodiversity has been done.

1.3 .1 A Comparison with the case of biodiversity

Biodiversity is one of the areas that the question of public good and global public goods has been discussed a lot for that. According to the Convention on Biological Diversity, biodiversity means "the variability among living organisms from all sources including, *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems" and biological resources which have been often commercialized have been defined by Convention on Biological Diversity (CBD) as: "…genetic resources, organisms or parts thereof, populations, or any other biotic component of ecosystems with actual or potential use or value for humanity." (UN 1992, p.3) It is important to distinguish between biodiversity and biological resources. In fact, Biological resources are subset of biological diversity.

Understanding different dimensions of biodiversity as public and private goods is necessary for the purpose of conservation. Markets often fail to incorporate value related to the biodiversity, resulting in unsustainable harvesting practices and discouraging long term investments. Many products and services associated with biodiversity are non-excludable and non-rival in consumption. Another point is that property rights on biodiversity are not clear and this helps also to the issue of market failure. However, biodiversity goods and services cover all the spectrum of the goods from private to the public goods. Private such as organic agriculture and sustainable local agriculture, club good as eco-tourism and natural parks with entrance fee, open access such as international fisheries and pure public good such as existence of species and ecosystems and global gene pool (OECD,2003). The local services provided by well-functioning ecosystems are often pure public good while the individual component of an ecosystem is often private goods. Biological resources are rival in consumption and could be

even scarce. Therefore, they are privately owned and traded in the market (Perings and Gadgil, 2003).

All the biological services are not beneficial and therefore benefits of biodiversity conservation should be balanced against it costs. Moreover, Perings and Gadgil (2003) indicate that people may not agree on the benefits of biodiversity conservation and the consensus should be created through the political process.

Valuation of biodiversity then becomes important for decision making process. Value assessment of public goods is a complicated task and it is even more complicated for biodiversity due to difficulties in measuring it and its components. Valuing the economic benefits of biodiversity is useful as it could be used in CBA analysis.

The total value of the biodiversity as explained by Biller (2007) is classified into the use and non-use values. Use values encompass the value of direct use or indirect use and option value while non-use values include altruism, bequest and existence value. Direct use value can also be divided to extractive and non-extractive values. OECD (2002) presents the categorization of total value a bit differently : actual use value (Value driven by visiting for instance a national park), planned use (for a planned visit in future) and possible use (option value) which is having the option of visiting in future and non-use values have been categorized into existence value, altruistic value and bequest value. "Existence value refers to the WTP to keep the good in existence in a context where the individual expressing the value has no actual or planned use for his/herself or for anyone else…Altruistic value might arise when the individual is concerned that the good in question should be available to others in the current generation. A bequest value is similar but the concern is that the next and future generation should have the option to make use of the good (OECD 2002, P.84)". As it is seen again different categorizations of the total value exist but the types of values are close to that of historic sites and buildings that we discussed thoroughly. Though, value assessment of Biodiversity is more difficult than historic sites as finding the precise object to value is difficult. That's the reason why studies have mostly measured the total value of the biological resources rather than the biological diversity.

The question that remains is that whether estimating the total value of biodiversity goods and services is enough for making the decisions about financing conservation? Valuing biodiversity is an important step in its conservation, because it allows biodiversity to participate on the same basis with other competing calls on public funding and therefore, the best practice

is to use valuation techniques as a part of cost-benefit analysis. OECD (2006, PP.179-180) depicts the situation as:

"The central problem is one of uncertainty – the basic fact is that we do not know what these losses are likely to be. Efforts at valuation are therefore important but are unlikely to inform us of the scale of 'tolerable' change. Moreover, if decisions are made and they turn out to be extremely costly, little can be done to reverse them. Finally, if ecologists are right and the systems have thresholds and other non-linearities, maybe the consequences of losing even modest ecosystem areas could be large. Ecosystem [biodiversity] loss thus combines several features:

- A potential large "scale" effect;
- Irreversibility;
- Uncertainty.

Economists have long known that this combination dictates a "precautionary" approach (e.g. Dasgupta 1982). To these features we need to add another:

- Few ecosystems undisturbed by human activity exist.

The relevance of this last point is that the world no longer has a 'reserve' of ecosystems [biodiversity] subject only to natural variation and to which it could turn for genetic and other information. In effect, the information stored over millions of years of evolution is at risk."

OECD (2006) has also suggested two models of CBA, one the common method and the other one that takes into account uncertainty and irreversibility and has explained it as "real option" approach to CBA. The focus of this model is on learning process and the fact that decision making process can be delayed in order to reduce uncertainty about value of conservation by obtaining the required information. For instance, for making decision about converting a forest land to agricultural land, the value of conversion is clear but the real value of conservation is not certain. Therefore, the delay can help in the process of gathering information about benefits of conservation. This type of CBA is compatible with the precautionary approach mentioned earlier. Another precautionary approach which has been used is the "safe minimum standard" suggested by Ciriacy Wantrup (1952) in terms of conservation practices to avoid critical zone. In other word, the conservation loss would not be acceptable if the opportunity cost is intolerably high. OECD (2006, P.181) indicates that "the

level of tolerance might be determined by political process, by reference to some notional benchmarks - perhaps a percentage of GNP, or by a more extreme indicator-e.g. the forgone development causes severe hardship or poverty."

OECD (2002) suggests that as there is limited conservation budget, some form of cost-effectiveness criterion should be used. Cost effectiveness is adequate when there is a single outcome but when multiple outcomes exist weights are required. These weights can come from public opinion, expert opinion and prices (willingness to pay) and if the weights are prices then cost-effectiveness turns into cost-benefit analysis and if the weights come from public or expert opinion multi criteria approach is applied. Multi-criteria approach has appeared due to the fact that multi-dimensional character of the environmental changes needs several criteria for making decisions about different options. For instance, loss of species is related to the market but loss of natural functions value can not be captured by market. In this case, monetary criterion is used alongside non-monetary criterion in multi-criteria approach.

As in the case of biodiversity that we have a great diversity, for historic sites and buildings there is also diversity. Historic sites and buildings are various depending on their function, their style and historical period. As explained by Andy Stirling (2007) the interesting point about diversity is that, across different contexts, it refers repeatedly similar set of properties. He explains that the concept of diversity across different sciences shows combination of three basic properties: variety, balance and disparity. As defined by Stirling (2007, p.9) "Variety is the number of categories into which system elements are apportioned. It is the answer to the question: "how many types of thing do we have?"… Balance is a function of the pattern of apportionment of elements across categories. It is the answer to the question: "how much of each type of thing do we have?" Disparity refers to the manner and degree in which the elements may be distinguished. It is the answer to the question: "how different from each other are the types of thing that we have?" Therefore, diversity is another common ground between biodiversity and historic monuments.

Finally, the condition is more complicated for the biodiversity in comparison with historic sites and buildings due to uncertainty and interactive relation between biodiversity elements. But the important point is that a precautionary approach should be applied due to irreversibility of these resources and its large scale effect on one hand and the limited budget which is available from the other hand. As historic building and sites are also irreversible their conservation could be compared somewhat by biodiversity and therefore, the conservation

decisions should be made by precaution and a tradeoff between cost and benefits should be made and weights should be used to make the decisions. Multi-criteria approach is also recommended for the historic sites and buildings to combine the obtained value estimates from value assessments with expert opinion for making higher quality decisions.

1.3.2 Markets for historic sites

As it was discussed historic sites and monuments are mainly regarded as public goods, having the characteristic of non-rivalness and non-excludability that makes it impossible to rely on market forces to cover the conservation cost. Historic sites with entrance fee could be considered as club good and therefore show the characteristic of excludability. Market failure is due to the free rider problem. The demand can not be satisfied by market as individuals that benefit from conservation of historic sites but do not want to pay can not be excluded from use of historic sites (Benhamou, 2013) as they can at least benefit from the façade of historic buildings and their impact on the urban views. That's why great number of historic sites are owned and administered by Governments. However, having the characteristics of public good does not mean that the good should be financed publicly for instance rise in local taxes might be used instead (Benhamou, 2013).

On the other side, private owners of historic sites and buildings may not have the incentives to preserve their historic property as they should. That's why public intervention has become necessary to encourage them to preserve their property by providing some incentives such as tax cut or subsidies. Therefore in these cases, historic sites and buildings maintenance and restoration are financed by cooperation of the Government and private owners. This process is done through listing of the historic sites and in return of the compliance of the owner with the regulations and norms defined for the listed historic sites. However, this policy of financial support has led to overprovision of listed sites and high demande from side of the owners to be listed.

Another issue regarding biodiversity that is important to be considered here is the possibility of market creation and implementation for biodiversity. OECD (2003) indicates that recognition of values of biodiversity has led to creation and use of markets for biodiversity and even regulators find that these markets help in achieving regulatory standards. It discusses that

many biodiversity goods show public good characteristics but explains that by proper regulation the non-excludability of some goods and services could be addressed and then be provided by the market. In other word, having just one attribute of public goods especially non-rivalness does not prevent the market from providing the good. Then, several emerging private market have been explained in this study that they include organic agriculture, sustainable forestry, non-timber forest product (NTFPs) and genetic resources. These are excludable and rival in consumption. But there are as well club goods such as eco-tourism and parks and their related markets. The question that is raised here is that whether there is possibility of markets for historic sites and monuments as in the case of biodiversity?

In comparison with the case of biodiversity, diversified services that are provided at historic sites and building have created a market. Exploitation of the historic sites and buildings depend on their nature. The simplest form is the visit and takes different forms and could be multipled for a site. These services include for example restaurants and souvenir shops at historic sites and exhibitions held at a site for instance Invalid in Paris which is a complex of Napoleon tomb, war museum and a restaurant or re-use of the site for other purposes while maintaining its essential character for instance public historic sites have been used for governmental offices and agencies such as city hall, chamber of commerce, social services and the private ones have been used for residences or businesses or in other word, for market and non-market re-use. In many places, historic sites have been transformed into hotels or restaurants. For instance, Golshan historic house in Yazd city of Iran that turned into Laleh Hotel.

Therefore, there should be a form of plan mechanism including a specific conservation plan or action plan and a regeneration strategy for the preservation and re-use of historic sites. The improvement and rehabilitation of historic buildings and encouragement of compatible businesses could be two important objectives in this regard. Such planning requires also consideration of the vacancy in historic sites and assessment to see whether new uses for historic sites damage its historic characteristics or not (Pickard, 2001)

Specific financial arrangement will be needed to encourage preservation and re-use of historic sites and buildings. This might include funding partnership or venture capital among public authorities and private organizations. For instance, now in Iran private sector can rent a historic site and re-use it while preserve it base on the defined norms.

International financing of global public goods is another issue to be discussed. However, as explained by Kaul and Goulven (2003) most financing of global public good continues to

happen nationally and it is mainly an option for the developed countries, the payers are also beneficiaries, international financing is usually in the form of official development assistant that should be used to fight poverty instead of being used for the provision of global public goods. The possibility of international financing has been discussed in the next section.

1.4 International cooperation and financing

Accepting the fact that some of the historic places in the world are global public goods, brings about this question: Is there a need for uniformity and coordination in heritage administration? Considering the fact that there are differences in the value systems and economic conditions of the countries, reaching to a global consensus in this regard seems difficult. Countries with less developed economies might prefer to invest money on infrastructures.

However, proper policy-making and commitment of the countries to the global regulations regarding preservation of the historic built heritage can change prioritization of the countries. This is necessary if we look at the outstanding historic built heritage of the countries as global public goods. Registration of the valuable buildings, sites and city textures of the countries on the UNESCO list of the world heritage has been a good step in this regard. UNESCO's 1972 convention on world heritage "seeks to encourage the identification, protection and preservation of cultural and natural heritage around the world considered to be of outstanding value to humanity|" (UNESCO 2005, p.3). Registration of the historic buildings, sites and city textures on this list has two important impacts: First, it encourages countries to preserve their outstanding historic resources with global value; second, it would create externalities as it helps to strengthen the cultural identity which is created from the historic built heritage of a country. This convention indicates that due to the free-rider problem at national level, the preservation of the historic built heritage is inefficiently low (Frey, Bruno & Pamini, 2009).

Frey et al. (2009), on their research on the global heritage indicate that distribution of UNESCO efforts for the preservation of the global heritage has been inefficient. They also remark that developed countries spend too much resource on their national historic heritage that some of them are not of high value while some of the most valuable heritage sites are in danger.

The question would be then whether it would be possible to establish cooperation between countries for preserving the valuable architectural heritage of the world? Cooperation has been possible partly for other global public goods such as climate change mitigation, prevention of nuclear proliferation, etc as their provision benefits every country. However, there has always been the free-rider problem. Specifically, developed countries might have to take a more significant role in the provision of global public goods. Baret (2007) proposed that global public goods differ from each other fundamentally and as the result, we can not adopt the same strategy for all of the global public goods in order to increase cooperation among nations. The important point here is that cooperation should make sense for all the parties to be feasible or effective.

Cultural heritage as global public good is a newly developed concept and though, valuable cultural heritage of a country have the characteristics of the global public goods, they have their own specific characteristics. They have not been considered as a source of the benefits for other countries up to now as benefits that are generated from them for other countries are immaterial and very indirect. Two types of cooperation would be possible regarding the historical buildings and sites: technical or financial assistance. Technical cooperation has always been in place among countries. Usually countries with valuable experience regarding preservation of the historic places assist other countries in the restoration of their monuments and sites. But financially, establishing cooperation for the preservation of the world's built heritage is difficult due to the reasons already mentioned. UNESCO has played an important role in increasing cooperation but has provided minor financial aid.

In order to save the world's most valuable heritage and remove this imbalance in preservation of historic heritage between rich and poor countries, Frey and Pamimi (2009) have proposed that world's valuable heritage that belong to the humanity should be identified and experts should indicate how many " world heritage unit" belong to each site base on its historic significance and each country should determine its contribution to the preservation of the historic sites base on the factors such as per capita income level of a country and its population. In return, those countries that spend on the preservation of the historic sites of the other countries will receive a "world heritage certificate" for each unit of a world heritage preserved. These certificates indicate how much each country has contributed to the preservation of the world heritage and if a country accumulates enough world heritage certificates to meet its obligations has been a good member of the global community. Moreover, they have suggested

that these certificates should be tradable in the market to increase the possibility of the contribution of the countries.

Frey and Pamimi (2009) have investigated the barriers to the implementation of their proposal. One of the main barriers they have mentioned is the fact that cultural heritage is still considered a "national affair". As we mentioned before, historical heritage of the countries have a great impact on creation of the national identity and therefore, issuing world heritage certificate for other countries can hurt this national identity. Moreover, countries might prefer to spend on their own cultural heritage even if they are not of high value. Therefore, the feasibility of this proposal is under question.

However, they believe that it might be possible to implement this proposal as the similar schemes for the environmental protection has been successful and as firms which are active in the area of international tourism will probably support it. Moreover, they indicate that the globalization phenomena itself will affect the attitude of the countries to think about the global heritage rather than the national ones (Frey et al., 2009).

Considering the limitations that exist, there is no sufficient motivation for the countries to cooperate financially for the preservation of the historic built heritage determined as global public goods unless the trend of the globalization reach to a point that decreases nationalism of the nations. Then, maybe the solution provided by Frey and Pamini is feasible. Until that time, there would n't be a remarkable financial assistance from the side of other countries as competition among nations continues and each country is willing to increase its competitiveness in tourism industry.

Conclusion

Base on what we already discussed, historical buildings, sites and tissues could be considered as public goods as their benefits are de-facto non-excludable. Even if access of the people be restricted by putting entrance fees or making the place close to the people, people can still benefit from the historic façades of these buildings. Historic places exhibit different levels of rivalrousness and this level depends on the location and total value of the monument.

Therefore, historical monuments could be assigned to somewhere within the range of pure and impure public goods. However, some of the scholars have ignored the congestive property

of the historic monuments and sites and considered all types of these monuments as pure public goods.

Historical buildings, sites and tissues encompass a wide range of value that could be delivered to the society. In general, these values could be divided into the two categories of use and non-use values. These values prove the high degree of publicness of the built heritage and could be used for grading historical monuments and sites and prioritizing restoration of them.

Financing of historic sites and buildings is another issue that has been discussed in this chapter. Having discussed the different values that are generated from historic sites we discuss how the measurement of the total value that is generated by a site could be used as a criterion for financial decisions. Experiences in the field of biodiversity have been studied as an example. In essence, a precautionary approach should be used when the goods and services are irreversible and a trade-off between costs and benefits should be made, using weights for the decision making purpose. A multi-criteria approach is also recommended. Markets for the historic sites have been considered as well and a comparison with biodiversity case has been done again. In general there is a market failure for the conservation of historic sites but there is a market for the services that are provided through historic sites.

Moreover, historic sites and buildings that are of high value to the humanity could be considered as global public goods as they belong to the more than a group of the countries, a group of the population and to the current and future generation. Saving the historical monuments of outstanding value to the human society demands international cooperation in technical and financial terms. However, there has always been lack of financing as benefits that countries receive from donating money for the preservation and restoration of the historical buildings of other countries are usually indirect and immaterial. Renting or issuing tradable certificates and shares seems not to be feasible at least in the short term as it induces nationalistic feelings of the people of a country and hurts their identity. However, trend of globalization might reach to a point that reduces nationalism in countries and make the proposals such as tradable certificates feasible.

By considering different dimensions of value that is derived from the historic built heritage of a country, putting historical buildings and sites into the category of the public goods and paying attention to the high cost of preservation, the significance of the planning for efficient preservation and restoration of the historical buildings and sites and extracting more values

from these assets (market and non-market) without surpassing the optimal level is revealed even more.

Chapter 2: Different methods of value assessment of historic buildings - Creation of a value typology and Choice of the proper method

Introduction

In this chapter we consider the prospective locations that we are willing to choose our site from and finally, base on the data available and different criteria choose one site for value assessment (Measurement of total value, use and non-use values). Following that base on our thorough study of the types of values that are generated from historic sites and buildings in the first chapter, we create a value typology that entails full spectrum of the values and could be used as a framework for the future studies. Then we proceed by studying different methods that have already been used for the value assessment of the historic sites and identify the types of values that each method is capable to capture. Finally, we try to match the values we are going to measure for our site with a proper method that can capture them.

2.1 Study of the available data in the prospective locations of our site

In this step, we first have a look at the available data and to this mean; we first examine the possible locations to select our site.

Our criteria for selecting these locations were having significant architectural heritage and /or valuable experience regarding creation of economic value from historical buildings, sites and city texture. I chose Iran and France.

Three cities were considered as candidate for selecting our site from them. Paris in France has been very successful regarding management of its built heritage and extracting economic value from it that was the reason I studied it. In terms of tourism, France has had third rank in international tourism receipts among different countries in 2013 (UNWTO, 2014). The second case was the city of Isfahan in Iran which is very rich in terms of architectural heritage and has

been always admired by tourists and art specialists for its architectural beauty. This city is called half the world in Persian culture due to its beauty and is considered as museum city; however, it lacks strong management of its architectural heritage needed for extracting economic value from its built heritage .Historic-Natural Axis of Isfahan City is currently listed on the tentative list of Iran at UNESCO (UNESCO web site, tentative lists).

Another city that was considered was city of Mashhad, located in the Khorasan province in Iran, though the city itself is not currently very rich in terms of the historical monuments (unfortunately they have not been preserved well), there are many outstanding historic sites and areas around Mashhad and in the Province. In this city there is however a holy shrine of Imam Reza and the complex is accounted as an outstanding built heritage of Iran and this shrine is a major tourist destination for pilgrims from Iran and Arabic countries.

In the next step, we looked for the list of the protected sites in Iran and France and considered the information that these lists provide concerning each of the protected sites. We have decided to work on the listed sites and monuments as usually the buildings and sites of high value are listed and as comparatively more data is available about them.

In France, there is a database which is called Base Mérimée that includes all the historic buildings and sites that have been classified up to now. This database provides some information about each of the protected sites including: Photo, location, date of protection, precise-protection, denomination, builders, Century, history, state of the property (public or private), allocator, level of protection, observations and visits (utilization and being open or closed to public). This database is accessible through the web site of the La Médiathèque de l'architecture et du patrimoine, web site of the Inventaire générale du patrimoine culturel and portal of the architecture and patrimoine of the Culture and Communication Ministry of France and there is also possibility of searching through these database base on different inputs such as type of the building, thematic access,… (Portal of the architecture, La Médiathèque de l'architecture, Inventaire générale websites).

Notably, historic buildings and sites in France could be protected at two different levels, national or regional and are respectively called listed or registered (classé ou inscrit). Protection can include total or part of a buildings or site, interior and exterior. These two types of protections are given by the préfet for the regional level, or by the Minister of Culture for the national level, with the opinion of a commission named Commission régionale du patrimoine et des sites (CRPS) (Ministère de la culture et de la communication web site).

In terms of restoration, the Dracs (Direction régionales des affaires culturelles) are responsible for the restoration of the historic monuments in different regions of France and work on the technical, legal and financial aspects of the restoration projects (Direction régionales web site).

At the national level, there is also le Centre des Monuments Nationaux which is a public administration run by the ministry of Culture and Communication in France responsible for the conservation, restoration and management of the national sites. (Monuments-nationaux web site).

In Iran, there is a database for the listed historical and cultural heritage. This database is currently accessible through the direct contact with Iran Cultural Heritage and Tourism Organization. National heritage list has also been published as book.

Iran Cultural Heritage and Tourism Organization (ICHTO) is the organization in charge of the conservation, restoration and management of the historic places in Iran. This organization has its branches in all provinces of Iran for restoration and management of the historical sites regionally. The process of registration of the historical buildings and sites in the national heritage list is handled by the department of the registration of the historical and cultural heritage of this organization (Portal of ICHTO).

We have also had a look on the world heritage list of the UNESCO to see which sites in our selected locations are registered in this list. (See appendix 1 for the list of Iran sites in the world heritage list). In Iran, it has n't been so many years that registration of the historical monuments in the world heritage list has been followed by Iran Cultural Heritage and Tourism Organization. In Isfahan, Naghsh-e-Jahan Square (currently called Imam Square) has been registered in the world heritage list of UNESCO. This square which is one of the largest squares in the world is a complex that embodies two mosques, one palace and one grand Bazar (old type of market) in itself. In Mashhad and its surroundings, we do not still have a site registered at the UNESCO (Though, there are sites that Iran Cultural Heritage and Tourism Organization is planning to register at UNESCO).

In Paris, seine river bank is listed in the world heritage list. There are also sites close to the Paris such as palace and park of Versailles and Fontainebleau that are listed in the world heritage list (UNESCO web site- world heritage list).

In the next step, available data for historical monuments in France and Iran was considered. By referring to the INSEE (National Institute of Statistics and Economics Studies) web site (INSEE web site), I could just have access to the number of entry to the national sites and museums. In Iran as well, I could have access to the number of entry of national sites at the web site of SCI (Statistical Center of Iran) (SCI web site).

We also studied the availability of the economic impact study in our selected locations. In order to conduct an economic impact study, we need to have access to the data such as turnover and employment of the historical monuments. Economic impacts studies usually measure return on investment by measuring economic investments, direct employment and the secondary gains throughout the economy.

In France, La direction de l'Architecture et du Patrimoine du ministère de la Culture collects such data and releases reports on the social and economic impacts of the historical monuments in France (Impact-patrimoine web site). This type of study was first carried out by l'agence Régional du Patrimoine Paca in 2005 at regional level for the Provence-Alpes-Côte d'Azur region with cooperation of the Aix Marseille University and then it was planned by La direction de l'Architecture et du Patrimoine to be extended to the national level. This is a key study that helps each region to get to know its built heritage value and find out about the impact of its built heritage on the regional economy (Ministère de la Culture et de la Communication, 2009). The synthetic document that has been published about the results of this study provides information about direct and indirect result of heritage.

Unfortunately, I could not have access to the equivalent data in Iran but it might be possible to obtain the data by contacting the cultural heritage organization of the provinces.

I studied France as a successful model in management and preservation of historic sites but I chose my site in Iran as economically little has been done in Iran for extracting economic value from its built heritage. In the cities of Isfahan and Mashhad, I was looking for a site of high value that needs more attention in terms of extraction of economic value and I chose the Ferdwosi mausoleum site near Mashhad as it is explained below.

2.2 Selected site- Ferdowsi mausoleum

We decided to work on Ferdowsi mausoleum in Tus historic area near Mashhad due to its great importance and after our consultancy with specialists in built heritage. Ferdowsi is a worldly renowned poet which is greatly respected by Iranian nation due to the significant impact that his book of epic poems Shahnameh (Book of Kings) has had on the Persian culture and more particularly in the revival of the Persian language. Ferdowsi saved the Persian language after Arabs invasion to Iran and worked for thirty years to this mean. He explains it in his book of poems, Shahname as: I suffered during these thirty years, but I have revived the Iranians with the Persian language. Ferdowsi is also very renowned in other Persian language speaking countries such as Tajikistan and Uzbekistan. From the point of view of the architecture, the building and garden of the mausoleum are also of high importance. Iran Cultural Heritage and Tourism Organization has some plans to register the Tus historic area that includes Ferdowsi mausoleum in the UNESCO world heritage list. As the main objective of our research is measuring the total value (use and non-use values) of our selected site, this research could also be of value in the process of registration. We will explain about the specifications of this site in the next chapter.

The cultural complex of the Ferdowsi mausoleum is located in Tus city, 20 km from Mashhad city, the second largest city of Iran. Tomb and Garden of the mausoleum site dates back to the life time of Ferdowsi, 10th and beginning of 11th century. Ferdowsi lived in this garden and was buried there. In 1923, it was decided that a mausoleum be constructed for Ferdowsi at the place where he was buried by the effort of the Society for National Monuments and its architect was Karim Taherzadeh Behzad. The plan of the building was designed similar to the Cyrus[1] tomb and it was opened for the Ferdowsi's Millenary Celebration in 1934. Later on, architect Hushang Seyhun made some modifications to the site and architect Yaghoub Daneshdoust revived its Persian Garden Plan.

The cultural complex of Ferdowsi mausoleum is composed of the building of the mausoleum that some poems of Ferdowsi have been carved on its façade and interior of it some stories of Shahnameh have been depicted by stone-cutting, Persian garden, bookstore, museum and restaurant and part of old walls of Tus city. This complex offers facilities for conferences and cultural events. One of the most prominent events that is held at this complex

[1] (Cyrus was the founder of the Achaemenid Empire who is famous for his achievements in human rights, politics and military strategies. He respected the customs and religions of the lands he conquered and influenced greatly the ancient world. Cyrus cylinder has been announced by the United Nation as the first declaration of human rights)

is shahnameh-khani which includes singing Shanameh poets in a special way which is one of the traditions of Iran

Currently, Iran's cultural heritage and tourism organization is developing some plans for expanding and reviving this complex. The relative importance of this site compared with others in the country is due to the fact that Ferdowsi has revived Persian language, culture and traditions. At his time everybody had to read, write and speak in Arabic, due to Arabs conquering Persia and Persian language and history was getting completely forgotten. Ferdowsi's immense popularity is mentioned in school history and literature books and every Iranian kid knows the importance of Ferdowsi and his share in survival of Persian language today. The policy of tourism is mostly concentrated on domestic tourism and attracting tourists from Persian and Arab language countries and lesser from western countries. From the point of view of architectural heritage, Iran is comparable with Turkey but due to the regional and political condition, facilities for tourists have been less provided in Iran.

2.3 Values typology

Developing a value typology that could be used as a basis in different studies, is indeed needed as each of the studies so far have used their own typology of values. Sometimes, they have expressed the same values but have applied different epistemology and modes of expression and other times; they have sliced the pie of values in different ways and have shifted the boundary of a category of value. However, Randal Mason warns us that suggesting a framework that includes most of the values associated with the historic sites does not mean that this framework would be suitable for all historic sites (Mason, 2002).

In chapter 1, we studied different types of value that have been identified by different scholars. Base on the review done, we are going to propose an identical typology that includes all the values already identified in a clarified and explicit way.

We divide economic values into sub values, use and non-use values. Non- use values are divided into the following categories: collective values, beneficial externalities, bequest value, option value, existence value and quasi-option value. Collective values consist of the values

such as cultural identity and cultural continuity. The value typology that we have defined has been depicted in the figure 1:

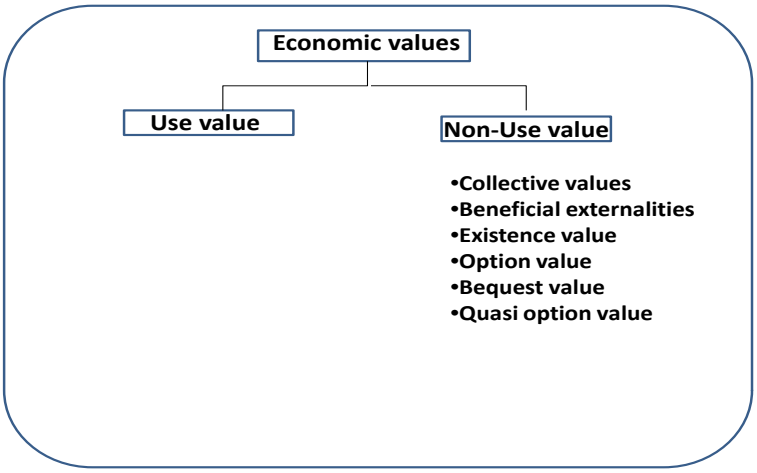


Figure 1: Value typology

There are several remarks concerning the typology that we provided. First, quasi option value that had been proposed in a research by Ismail Serageldin (1999) as we reviewed in chapter 1 was used in our typology. Although this value might not be relevant to many sites; interestingly, it adds the factor of time into our assessments.

As already explained in chapter 1, Davis Throsby has proposed a classification of values which is: public/ private value (in addition to his individual/collective value classification). However, if we look at it more thoroughly, these two categories do not reflect two different types of value but two different perspectives about the same types of values and different tools that are applied for measuring these values. Therefore, we did not use such a classification in our typology

Another point to be mentioned is that Ismail Serageldin as we reviewed in chapter 1 had divided the 'use value' to the two categories of extractive use value and non extractive use value. But in our classification, we have not disaggregated the use values to these categories. Instead, we have applied David Throsby definition of use value.

Regarding the symbolic value that has been placed in the beneficial externalities category among the non-use values, I would like to add a point that might be of interest. In our prospective chosen places that were Iran and France, we might get quite different results concerning the importance or existence of this kind of value in these countries. Traditional architecture of Iran, in particular the architecture of religious buildings is mixed with mysticism and all of the designs and figures have mystic values and messages but in the France historic sites magnificence and power has been more center of attention.

2.4 Methods already used

In this part, we are going to study different methods that have been applied so far for the value assessment of the historic buildings and sites. We are going to identify the pros and cons of each method and the values that each method is capable to measure. By reviewing the available literature, I found out that methods that have been applied so far for the value assessment of the historical monuments and sites are classified into the two groups of revealed preference methods and stated preference methods that we are going to explain each method here.

2.4.1 Revealed preference methods

In the revealed preference methods, the estimated value of the built heritage is base on the observed behavior of people.

2.4.1.1 Market price method (MPM)

This method is based on the fact that market prices reflect the value of the historic building. However, market prices are good indicators of value in case of perfect competition. Regarding the historical buildings, we are encountered with the public goods problem which means that they are usually provided by the Governments for the people of

the society and therefore, market price method is not a suitable tool for assessing the values of these types of goods (Kurowski et al., 2007).

Disadvantages of this method include: Many environmental or cultural goods and services do not have market or markets are distorted and therefore, market prices may not be used as a reference for value, seasonal effects and variations must be taken into account.

Advantages of this method include: The method uses standard, accepted economic techniques (consumer and producer surplus based on supply and demand curves) and is relatively easy to apply; the method uses observed data of actual preferences.

2.4.1.2 Hedonic price method (HP)

This method which could be traced back to the characteristic theory of value introduced by Lancaster (1966) has been used a lot for the assessment of environmental values. This indirect method measures the value of a non-marketed environmental good as a measurable component of a marketed good (Anderson, 1989).

In this method, first we need to identify all the variables beside the environmental variable (that is of our interest) that are correlated to our dependent variable. Dependent variable is usually purchase or rental price of the property. In the next step, a hedonic price equation is estimated and value of the marginal change in the environmental variable is then calculated by partially differentiating the hedonic price equation in respect to the environmental variable (Dosi, 2001)

As for the historic monuments, this method measures the impact of a heritage on the price of a real estate parcel in the neighborhood in which it is located. Large information about housing unites is gathered including various physical characteristics, price and location of the buildings. One of the characteristics of the location could be density of the historical buildings. A regression model is then built on these variables in order to explain the price differentials and to consider the impact of proximity of a real estate parcel to a historical building in its neighborhood on its price and as the result, gives information concerning the value of the historical building (Navrud & Ready, 2002b).

Disadvantages of this method include: this method relies on the false assumption of perfect property market in which individuals are fully informed and mobile (Mourato & Mazzanti, 2002) and can only capture part of the non-use values of a historic monument as reflected in the market. Use values and some types of non-use values such as bequest value are not measured in this method, it can be difficult to measure the intangible characteristics meaningfully (OECD, 2006), environmental or heritage benefits that can be valued are constrained to attributes related to housing prices, , data requirement are substantial, needs high quality expertise statistical analysis.

Advantages of this model includes: it is one of the revealed preference methods that relies on the available data (actual behavior) that are more trustable in the opinion of some economists in comparison to data collected in stated preference methods, property markets can be good indicators of value because they respond reasonably well to information, property records are reliable, and data on property sales and characteristics are relatively easily available (Ecosystem valuation web site) and the method could be adapted to consider possible interactions between market goods and historic quality.

2.4.1.3 Travel costs method (TCM)

This indirect method measures the value of the recreational and historic sites base on the travel expenditure of the people who visit these sites. It considers visit of a historical monument as a good that can be purchased. Travel expenditure includes cost of traveling to and from the historical monument; entry fee and sometimes food and lodging which is associated with the travel distance and value of time spent traveling (Englin and Shonkwiler, 1995).

Two types of travel cost method have mostly been used: visitation frequency model and site choice model. First one considers frequency of the visit of a site by an individual or a group and the second one, considers that on a specific occasion which one of the several possible sites for visit would be chosen by an individual. In visitation frequency model, a trip generating function is built in which number of trips taken in a specific period of time (usually recreation season) is estimated base on the total travel cost and some other explanatory variables such as income of the visitors and as the result, the demand function and total consumer surplus generated by the site could be estimated.

The second type of travel cost models instead visitors choice of which sites to visit on a trip and use random utility models base on the fact that utility function of each individual depends on the characteristics of the historical building, travel cost and a random component that differs for each individual and changes from one occasion to another. This utility function is estimated by regression analysis and it could be used to determine the WTP for the continued access to the site or a change in the quality of the site (Navrud & Ready, 2002b).

As mentioned by Freeman (2003) each model has its own advantage and disadvantage. Visitation frequency model takes into account the total number of visits of a site but limits the frequency of visits to the recreational season. On the other hand, site choice model (random utility model) takes into account the characteristics of the site as people have to choose between different sites base on their price and characteristics but does not consider the frequency of visits in the model.

Disadvantages of this model include: Travel cost method only captures use values of the sites and is only useful for the value assessment of the sites with remarkable number of visitors (Mourato & Mazzanti, 2002), the travel itself can have value not just visiting a site, some of the cost are themselves intangible for example opportunity cost of time that this amount varies for different people and should be considered in travel cost as the time could be expended in different way and not accounting that leads to underestimation of the value of the site (OECD, 2006), the simple models of TCM assumes that individuals travel for only one reason that is visiting a specific site while if the travel be multi-purpose, the value of the site may be overestimated, biases may be created while interviewing people on site.

The advantages of TCM includes: it is based on actual behavior and in this regard has advantage over stated preference methods which are base on a hypothetical scenario; it is relatively inexpensive to carry out (especially in comparison with mail and telephone surveys), and there is easier possibility of taking large sample sizes as people usually are willing to answer on site.

2.4.2 Stated preference methods

These methods ask people to make their choices in a hypothetical market. Therefore, it is important that the proposed situation be imaginable and feasible for people being surveyed.

2.4.2.1 Choice modeling(CM)

This method also backs to the Lancaster's characteristics theory of value and could be used for measuring both use and non-use values by having this advantage that we would be able to measure the values associated with different characteristics of a historical building (Mason, 2002). This method is used for value assessment of non-market goods. In CM, a good is described by its different attributes and their levels and survey respondents have to choose among different alternative description of the good by ranking, rating or choosing different alternatives and WTP could be indirectly calculated by considering price or cost as one of the attributes of the good (Mourato & Mazzanti, 2002).

While applying choice modeling method, we go through the following stages: Selection of the attributes, assignment of levels, choice of experimental design, construction of choice sets and measurement of preferences.

Main strength of this method is that we would be able to deal with multidimensional changes. This means that not only we would be able to assess the value of a good on the whole but even the value derived from its different attributes. However, in this method, we can encounter with a problem that arises from the difficulty of complex choices that respondents should make between different scenarios which include many attributes and levels. This in turn affects the final result of a CM study. The reason behind that could be "respondent fatigue, learning effects, and the adoption of rules of thumb to facilitate the choice task" (Mourato & Mazzanti 2002, p.65) and therefore, it would be quite important to apply CM study with the least attributes and levels possible.

CM is a considerable method but we should keep in mind that this method does not break down the total value into the sub-values presented in our value-typology. It breaks down the value for the different services and functions provided at a site.

Possible disadvantage of this method could be lack of validity and reliability, unfamiliarity of the respondents with the process of making trade-offs as the changes are multidimensional may create bias, if respondents encounter with many choices and bundles of attributes they might become exhausted and do not answer carefully, by not providing enough choices again respondents may not find their favorite choice among choices, it requires sophisticated statistical techniques to estimate WTP that therefore, it should be implemented carefully, estimates are sensitive to study design for instance choice of attributes and their levels and therefore, the process of survey designation should be done carefully, it is more difficult for CM in comparison with CV to measure value for a sequence of elements represented by a policy or project. (Hanley et al., 2001)

Advantage of CM includes its capability to measure total value including use and non-use values, it can be used to value the whole entity, as well as the various attributes, it allows respondents to think in terms of tradeoffs which might be easier than the task in CVM putting monetary value directly on the amenity (Ecosystem valuation web site), qualitative ranking or rating of different choices is easier for respondents than expressing WTP.

2.4.2.2 Contingent valuation (CVM)

Contingent valuation is a significant method for measuring total value of a heritage (use and non-use values) by asking people to make a tradeoff between their own wealth and improvement of the quality of a site and express their WTP or sometimes WTA for that site. This method gradually became famous as it was revealed that it is capable to measure the non-use values (Venkatachalam, 2004).

In this method, the process of designation of the scenarios is quite important. Providing information about the good provided, payment vehicle, exclusion mechanism and elicitation of values are the things that should be well considered in the designation process.

It would be quite important to design the questionnaire in a way to be able to get true answers from respondents. Due to the free rider problem which is a general problem concerning provision of the public goods, respondents may lie about the value of a built heritage for them. It is also possible that they do n't think well about the questions when they are posed or make some mistakes while answering the questions for instance when they are not fully informed

about the good and as they are not used to place monetary value on the public goods and services and therefore they may not reflect the true value for them (Ecosystem valuation web site). Therefore, it is the quality of the implementation of contingent valuation survey that determines the quality of the results. Due to these concerns, some methods have been developed to verify validity of a contingent valuation study.

In CVM studies, the value measured is expressed as the mean or median willingness to pay (WTP) or willingness to accept (WTA) per capita and then it is used to estimate the total value aggregated for the whole population. CVM Studies are usually followed by a socio-economic study in order to reveal the correlation between the socio-economic and demographic variables and the expressed WTP or WTA by using regression analysis.

To summarize a CVM study include the following steps: 1- designation of the CVM questionnaire 2- pre-testing the questionnaire 3- conducting the survey using the final questionnaire 4- Calculating the mean or median WTP or WTA (or the aggregated one for the whole population) 5- Conducting a socio-economic analysis (relationship between WTP or WTA and the socio-economic variables)

The most important reference for conducting a contingent valuation study is NOAA panel Guidelines provided by Arrow et al. in 1993. CVM has been used a lot for value assessment of the public goods in particular for the ecosystems and environmental services and could be quite well adopted for the value assessment of the built heritage (Navrud & Ready, 2002b). However, this method does not break down the value into its components, the sub-values we already discussed. OECD (2006) indicates that few studies that have compared CM and CVM show that the estimated amounts of total value by CM is higher than CVM.

Possible disadvantages of this method are the lack of validity and reliability. We have studied the issues of validity and reliability of CV studies thoroughly in chapter 4. Studies have considered the robustness of this methodology and mostly have led to the acceptance of CV method. Most of criticisms of the method relates to the survey designation and implementation and different biases that might happen. On the whole, empirical findings approve validity and reliability of CV studies (OECD, 2006). Application of this method for policy purposes has been growing but still policy makers encounter it by doubts.

Advantages of this method are its capability to measure total economic value (TEV), use and non-use values of a non-market good or service, its wide range of application and estimation

of value for the goods and services that there is a market failure for them. By the way, great amount of research has been done to improve CV method. It has sound basis in welfare theory of economics since it has potential for tracing the WTP distribution among a population of economic agents for a proposed change in a good or service.

2.5 Adopting a method for our study

Based on the review done, revealed preference methods can not measure all the values generated by the historic sites while stated preference methods are capable to measure total value (use and non-use value) of the historic sites.

Our objective is to measure the total value of the historical buildings and sites in the most accurate way possible. We have already defined the range of values we are going to measure by proposing a value typology in this paper. This typology entails all types of values which have been identified so far concerning a historic site. Therefore, it is important to 'match the assessment tool to values' (Mason, 2002) that we are going to measure. For sure, each method has its own advantages and disadvantages and some are strong tools for measuring a specific type of value. As already mentioned, contingent valuation or choice modeling methods could be used in order to capture non-use values in our assessment. These two methods are survey based and quite sensitive to the designation of the scenarios. Finally, it is recommended that we choose contingent valuation method. Our main goal is assessing the total value of our selected site. Though, both of these methods capture the total value of a site, choice modeling method estimates the value of a good by describing it in terms of services and functions that has not been our aim in this research. However, contingent valuation method also does not break down the total value into the values discussed in chapter 1 and summarized in the typology that we developed in the section 2.2 of this chapter. But we are going to use a method to estimate these sub-values.

2.6 Synthesis of results

In the table below, we have synthesis of results of our study concerning different methods of value assessment.

Table 1: Methods of value assessment-advantages and disadvantages

Methods of value assessment	Advantages	Disadvantages
Revealed preference methods		
Market price method	Uses standard and accepted economic techniques, easy to apply, uses observed data of actual preferences	No market or distorted market for many environmental or cultural goods and services, market price is not a good reference of value, seasonal effect and variation exist
Hedonic price method	One of the revealed preference methods relying on available data (actual behavior) more trustable in the opinion of some economists, property markets being good indicator of value as they respond reasonably well to information, property records are reliable, property sales and characteristics are relatively easy available, method could be used to consider possible interactions between market goods and historic quality	Base on the false assumption of perfect property market, capturing only part of non-use values as reflected in the market, not capturing use value, difficult to measure intangible characteristics meaningfully, environmental or heritage benefits that can be valued are constrained to attributes related to housing prices, substantial requirement for data and statistical expertise

Travel cost method	It is based on actual behavior and in this regard has advantages over stated preference method which are based on hypothetical scenarios, relatively inexpensive to carry out, there is easier possibility of taking large samples as people are usually willing to answer on site	Only capturing use value of the sites, useful for the value assessment of the sites with remarkable number of visitors (Mourato & Mazzanati, 2002), travel itself can have value and not just visiting a site, existence of some intangible costs, for example: opportunity cost of time that should be considered in travel costs and not accounting all that leads to underestimation of the value of the site (OECD, 2006), simple models of TCM assumes that individuals travel only for one reason visiting a specific site while if the travel is multipurpose, the value of the site may be overestimated, biases during interviewing on site
Stated preference methods		
Contingent valuation method	Capability to measure total economic value (TEV), use and non-use values of a non-market good or service, wide range of application, estimation of value for goods and services with market failure for them , existence of great amount of research for the improvement of CV method, sound basis in welfare theory of economics.	Possible lack of validity and reliability. Most of criticisms relates to survey designation and implementation in CVM and different biases that might happen. However, on the whole empirical findings approve validity and reliability of CV studies (OECD, 2006), Application of this method for policy purposes has been growing but still policy makers encounter it by doubts.
Choice modeling method	capability to measure total value including use and non-use values, it can be used to value the whole entity, as well as the various attributes, it allows respondents to think in terms of tradeoffs which might be easier than the task in CVM putting monetary value directly on the amenity (Ecosystem valuation web site), qualitative ranking or rating of different choices is easier for respondents than expressing WTP	Possible lack of validity and reliability as for CVM, unfamiliarity of the respondents with the process of making trade-offs as the changes are multidimensional that may create bias, if respondents encounter with many choices and bundles of attributes they might become exhausted and do not answer carefully, by not providing enough choices again respondents may not find their favorite choice among choices, it requires sophisticated statistical techniques to estimate WTP that therefore, it should be implemented carefully, estimates are sensitive to study design for instance choice of

		attributes and their levels and therefore, the process of survey designation should be done carefully, it is more difficult for CM in comparison with CV to measure value for a sequence of elements represented by a policy or project. (Hanley et al., 2001)

Conclusion

In this chapter, we studied several prospective locations for our case study and proceeded by studying the available data in these locations. The different built heritage lists, management of heritage, etc in these locations were considered. We finally chose one site in one of these locations which is called Ferdowsi mausoleum located in north east of Iran. In the next step, by considering different dimensions of the values that have been defined by different scholars, we created a values typology that could be used as a framework for future researches. Applying a same value typology would make the comparisons between researches possible. However, this typology should be modified base on the characteristics of the site and purpose of the study that determines the method that would be applied for the value assessment. In this chapter, we also studied the various methods that have already been used for value assessment of historic sites. Advantages and disadvantages of each of these methods and types of values that they are capable to measure were considered and in the next step, we tried to match a proper method to our defined typology.

As the typology that we have proposed entails all the types of values identified so far, we came to the conclusion that one of the stated preference methods including contingent valuation and choice modeling could be applied for the objective of our study as these methods enable us to measure both use and non-use values of historic sites. However, in choice modeling the good provided is described in terms of the services and functions and the value is broken for these items and this has not been the aim of our research. Therefore, we decided to proceed by contingent valuation which is a strong and approved method for the value assessment of the public goods and use another way to estimate the sub-values defined in our values typology. We will consider the methodological and analytical details of the contingent valuation in the next chapters on survey conduction and data analysis.

Chapter 3: Survey designation and implementation

Introduction

In this chapter, we have first considered different steps of designation of surveys in contingent valuation studies. In continuation, we have discussed about different items that should be decided while designing a CV survey and explained about the problems and biases that have been identified. We have then proceeded by explaining about our selected site for the case study and the process of our survey designation and our final questionnaire has been provided.

3.1 Review on the survey designation steps in CVM

As the quality of the survey affects the validity of a contingent valuation study, it is quite important to design the survey carefully. If not, the results would be biased or inaccurate and could not be used as a reference for justification of the projects. Therefore, it is important to put the questions into the proper format and wording as well as order (Murato & Mazzanti, 2002).

First of all the good or service provided should be presented very well to help the respondents to reply accurately. In case of a historic site, they should be informed about different parts of the site, its history and significance and the services that are provided there.

It should be explained that which institution is going to handle the project. We need to ensure the respondents that funds will be used completely for the purpose of the project as some people might hesitate to cooperate as they can not fully trust the Government. For instance, Santagata and Signorello (2000) propose three solutions to solve this problem in their research. They ensure that the funds would be handled with a non-profit agency; payers would be informed each year about the expenditure on the project and announced that contributions would be collected each year just in case the contributions collected were sufficient for running the project.

The first part of a CV survey consists of the questions about the attitudes of the respondents toward the environmental services or restoration and maintenance of the historic monuments and habitudes of them such as number of visits of the historic sites or natural sites, their budget for cultural activities, their use of the good or service and their knowledge about it, etc.

The cultural budget constraint should be reminded to the people before posing the main CVM questions to the people. In some surveys people are also asked to mention their budget for the cultural activities or their number of attendance in different cultural centers such as cinemas, theaters, and considering the mean price for them, the average expenditure of the respondent on cultural affairs has been estimated and this could be also helpful in identifying the free rider or override behaviors.

It is then followed by the value assessment part that includes main survey question that is the question about the willingness to pay (WTP) of the people for the good or service (CVM question).

Next part is the socio-economic survey. In this part the relation between WTP or WTA and socioeconomic and demographic variables such as age, gender, education, and household income… is studied.

3.2 Items to be decided in the process of survey designation

3.2.1 WTP or WTA?

WTP (Willingness to pay) could be defined as the maximum amount that an individual is willing to pay to make sure that the good or service would be provided. WTA (Willingness to accept) could be defined as the minimum compensation that an individual is willing to accept if the good or service is not going to be provided anymore. Batman and turner (1993) defined WTP and WTA measure of value in both cases of a welfare gain and welfare loss base on the Hicks classification of consumer surplus (compensating variation and equivalent variation). In case of a welfare gain, the compensation variation means the amount of income that should be given by the consumer to obtain a certain level of utility (WTP) and the equivalent variation would be the amount that should be paid to the individual in case the good is not provided any

more (WTA). In other words, for a welfare loss the compensating variation is the amount that should be paid to the individual due to the welfare lost (WTA) and the equivalent variation would be the amount of income considered by the consumer to avoid the loss happening in future (WTP) (Bateman & Turner, 1993).

WTP and WTA estimates could differ greatly. Different reasons have been explained for this disparity including: Income effect, presence of substitute goods, prospect theory, issue of property right, transaction cost, familiarity issue, experimental feature of the CV, broad-based preferences, etc.

WTP depends on the people income; therefore, is generally lower than WTA while WTA is usually much greater than WTP as people have hope to get a higher compensation. Willig (1976) explains that WTP and WTA amounts would be different in case of a commodity with high income elasticity of demand while Randal and Stoll (1980) mention that this disparity is lesser in case of public goods. Hahnemann (1991) indicates that WTA values could be five times greater than WTP.

As expressed by Shorgen et al. (1994), there is n't a boundary for the divergence between WTP and WTA and this amount could be somewhere in the interval from zero to infinity base on the availability of substitution goods and presence of positive income elasticity. Hanemann indicates that by considering the income effect constant, the fewer substitute goods available, greater the disparity between WTP and WTA would be (Hanemann, 1991). Prospect theory explained by Kahneman and Tversky (1979) adds the psychological dimension to this argument and refers to the fact that the loss of a commodity for an individual is always greater than the gain derived from obtaining that.

Familiarity issue explained by Freeman in 1986 refers to the degree of familiarity of the respondents with the CV studies that affect their responses to value assessment questions. Experiments show that repetition of trials that provides the opportunity for the respondents to understand the scenarios well and respond more carefully leads to divergence between WTP and WTA measures. Due to the lack of time, sometimes respondents do not answer carefully to the value assessment questions or do not pay enough attention to the explanations provided concerning the good or service in the study. Hoen and Randals (1987) have indicated that difference between WTP and WTA amounts would be greater for those do not have enough time to optimize their decision.

The choice between WTP and WTA could also be based on the property right. If the person has a property right over the good, then WTA would be preferable. However, it is quite difficult to determine who has the property right in case of the public goods. However, as indicated by Mitchell and Carson (2005) in many cases individuals consider the property right as illegal or difficult to believe and this is one of the reasons behind the problem that has been reported a lot while using WTA measure and that is large amount of protest bids (rate of 50% or more) (Ninan, N.A.).

The transaction cost while buying and selling may also play a role in case of commodities while this is not true in case of public goods that are mostly considered non-market. Though some studies also indicate that the difference between WTP and WTA could be derived from the fact that the survey is hypothetical and there is not a real payment, a study by Horowtiz and Mcconell's (2002) proves that hypothetical experiments do not differ significantly from the real ones. Horowtiz and Mcconell's claim that differences between WTP and WTA come from the broad-based preferences of individuals.

To conclude, WTP measure is considered to be a better measure of value as has been justified by different reasonings above.

3.2.2 Payment Vehicle

Different payment vehicles have been used in contingent valuation studies including lump sum payment, annual payment, tax, donations, entry fee, etc. The choice of a payment vehicle depends on the economic structure of a country and people culture. Payment vehicle should be incentive compatible. For instance, in a country that people are used to pay for the restoration of the historic monuments through taxes, if donation be used as a payment vehicle it could lead to over-stating of the WTP amounts to ensure the provision of the good or service (Murato & Mazzanti, 2002).

3.2.3 Elicitation format:

Open ended

In this format, open question is used to ask people about their Willingness to pay. Though, this method leave the hands of the respondents open as do not limit them to choose among the specified amounts and therefore, it is more informative in this sense. In case, the respondents are not well informed or have a made up mind, might not answer correctly to the valuation question.

Bidding Game

In this method, surveyor starts with a certain amount and if the respondents was willing to pay that amount, he will increase the bid. He will continue this until he receives a NO answer and in case, the respondent was not willing to pay for the initial amount, he decreases the amount of bids until he receives a yes answer.

Payment card: In this method, the amounts will be written on a card or on the questionnaire and the respondent has to choose among these amounts.

Single-bounded dichotomous choice (or single-bounded referendum SBR)

In this method, that has been used in most researches a vector of the probable amounts of the bids that people are willing to pay is prepared. These amounts are usually determined base on open some previous open question and the bids are proposed randomly to the respondents. For instance, are you willing to pay the amount of 5$ to this mean? The response would be in the form of yes and no. It is then followed by the question that what is the maximum amount that you are willing to pay? One advantage of this method as indicated by Hohen and Randal (1987) is that it is an incentive-compatible method and helps in limiting the free-riding behavior of people.

Double bounded Dichotomous Choice (or double-bounded referendum DBR)

In this method also a random initial bid is proposed to the respondent from a vector of the probable amounts of bids and if the response was yes, another greater bid is proposed and if the answer is no, a lower bid is proposed. This method is considered to be more efficient than the single bounded dichotomous choice method.

Table 2: Contingent valuation method: Elicitation formats- Some Common Problems

Elicitation format	Main Problems
Open ended	Large number of zero responses, few small positive responses
Bidding Game	Final estimates shows dependence on starting point
Payment card	Weak dependence of estimates on amounts used in the card
Single-bounded Dichotomous Choice	Estimates typically higher than other formats
Double-bounded Dichotomous Choice	The two responses do not correspond to the same underlying WTP distribution

Source : Carson et al. (2001)

3.2.4 Mean versus median

Whether we use mean or median to aggregate and calculate the total WTP depends on our data. If we have some data that distort the mean, the median would be a better representative of the sample.

3.2.5 Survey method

In-person interviews, mail or telephone surveys could be carried out. In person interviews have the highest quality but are usually more expensive than the other methods. Telephone interviews have also an acceptable quality but we do not have the opportunity to explain about the scenario as in the case of in-person interview due to more limited time and as we do not have the opportunity to display photos.

Mail survey is considered to be the least expensive method but as indicated by Alberini and Cooper there would be a correlation between completion of the questionnaire and WTP of the person for good or service and as they mention it would be a "self-selected sample" (Alberini, Cooper & Joseph , 2000)

3.3 Biases in CVM

There are many types of biases that might occur during designation and implementation of CVM. Therefore, these studies should be carried out by paying attention to the points needed to avoid these biases. We have thoroughly studied these biases in chapter 4 section 4.6.

3.4 The free rider and over-rider problem

Free rider problem occurs when for some strategically reasons respondents mention a WTP below their true WTP. It happens when the respondents think that they might have to pay the amount they mention in action or the good or service would be provided without their contribution. This could be observed more in case of non-users of a service or good. In contrast, considering the hypothetical nature of the scenario in a CVM, people might overestimate their bid to make sure the provision of the good or service or in some cases, to show that they are very interested in culture. Mitchell and Carson (2005) indicate that although these kinds of strategic behaviors in CV studies should be taken into account as a kind of bias, it is not an extraordinary problem and the properties of a contingent valuation study itself and information costs and people adherence to the social norm of truthfulness lessens the strategic behaviors.

3.5 The problem of protest bids

One of the important issues that we deal with in a CVM study is interpretation of zero bids. How to distinguish a zero bid which is a true expression of WTP from a protest bid is an important issue. A protest bid indicates that the good or service in the study has some value for the respondent but for some reasons such as believing that Government should pay for the costs or other people can pay for that (free rider behavior), thinking that it is not their responsibility,… they announce a zero bid.

The method that has been used to identify the protest bids as they bias the result of the studies (since they are not the true expression of WTP) has been simply asking people why they are not willing to pay an amount.

3.6 Guidelines for conducting a CV study provided by the NOAA Panel

This guideline that was developed by NOAA panel (US National Oceanic and Atmospheric Administration) and has been updated by Bateman and colleagues (2002) for the UK Government has been a good reference for those who are willing to carry out a contingent study.

However, as it has been indicated by Murato and Mazzanti (2002), these are some useful hints for conducting a CV study and not following them does not indicate the inaccuracy and in-validity of the survey. The NOAA guideline for carrying out a contingent study has been put as a reference in appendix 2.

3.7 Survey designation and implementation: Case study of the Ferdowsi Mausoleum

3.7.1 Designation of the survey

In order to design the questionnaire, we considered the questionnaire applied in other researches, studied carefully guidelines and hints regarding the designation of the questionnaire in a contingent value study and following that we designed our own questionnaire base on the Iranian culture and site specifications.

Basic information part: In the beginning, we introduced Ferdowsi (Iranian poet) to the people as a reminder (not really needed as everyone knows him well in Iran) and showed the photos of the mausoleum site. Then we proceeded by explaining briefly about his work ; Shahnameh, national epic of Iranians and the location and specification of the Ferdowsi mausoleum site, the services which it provides and the future plans of the cultural heritage organization for this site and the purpose of the study which is identifying the value of this historic site to the people.

Then, the **questions part** is commenced and it includes three main parts:

First part is about the attitudes of the respondent and includes their attitudes regarding the historic sites, the mausoleum site and their habitudes such as frequency of visit…

Second part is the value assessment part that includes the WTP question and sub-WTP questions.

Third part is about the socio-economic data including age, sex, level of education, occupation, number of households and monthly expenditure.

We decided to carry out personal interview as it would be more informative and it decreases the problem of missed data.

3.7.1.1 Value assessment part

In this part, we first asked from the respondents to mention whether they are willing to pay something for the revival and maintenance of the Ferdowsi mausoleum or not. If not, then we asked them the reason for that. If the answer was yes, we continued to ask them what percentage of the amount they mentioned they would like to pay in the form of the ticket and what percentage in the form of donations. Next, we asked them what percentage of the amount that they mentioned as their WTP, they would assign to each of the sub-values in the boxes depicted in the questionnaire (Please refer to the questionnaire in section 3.3.2.3). In order to minimize the misunderstandings and help them in the process of assignation of percentages, we explained about each sub-value to make sure that they have well understood them. This method has been used partially by Olgethrophe and Milliadou in valuing the non-use attributes of the Lake Kerkini in Greece (Oglethrope & Milliadou , 2000).

Elicitation format: We used payment card method to elicit WTP of the respondents. There were several reasons for that: First was cultural as by considering the culture of Iranians, I decided that it would be better to put different amounts of the bids on the questionnaire and let them choose among the bids. Moreover, other methods such as dichotomous choice method and bidding game demanded too much of time for taking the surveys and also could be exhausting for the respondents. An extra reason was the starting point bias in dichotomous

choice and bidding game methods that could affect greatly the final bid of the respondents and therefore, impact the final result of study.

3.7.1.2 Sample size

The questionnaire was pre-tested and to check its reliability, we used Cronbach's Alpha. Cronbach's Alpha in fact determines the correlation among questions in a questionnaire and determines whether the questions can help the researcher in meeting his or her objectives. The amount of Cronbach's Alpha is between zero and one and as the amount gets closer to one, the questionnaire becomes more reliable. The amount of the Cronbach's Alpha was calculated 0.730 which is higher than 0.7 and therefore, the reliability was high.

Following that for estimating the size of the sample we used Cochran formula and we reached to the number 206. Finally, we took 250 surveys in order to be able to omit protest bids. The final size of our sample after omitting the protest bids was 210.

We had to choose Cochran formula, as we had the size of the population of Mashhad city in the last national survey (2011) but we did not have the tourists' size for this year. Number of tourists has been calculated just for the year 2009 and for the other years, the number of incoming and outgoing passengers has been calculated.

Therefore, we used Cochran formula which is used when we do not have the exact number of population and aggregated our mean WTP to the total WTP for the population of Mashhad and its tourists in the year 2009. Notably the total value would be more as Mashhad is a touristic city and number of tourists is increasing constantly.

3.7.2 Questionnaire example

An exemple of the questionnaire can be consulted in the following pages.

Value assessment of the cultural complex of Ferdowsi mausoleum

As you know Ferdowsi (Persian Poet) has kept Persian language alive and has worked for 30 years to this mean. Now we want to fill out a questionnaire to know opinion of the people about the value of the cultural complex of Ferdowsi mausoleum. Can we take your time a bit please?

بسی رنج بردم در این سال سی
عجم زنده کردم بدین پارسی

I suffered during these **thirty years**, but I have revived the Iranians with the **Persian language**

(translation of a couplet of poem)

Hakīm Abu'l-Qāsim Ferdowsī Tūsī (940–1020 CE) was a highly revered Persian poet. He was the author of the *Shahnameh*, the national epic of Iran. He is renowned as the greatest poet of the Persian language.

The *Shahnameh is* about 50,000 couplets that explain about life, victories, defeats, failures and bravery of Iranian people and chronicles the legendary history of the pre-Islamic kings of Iran from Keyumars (the first king of the world) to Yazdegerd III king of Sassanid dynasty (The last pre-Islamic dynasty conquered by Arabs). Ferdowsi is renowned and admired all over the world and Shahnameh has been translated to many languages in the world.

The cultural complex of the Ferdowsi mausoleum is located in Tus city, 20 km from Mashhad city, the second largest city of Iran. In 1923, it was decided that a mausoleum be constructed for Ferdowsi at the place where he was buried by the effort of the Society for National Monuments.

The plan of the building was designed similar to the Cyrus[2] tomb and it was opened for the Ferdowsi's Millenary Celebration in 1934. In 1968, the mausoleum was expanded and its garden and museum were built.

The cultural complex of Ferdowsi mausoleum is composed of the building of the mausoleum that some poems of Ferdowsi have been carved on its façade and interior of it some stories of Shahnameh have been depicted by stone-cutting, garden, bookstore, museum and restaurant.

Currently, Iran’s cultural heritage and tourism organization is developing some plans for expanding and reviving this complex.

[2] (Cyrus was the founder of the Achaemenid Empire who is famous for his achievements in human rights, politics and military strategies. He respected the customs and religions of the lands he conquered and influenced greatly the ancient world. Cyrus cylinder has been announced by the United Nation as the first declaration of human rights)

Section1) Attitudes

1- In your opinion, what is the significance of maintaining and reviving historical and cultural monuments?

Not important		Slightly important		Average		Important		Very important	
1	2	3	4	5	6	7	8	9	10

2- What is the significance of maintaining and reviving cultural complex of Ferdowsi mausoleum to you?

Not important		Slightly important		Average		Important		Very important	
1	2	3	4	5	6	7	8	9	10

3- How much is your knowledge about Ferdowsi?

Not at all		Very little		Some		Quite a bit		very much	
1	2	3	4	5	6	7	8	9	10

4- How much do you spend yearly for visiting historic sites in Iran?

Less than 2000 toman 2000 to 5000 toman 5000 to 10000 toman
10000 to 15000 toman 15000 to 20000 toman more than 20000 toman

5- How many times have you visited Ferdowsi mausoleum during last year?

Never 1 time 2 times More than 2 times

5-1 How many times have you ever visited Ferdowsi mausoleum in your life?

Never 1 time 2 times 4 times more than 4 times

6- In your opinion, does Ferdowsi Mausoleum have value for those not visiting it?

Strongly disagree		disagree		neutral		agree		strongly agree	
1	2	3	4	5	6	7	8	9	10

7- In your opinion, are there some other affairs for investment that have priority over maintenance and revival of Ferdowsi mausoleum?

Yes NO I do n't know

8- If yes, What affairs? Please mention them.

a) Cultural affaires
b) Others

Section 2) Value assessment

9- In accordance to the significance of Ferdowsi and the role that he has played in Iran's culture, are you willing to pay an amount of money for the maintenance and revival of his mausoleum?

Yes NO

10- In case no, for what reason you are not willing to pay an amount?

a) You are not interested in
b) There are other priorities
c) Other people can pay
d) Other (mention it)

11- In case of Yes answer; considering your budget limit for cultural activities, you are willing to pay which of the amounts below?

1000 toman	2000 toman	5000 toman
10000 toman	15000 toman	20000 toman
25000 toman	30000 toman	50000 toman
100,000 toman	? > 100000 toman	

If these amounts are shared between ticket price and donations, what proportion of each is optimal for you?

11-1-ticket price: … %

11-2- donations: … %

In your opinion, cultural complex of Ferdowsi mausoleum has some values that you mentioned you are willing to donate …. Toman. The total value of this complex could be divided to some sub-values. Now we want to find out that what proportion of the amount you mentioned, you are willing to assign to these sub-values. (Questions from 12 to 17 will be asked from respondents by showing them the carts that have come in the appendixes 1 and 2.)

a) If the respondent has visited the Ferdowsi mausoleum,

12- What percentage of the amount you mentioned you are willing to pay because of what you have gained through your visits?

b) For visitors and non-visitors,

13- What percentage of the amount you mentioned was to be spent just for the existence of the Ferdowsi mausoleum?

14- What percentage of the amount you mentioned was for the reason that this complex be kept for the future generation?

15- What percentage of this amount was just to have the option to visit the mausoleum whenever you want?

16- What percentage of the amount you mentioned was due to the aesthetic, symbolic and historic values of the complex?

17- What percentage of the amount you mentioned was due to the role of the cultural complex of Ferdowsi mausoleum in creation of a national identity?

Section 3) Demographic information

18- Please tell us your age :

19- Sex Male Female

20- How much education do you have?

No diploma diploma associate's diploma bachelor master Ph.D

21- What is your job?

22- What is the number of people in your household?

23- How much is your monthly expenses?

<500,000 toman 500,000 to 1,000,000 toman

1,000,000 to 2,000,000 toman 2,000,000 to 3,000,000 toman ? >3,000,000 toman

Appendix 1> For visitors: What proportion of the amount you mentioned, you are willing to assign to these sub-values? (In percentage)

Because of what you have gained during your visits	Just for the existence of Ferdowsi mausoleum	For future generations	For using this complex whenever you want in future	For its aesthetic, symbolic and historic values	For national identity that creates

Appendix2> For non-visitors: What proportion of the amount you mentioned, you are willing to assign to these sub-values? (In percentage)

Just for the existence of Ferdowsi mausoleum	For future generations	For using this complex whenever you want in future	For its aesthetic, symbolic and historic values	For national identity that creates

Conclusion

According to what has been discussed in this chapter, the process of survey designation in a contingent valuation study is quite important and sensitive. It is necessary to design the questionnaire in a way to let us elicit accurate data from respondents as we discussed in detail. Efforts should be made to minimize different types of biases already explained and increase the reliability of the results of a CV study. The questionnaire and survey process for our case study were designed based on the guidelines and hints provided.

Chapter 4: contingent valuation method

Introduction

In this chapter, we have first studied the history of contingent valuation method. In particular, we have assigned a section to the available CVM studies that have been carried out for the historic sites. We have then studied the econometric theory of contingent valuation. Following that validity and reliability of CV studies has been discussed. Weak points and limitation of CVM and its application for policy purposes have been studied next.

4.1 Valuing public goods using the contingent valuation method

Contingent valuation method has been used for the value assessment of different public goods in culture, environment, biodiversity… where there is no real market for them. For instance, in case of recreation sites, there is no charge for use under public policy or there is arbitrarily charge. For air and water quality improvement a charge would not be feasible (Mitchell and Carson, 2005). Although, its application for natural resources and environmental goods and services has been vast, its application in developing countries has been more limited.

Therefore, this method helps to find out about the benefits of a public good against its costs in a cost-benefit analysis needed for more informed choices. CVM is a survey based method in which a hypothetical market is presented to people while asking them to indicate their Willingness to Pay (WTP) to secure or to avoid the supposed change in the level of provision of the good presented. This method is called contingent valuation as the results are contingent upon the hypothetical market presented (Mitchell and Carson, 2005). Ajzen et al. (1996) mention that ability of assigning monetary value to a public good definitely depends on the information provided in the scenario. In other word, being contingent on the information is necessary for the real estimations.

In the first look, contingent valuation might seem simple but for implementing that apart from the economic theory, there is a need for application of sociology, psychology and

surveying rules. Designing and conducting a CV survey with high quality is also quite difficult. First of all, the good should be described quite well to give the respondents opportunity of giving responses close to reality. Moreover, decision should be made concerning payment vehicle and elicitation format of the survey. Literature also provides hints and warnings regarding designation and implementation of CV (e.g. Arrow et al., 1993; Venkatachalam, 2004) as the scenario is hypothetical and therefore, CVM is vulnerable to different types of errors. The survey designation process was discussed thoroughly in chapter 3. Next, we discuss history of the contingent valuation method, econometric theory of contingent valuation, validity and reliability of a CV study, weak points and limitation of CV and CVM and public policy.

4.2 History of contingent valuation

Economists such as Clark (1915) and Hines (1951) gradually found out that there are goods that market prices could not be a good representative of the individual utility acquired from them and therefore, a need for a method that could be able to measure total value of such goods emerged.

Bowen (1943) for the first time used survey method for a good defined as beautification of landscape and Ciriacy-Wantrup (1947) for soil conservation. Later, this method was used for US projects regarding its national parks and its water based projects for recreation. However, Davis (1963) was the first one who empirically implemented a CV survey for the Maine woods. Davis participated in Samuel Stouffer course in survey methods at Harvard and realized that "it is possible to approximate a market in a survey by describing alternative kinds of areas and facilities to make available to the public and then simulate market bidding behavior."[3]

Roland Ridker (1967) used contingent valuation method in some studies concerning air pollution, in particular WTP for the avoidance from the dirt caused by air pollution; however, these studies lacked many essentials of CV surveys that improved later.

Some other researchers later used CV method to value recreational places such as Gardner Mallard Brown and Hammack (1972) WTP and WTA of western hunters to give up their rights

[3] Davis, personal communication, June 16, 1986 as cited in Carson, R.T. and Hanemann W.M. (2005), p.830

to hunt waterfowl and Cicchetti and Smith (1973) who measured WTP of hikers in a wilderness area to decrease the congestion by hikers using the area.

Gradually number of researchers who used contingent valuation methods to value recreational places increased and among these studies Darling's study (1973) to find out about the WTP for three urban parks in California and Jack Sinden (1974) for putting monetary value on recreational places were two of the outstanding works in this regard. Sarja (1969) study on lake recreation in Finland seems to be the first CV study in Europe (as cited by Carson and Hanemann, 2005)

In 1974, Alan Randal et al. applied contingent valuation method to study air visibility benefits in the four corners area in the southwest. His work is one of the prominent works in the development of contingent valuation.

Along with these studies, theoretical aspects of contingent valuation method improved. Different types of values and externalities gradually identified. Different scholars worked on these values such as Weisbrod (1964) on option value, Krutilla (1967) on existence value and Arrow and Fisher (1974) on quasi option value.

Contingent valuation has also been used in the areas of health and transportation in particular for the programs for the old people or young children. One of the initial works is Michael Jones-Lee (1976) work on WTP for reducing risk to human life. Advancement of the CV studies in the domain of health has been slow as policy makers claim that it is not right to make decisions base on the WTP of the people in this area. Later in 1980s again CV was used again in the health area to value some types of mortality risks and was used for some other purposes such as drug therapy options discount rates for treatment options, valuing pharmacy options… (Carson and Hanemann, 2005)

In the transportation area, one of the initial works was by Jourdan Louviere in 1974 on choice of trout fishing location as a function of site attributes. Another initial work was by Meyer, Levin and Louviere (1978) study on determinants of transportation mode choice. The later works focused on value of time and valuation of new forms of transportation.

Existence value defined by Krutilla emerged in CV studies gradually and one of the important researches that pinpointed this value in the beginning was the study of air visibility in Four Corners area by Randal, Eves and Eastman (1974) that they estimated this value. Their work was outstanding from different points of view, especially as they valued a good that was

not measurable by other common methods. In continue, other types of values such as bequest and option value ... were added to the studies.

From 1970s through late 1980s the use of contingent valuation for different types of goods continued. Its use for the value assessment of the recreational sites had the highest rate among various goods and the types of recreation valued expanded as well in this period. Moreover, the range of applications of CV expanded notably. Many of the studies in this period concentrated on refining CV method, testing the possible biases in CV and checking CV credibility by comparing its results by other common methods such as travel cost method (Carson and Hanemann, 2005).

In the domain of biodiversity, Loomis and White (1996) have considered different studies that have used CVM for value assessment of different species. Some of the early works in this regard as mentioned by them include Brookshire et al (1983) study of gain for hunting permits of grizzly bear and Hageman (1985) study to avoid loss of Gray-blue whale.

Applying CVM for the cultural goods commenced in 1980s but the majority of the CVM studies in this domain emerged after 1990. The reasons for the increasing interest in cultural CVM has been :1- improvement of the CV method 2- increasing demand for cultural public goods 3- increased recognition of the trade-offs which exist in provision of cultural public goods (Noonan, 2002). Some of the early CV studies in culture as cited by Noonan (2002) in his bibliography include: Throsby and O'Shea (1980) study to find out WTP of Mildura area residents for nonuse benefits from the Arts Centre of Mildura that they survey included urban, rural, theatre attendees and gallery attendees, Thompson, Throsby and Withers (1983) study that surveyed Australian residents to find out about their WTP through taxes to support Australian art at its current level, The Morrison and West study (1986) asked Canadian residents about their willingness to pay for public expenditures for performing arts in Ontario, Canada and for cultural activities in Canada. As value assessment of historic sites through CVM is the main purpose of this thesis, CVM studies of historic sites will be introduced in an extra section later.

Some of the major steps in expansion of CV in US were recommendations of Water Resources Council, US army corp. of engineers' guideline and funding of US environmental Protection Agency for the Improvement of CV method. In Europe also CV was used in OECD reports and the number of studies started to approach that of US. CV was pioneered in Europe first by the Norwegians and Swedes and later was used by British. Navrud (1992) in his book

‘Pricing the European Environment’ has explained early CV works in several European countries.

The major use of CV in developing countries was in late 1980’s. Some of the first applications in developing countries included Grandstaff and Dixon (1986) for value assessment of Lumpinee an urban park in Bangok, Thailand and Abala (1987) WTP for Nairobi National park in Kenya. Biller at al. (2006) has identified 250 country specific CV studies in 73 developing countries that 16 of these countries contribute to 57 percent of CV studies that from these 16 studies, 7 are low income economies, four lower middle income, three upper middle income and two high income economies. These countries include Brazil, India, Taiwan, Kenya, China, Indonesia, Mexico, Korea Rep, Costa Rica, Philippines, Zimbabwe, Malaysia, Nigeria, Ethiopia, South Africa and Tanzania. From these studies 71 percent have addressed environmental issues. From these 177, 102 studies have been regarding green issues such as natural resource management, renewable and non-renewable resources natural resources, biodiversity ecosystem services and recreation while about one third address brown issues such as pollution of water, air, soil or coastal areas. Biller et al. have also broken down the green studies in more detail. From which 56 percent are concerning tourism and recreation, 35 percent other green issues, 6 percent agriculture and 2 percent cultural. Brown studies main items include 38 percent water and sanitation, 35 percent variety of air, water, soil and coastal pollution problems and 12 percent health issues. 73 studies remain that are neither concerning green issues nor brown issues which are mostly concerning infrastructure investments such as better water supply. The main items include 40 percent water and sanitation, 29 percent health.

The World Bank, the Interamerican Development Bank and USAID (United states agency of international development) have also started to examine CV for the evaluation of projects in this period.

4.2.1 The Mitchell and Carson Book

The Mitchell and Carson Book (2005) *using surveys to value public goods: The contingent valuation method* has been influential in development of contingent valuation method. The first edition of this book was in 1989. This book discusses well the theoretical aspects of the CVM, different types of values, biases, survey designation and administration. It also reviews over 100 CV studies.

4.2.2 Exxon Valdez

US laws that allow for the recovery of monetary damages for injuries to natural resources has been one of the important elements in CV debates. The important case that had great influence was Exxon valdez oil spill that Government claimed a monetary payment for damage. Americans willingness to pay to avoid future Exxon Valdez oil spill was three billion dollars. Finally, Exxon settled out of the court for about 1 billion dollar. Existence value was the major value addressed in assessment. Notably, Exxon Valdez conducted CV studies for other issues to convince policy makers that CV is not a reliable method. These studies were presented at an Exxon-sponsored conference in Washington DC in March 1992, and then were published in Hausman (1993). Among the claims was scope or embedding bias of CVM, sequence and elicitation bias. They also claimed that measuring passive use values is a kind of double counting.

4.2.3 CVM and historic sites

Though many contingent valuation studies exist, only a few studies have applied this method for the value assessment of the historic sites. Each of these studies has used contingent valuation method to measure different types of values: use value, non-use values or Total value (use and non-use values) of the site. Some of them have measured the value that people put on a specific maintenance of a site such as for instance the maintenance due to the damage caused

by the traffic-caused air pollution. Moreover, each study has used different elicitation format and has done the survey at different scale (from different size of population).

Grosclaude and Soguel (1994) assessed values for selected local historic buildings maintenance in Neuchâtel, Switzerland using open-ended and bidding game format; Willis (1994) quantified the use value for the visitors of Durham Cathedral in England using payment card method; Martin (1994) measured the total value of the "Musée de la civilization" in Québec ; however, he used two different methods for measuring use and non-use values, travel cost method to measure use value and contingent valuation method to measure the non-use values for the residents of the Quebec province using payment card elicitation format; Hansen (1997) measured the total value of The Royal Theatre in Copenhagen for the Danish population using open-ended elicitation format; Scarpa et al. (1998) estimated use value for the visitors of the Contemporary Art Museum of the Castello di Rivoli (Turin) using dichotomous elicitation format; Chambers et al. (1998) measured both use and non-use values of St.Genevieve Academy located in Missouri using payment card elicitation format ; Santagata and Signorello (2000) assessed the total value of the Napoli Musei Aperti (a mixed cultural public good that provides access to the important cultural, historic and artistic monuments and sites located in four central areas of the city of Naples) for the citizens of Naples city using the dichotomous and open ended elicitation formats; Pollicino and Maddison (2001) assessed the willingness to pay for a change in the frequency of a hypothetical cleaning cycle of Lincoln cathedral for the residents of the Lincoln city and its surrounding using double bounded dichotomous choice elicitation format ; Carson et al . (2002) valued the benefits to the foreigners, visitors and non-visitors of Fez Medina of its rehabilitation using dichotomous elicitation format and Navrud et al. (2002) estimated value for visitors to the Nidaros Cathedral in Norway using open –ended elicitation format.

4.3 Economic theory of contingent valuation

4.3.1 Economic welfare measures

In a CV study purpose is measuring the monetary value for an item. We assign the item to be valued by q which is considered as a single commodity or program or mix of commodities treated as a fixed group. It is assumed that individual has a direct utility function defined as u(x,q) where x is quantities of various market commodities and an indirect utility function defined as v(p,q,y) where p is the vector of the prices of market commodities and y is the person's income. It is assumed that u(x,q) is increasing and quasi-concave in . The interpretation is about the change in q. We suppose that q changes from $q^0$to q^1; the utility function changes from $u^0 \equiv v(p, q^0, y)$ to $u^1 \equiv v(p, q^1, y)$. If the change is positive then $u^1 > u^0$ and if the change is not regarded favorable then $u^1 < u^0$ and if it is indifferent $u^1 = u^0$. Two hicksian measures compensating variation C and equivalent variation E are respresented which show the value of change in monetary terms.

$v(p, q^1, y - C) = v(p, q^0, y)$ (1)

and $v(p, q^1, y) = v(p, q^0, y+E)$ (2)

which $sign(c) = sign(E) = Sign(u^1 - u^0)$ (3)

Carson and Hanemann (2005, P.845) explain that "If the change is regarded as improvement, $C > 0$ and $E > 0$ in that case C measures the individual maximum WTP to secure change while E measures her minimum WTA to forgo it. If the change is regarded as being for the worse, $C < 0$and $E < 0$; in this case, C measures the individuals's WTA to endure the change, while E measures her WTP to avoid it. If she is indifferent to the change C=E=0."

WTP function could be then defined as follows:

$$WTP(q^0, q^1, p, y) = \begin{cases} C(q^0, q^1, p, y) & \text{if } C \geq 0 \\ -E(q^0, q^1, p, y) & \text{if } C \leq 0 \end{cases}$$

For simplicity, it is assumed that $C \geq 0$ and use WTP measure. We assign y=m (p, q, u) as expenditure function corresponding to the direct and indirect utility functions defined above. Compensating and equivalent variations base on expenditure function are defined as:

C= m (p, q^0, u^0) – m (p, q^1, u^0) = y – m (p, q^1, u^0) (1')

E= m (p, q^0, u^1) – m (p, q^1, u^1) = m (p, q^0, u^1) - y (2')

These concepts could be shown by Box-Cox indirect utility function:

$v_q = \alpha_q + \beta_q \left(\frac{y^{\lambda}-1}{\lambda}\right)$ q=0,1

Where $\alpha_1 \geq \alpha_0$ and $\beta_1 \geq \beta_0$ (Carson and Hanemann, 2005)

4.3.2 From WTP to CV response

Different survey formats are used to ask people questions and the way WTP and WTA is linked with CV responses is different. In the framework of statistical modeling, the survey responses are treated as realization of a random variable. It is needed to re-mention the deterministic model of WTP into stochastic model that can generate a probability distribution for the survey responses.

"The mapping from the deterministic model of WTP to a probabilistic characterization of survey responses involves two steps: (1) the introduction of a stochastic component into the deterministic utility model which leads to what is called a WTP distribution; and (2) the formulation of a connection between the WTP distribution and what we call the survey response probability distribution based on the assumption of a utility maximizing response to the survey question. (Carson and Hanemann 2005, P.848) "

The WTP cumulative distribution function G_c (x); specifies the probability that the individual's WTP for item in question is less than x

G_c *(x)* ≡ Pr*(C ≤ x),*

where C compensating variation is random variable.

If the elicitation format is open-ended and $A is the amount that respondent is willing to pay for the supposed change in the provision of good, from $q^0$to q^1 then the link between WTP and CV responses could be defined as follows :

Pr (Response to open-ended CV question is A) = Pr(C=A) ≡ G_c(A)

In case we assume the elicitation format as closed ended, single bound discrete choice format. If the respondent say yes to the WTP question which is accepting the change from $q^0$to q^1 in case that costs him \$A, the probability of yes response is as follows:

Pr *(*Response to closed-ended question is 'yes'*)* = Pr*(C ≥ A)* ≡ 1 − G_c(A).

WTP distribution could be obtained by two approach, determining distribution of C directly in open-ended CV format as

$C = \mu_c + \varepsilon = z_y + \varepsilon$,

And alternative definition as

$\ln C = z_y + \varepsilon$.

That in the first model c is normally distributed and in the second is lognormal. In term of utility theoretic compensation of c, it would be as: $C = C(q^0, q^1, p, y) + \varepsilon$

And in terms of Box-Cox model:

$C = y - \left(y^\lambda - \frac{\alpha}{b}\right)^{1/\lambda} + \varepsilon$

Second approach is through random utility maximization (RUM).This approach consists of specifying a particular indirect utility function V(p, q, y ; ε) and a distribution for ε. RUM model of restricted Box-cox model is as follows :

$u_q = \alpha_q + \beta\left(\frac{y^\lambda - 1}{\lambda}\right) + \varepsilon_q \qquad q=0,1$

Where ε_0 and ε_1 are random variables with a mean of zero.

$C = y - \left(y^\lambda - \frac{\alpha}{b} - \frac{\eta}{b}\right)^{1/\lambda} + \varepsilon$

Where $\alpha \equiv \alpha_1 - \alpha_0$, $b \equiv \beta/\lambda$ and $\eta \equiv \varepsilon_1 - \varepsilon_0$.

For instance, for $\lambda = 0$ we have logarithmic model from Hanemann (1984b)

$u_q = \alpha_q + \beta \ln y + \varepsilon_q$,

$C = y\,(1 - \exp[-(\alpha + \eta)]/\beta$

In case ε_1 and ε_0 be normal then C has lognormal distribution.

In case λ =1,

$u_q = \alpha_q + \beta \ln y + \varepsilon_q$

$C = \frac{\alpha+\eta}{\beta}$

If ε_1 and ε_0 are normal then c is also normal.

Another RUM which has been used is Bishop–Heberlein utility model.

$V(p, q^0, y, \varepsilon_0) = y+\xi$

$V(p, q^1, y, \varepsilon_0) = y+\xi+\exp[\frac{\alpha+\eta}{\beta}]$

$C= \exp[\frac{\alpha+\eta}{\beta}]$ (Carson and Hanemann, 2005)

4.3.3 Statistical model of CV responses

Statistical model of CV responses depends on the elicitation format of the survey. For instance, for the close-ended single bounded question format is as follows:

Pr (response is 'yes') = $pr\{C = C(q^0, q^1, p, y; \varepsilon) \geq A\} \equiv 1\text{-}G_c(A)$

In term of the RUM utility function:

Pr {Response is 'yes'} =Pr $\{v(q^1, p, y\text{-}A; \varepsilon) \geq v(q^0, p, y; \varepsilon)\}$

Given that $\mu_c=E[C(q^0, q^1, p, y; \varepsilon)]$ $\sigma^2{}_c$ =var$(C(q^0, q^1, p, y; \varepsilon)$ and G(.) cumulative distribution function of standardized variate $\omega = (C - \mu C)/\sigma_c$

Pr {Response is 'yes'} $=1\text{-}G\left(\frac{A-\mu_c}{c}\right) \equiv 1\text{-}G(\gamma+\sigma A) \equiv H(A)$

Where $\gamma \equiv \mu_c/\sigma_c$ and $\sigma \equiv 1/\sigma_c$

Distribution for the version of Box-Cox model:

Pr {Response is 'yes'} = 1-Pr{y - $\left(y^\lambda - \frac{\alpha}{b}\right)^{1/\lambda}$ + ε}

And response probability for RUM version of Box-Cox:

Pr {Response is 'yes'} = 1-Pr{y - $\left(y^\lambda - \frac{\alpha}{b} - \frac{\eta}{b}\right)^{1/\lambda} \leq A$}

In the linear model where $\lambda = 1$:

Pr {Response is 'yes'} = 1-Pr $\{\frac{\alpha+\eta}{\beta} \leq A\}$

If η has standard normal distribution then response formula becomes probit model

Pr {Response is 'yes'} = $\Phi(\alpha - \beta A)$.

If η has standard logistic random variable, response formula becomes logit model:

Pr {response is 'yes'} = $\frac{1}{1+\exp(-\alpha+\beta A)}$

With Bishop-Heberlin model:

Pr {response is 'yes'} =1-Pr $\{\frac{\alpha+\eta}{\beta} \leq \ln A\}$

And if ηis standard normal, response distribution becomes lognormal.

Pr {response is 'yes'} = $\Phi(\alpha - \beta \ln A)$

While if η is logistic random variable, the response distribution becomes log logistic

Pr {response is 'yes'} = $\frac{1}{1+\exp(-\alpha+\beta \ln A)}$

The common approach to estimation is maximum likelihood. Given that respondent i receives bid A_k, the probability of yes answer is $\pi^{Y}{}_{i}(A_k)$, the probability of No answer $\pi^{N}{}_{i}(A_k)$, the likelihood of observing this pattern of response is

$L=\prod_{k=1}^{K}\prod_{i=1}^{N_k}[\pi^{Y}{}_{i}(A_k)]^{1_{i,Y}}[\pi^{N}{}_{i}(A_k)]^{1_{i,N}}$

Where $1_{i,response}$ is an indicator variable equal to one if the respondent gives a specific response and zero otherwise.

The corresponding log likelihood function is

Ln $L= \prod_{k=1}^{K}\prod_{i=1}^{N_k}[1_{i,Y} Ln(\pi^{Y}{}_{i}(A_k)) + 1_{i,N} \ln\left(\pi^{N}{}_{i}(A_k)\right)$

And the non-parametric likelihood function is

$\prod_{k}^{K}\prod_{i}^{N_{A_k}}[\pi^{Y}{}_{k}]^{1_{i,Y}}[1-\pi^{Y}{}_{k}]^{1_{i,N}}$ (Carson and Hanemann, 2005)

The goal of the study was to develop some summary measure of people's WTP for the change in q. This could be obtained from the fitted response model. Carson and Hanneman (2005, P. 857) indicate that "The key to the interpretation of the fitted response model is the fact, that this is derived from an underlying WTP distribution, $G_c(x)$. By exploiting this relationship, one recovers the underlying WTP distribution from the fitted response model. With the closed-ended, single-bounded format, $\pi^{Y}{}_{A} = 1 - G_c(A)$. This makes it possible to derive welfare measures directly from the graph of the response probability distribution. For example, percentiles of the estimated WTP distribution can be read directly from the graph of the fitted response model. The θ-percentile of the WTP distribution C_θ satisfies

$\theta = G_c(C_\theta) = 1 - \pi^{Y}(C_\theta)$

i.e., there is a 100(1 − θ)% probability that the individual would be willing to pay at least C_θ for the change in q. In particular, the median estimated WTP is the quantity C0.5, such that

$0.5 = G_c\ (C_{0.5}) = 1 - \pi^Y(C_{0.5}))$,

i.e., there is a 50–50 chance that the individual would be willing to pay at least $C_{0.5}$. The analytic formulas for $C_{0.5}$ in the linear response model, if η has a symmetric distribution with a median (and mean) of zero, such as the standard normal or the standard logistic which generate the probit and logit response models" is as follows

$C_{0.5} = \frac{\alpha}{\beta}$

Therefore, as contingent valuation is an empirical approach to measuring economic concept, it is an exercise in the application of economic theory. Review of the economic theory of what is being measured in a contingent valuation survey, namely individuals' willingness to pay (WTP) or willingness to accept (WTA) for changes in some environmental or cultural amenity may be useful. As the result of this review, CV is deeply rooted in welfare economics to be precise, in the neoclassical concept of economic value under the framework of individual utility maximization. CV surveys are capable of directly obtaining a monetary (Hicksian) measure of welfare associated with a discrete change in the provision of an environmental or cultural good. The precise measure sought in the process of estimating an individual's benefits is the net change in income that relates to a change in the quality or quantity of a non-market good. That is, precisely, the linkage between the survey instrument and economic theory, because the CV survey provides information to trace the WTP distribution for a proposed change in an environmental or cultural good.

4.4 Validity of contingent valuation method

Assessment of validity is one of the important issues in contingent valuation methods. Studies show that CV studies have the potential to obtain valid data on people's willingness to pay. Validity assessment deals with how well CV studies can realize this potential (Mitchell and Carson, 2005). In the other word, validity of CV studies could be considered by answering two questions. First question is "Is the method valid?" that is a question asked by economists that believe more on revealed preference methods such as travel cost and hedonic price which are based on observed behavior of people rather than CV method which is survey based. Another question to answer is "to what extent findings of a given CV study is valid?" Experimental designs have been carried out using split samples to test different things that might have impact on the result of CV such as payment vehicle or starting point and the results of these tests have been generally in favor of CV method (Mitchell and Carson, 1988).

"The validity of a measure is the degree to which it measures the theoretical construct under investigation. This construct is, in the nature of things, unobservable, all we can do is to obtain imperfect measures of that entity. In the CV context the theoretical construct is the maximum amount of money the respondents would actually pay for the public good if the appropriate market for that market good existed. "(Mitchell and Carson 2005, P.190)

Three types of validity test have been used for CV studies: Content validity, criterion validity and construct validity. All the tests of validity do not have the same level of significance and the result of a single test is not definitive. If a CV study is invalid the reason for that might be poor design of CV study not the method itself.

Content validity tests whether the measure covers the construct's domain well. It can be assessed usually by examination of wording of questions as it provides stimulus to which respondents reply. Questions that could be posed suggested by Mitchell and Carson (2005, P.192) are as follows: "Does the description of the good and how it is to be paid for appear to be unambiguous? Is it likely to be meaningful to the respondents? Is there anything in the scenario that might suggest to some respondents that the good would not be paid for? Are the property right and the market for the good defined in such a way that respondents will accept the WTP format as plausible? Does the scenario appear to force the reluctant respondents to come up with WTP amounts? "

In fact, CV instrument should meet both requirements of economic theory and the need of CV respondents for meaningful set of question as it was explained. Questions such as is the scenario accurate and is it policy relevant? relates to the fit between the subject of study and requirements of theory and policy. If the scenario meets the requirements of theory and policy, then it should be communicated well to the respondents. Therefore, it is quite important to make an effort to well design the CV and pretest the CV instrument before applying that.

As explained by Mitchell and Carson (1988) the fact that scenario is understandable does not mean necessarily that respondent will make an effort to state his true willingness to pay and take the hypothetical situation seriously. Therefore, plausibility of the scenario is one of the factors that should be taken into the account. Two undesirable outcomes will happen if the scenario is not plausible: First the respondent might replace the scenario of the CV with one in his mind which is more plausible. Second, he might not take the scenario seriously.

Criterion validity is concerned with whether the measure of construct is related to other measures which might be regarded as criteria and could be used as a proper test for considering validity of WTP measure. To this mean we should have a criterion close to the theoretical construct that in CV studies that could be market prices; however, market prices are not always available and in these cases hypothetical simulated markets (HSM) or experimental market could be created for quasi public goods. Markets that goods could be bought or sold in them and observed values in their transactions could be used as criterion to be compared to that of CV study (Freeman, 2003). However, Carson et al. (1996) suggest that because of sampling variability and model specification for obtaining these measures, they do not really assess criterion validity.

There are two types of construct validity test: convergent validity and theoretical validity. Convergent validity concerns the correspondence between a measure and other measures of the same theoretical construct or as mentioned by Carson et al. (1996) is by way of comparing the CV results with the values obtained through another revealed preference method. Convergent validity differs from criterion validity in that in convergent validity none of the measures are considered to be true representative of the measure of construct while in criterion validity one measure is compared to another as a reference. For instance, efforts have been made to compare the CV results with travel cost and hedonic price methods result. Researchers have come to conclusion that convergence between these methods and CV results does not prove accuracy of CV results but proves just a relative accuracy as revealed preference valuation methods are

themselves prone to error as they have an indirect relationship with the good to be valued and this demands a set of arbitrary assumptions (Cummings et al., 1986) or as mentioned by Mitchell and Carson (1988) they are “parallel measures” of the same construct. A study by Carson et al. (1996) which included 83 studies that made 616 comparisons of CV results with results of revealed preference methods reveals from1966 to 1994 shows that CV estimates are found to be 20% lower than single site travel cost method, 30% lower than multisite travel cost method, little less than 40% to hedonic price method, 20% lower to averting method and indistinguishable to actual market value.

Cummings et al. (1986) used another approach for validity assessment of CV studies. They developed reference accuracy and a reference operating condition to this mean. Reference accuracy was defined as “the limit that errors will not exceed when the device is used under reference operating condition” which was set by them +/-50% of measure of value and reference operating condition was defined by four conditions: “1-Subjects must understand, be familiar with, the commodity to be valued 2-subjects must have had (or be allowed to obtain) prior valuation and choice experiment with respect to consumption levels of commodity 3-There must be little uncertainty 4-Willingness to pay, not willingness to accept measures are elicited. ” (Cummings et al. 1986, PP.11, 18)

Theoretical validity investigates the degree to which findings of CV study meets theoretical expectations. To this mean, a regression is carried out to find out about different independent variables that can be determinative on the amount of dependent variable WTP. The size and sign of the estimated coefficient reveals the consistency or inconsistency of the results with theory.

Mitchell and Carson (2005) stress that whenever CV studies are going to be used for the policy purposes, it is quite important to use a regression equation to test the theoretical validity of the CV study. However, they mention that regression has not been reported or predictors have become statistically insignificant in case WTP has been demanded in the form of ticket prices.

4.5 Reliability of CV studies

Reliability refers to "the extent to which variance of WTP amounts given by respondents in a contingent valuation survey is due to random sources or noise" (Mitchell and Carson, 2005, P.211) while Kealy et al. (1990) indicate that reliability refers to consistency or reproducibility of CV results and Carson et al. (2001) defined it as an index of reproducibility and stability of a measure which means the stability of WTP measures over time.

As explained by Mitchell and Carson (2005) variance in WTP amounts can be due to the three reasons: 1- True variance in WTP amounts 2- Due to the CV instrument: It's concept, wording and method of presentation 3- Due to the fact that a sample is used in a CV study. The second source of variance can be tested by carrying out survey in two different time intervals that the result of these two surveys shows the true variance plus some noise that is due to the survey instrument. For the third source of variance mentioned, if there was possibility to use several samples we could find out about variance due to sampling procedure.

Test-retest procedure that is done in two different points of time has been done by several researches and they have reached to almost similar results in the two tests. Some researchers have also examined the correlation between respondents answer at two points of time. Some examples of test-retest studies include: Carson and Mitchell (1993) reported finding similar values for the national water improvement in two national surveys carried out three years apart. Whitehead and Hoban (1999) administered two surveys five years apart for air and water quality improvement and reached to similar results though the WTP amounts had changed as some explanatory variables had changed. Kealy et al. (1990) tested the reliability of WTP values using a private good candy bars and a public good, de-acidification of lakes two weeks apart and reached to similar results. However, there might be a recall effect due to the short time gap between two tests. Recalling effect happens when respondents recall their responses in the previous test (Teisl et al., 1995). Loomis (1990) used a test-retest for different levels of water quality in Mono Lake 9 months apart and also reached to similar results. However, these kinds of tests have been often used for the studies having laboratory subjects or students. In general, test-retest studies show that contingent valuation studies are reliable.

In such studies at two different points of time respondents may not give the same answer because of the change in their financial status, change in expenditure opportunities and retesting

effect. Studies in this regard show correlation of 0.5 to 0.9 between respondent answers at different point in time (Carson et al., 2001). However, Venkatachalam (2004) indicates that an important issue that still needs to be resolved is what should be a reasonable time gap between two tests to eliminate recall effect and to take into account the changes in the socioeconomic variables.

It is quite important to make efforts to make the CV study as much reliable as possible. Not having sufficient sample or having unrealistic survey instrument reduces greatly reliability of a CV study. Studies that leave the respondent unbelievable or uncertain decrease reliability as respondents reply base on the clues in CV instrument rather than revealing their own real preferences.

Techniques that have been used for the assessment of variance in the CV studies such as test-retest process and using survey for several sub-sample explained above are quite expensive and therefore, usually researchers do not carry out such tests. In the absence of such tests, researcher need to prove that WTP amounts are not random responses and criterion that could be used to this mean is R^2 in regression between WTP and explanatory variables. R^2 should be at least 0.15 in order to say that a CV study is reliable. Notably, high reliability does not mean that the study is valid and there is no bias.

Sampling variance can be estimated by using several independent samples. This helps the researcher to estimate sampling variance by comparing the sample statistics of each of the subsamples. As instrument variance and sampling variance measurement is so costly it is recommended that researcher instead put more effort to gain data with higher quality.

Realism in CV scenarios is one of the components that increases reliability of a CV study. It is defined as the degree to which the valuation situation is plausible and meaningful to the respondent. There are four factors that make the scenario more realistic: 1- The degree to which respondents are familiar by the good before interview 2- key elements be presented in interview in such a way that respondent can grasp the meaning easily 3- Degree to which the scenario is plausible to respondents 4- Degree to which the scenario is compatible with prevailing moral assumptions (Mitchell and Carson, 2005)

Mitchell and Carson (2005) also indicate that scenarios that seem unrealistic to respondents elicit three types of responses. First type is “don’t know answers”, second is random guessing and third one is responding to cues. Second and third types occur when respondents can not

link the scenario meaningfully to their preferences. Example of responding base on cues is relying on starting point in a bidding game elicitation format.

Another question that has been posed by researchers is that whether there is a relationship between realism of a scenario and biases in CV study. Thayer (1981) indicates that a scenario lack of realism is not a type of bias but it is a random error. However, Mitchell and Carson (2005) indicate that lack of realism in a CV study makes it vulnerable to bias and putting so much of effort to increase realism of a CV scenario also can lead to bias due to information overload. Therefore, three solutions have been recommended for enhancing CV reliability without creating bias which includes: 1- Use of pretesting techniques to find out about weaknesses of a CV instrument 2- Avoiding to put too much of pressure on uncertain respondent to give an answer 3- Giving more time to the respondents to think about the scenario before posing valuation questions. Different components of scenario including the good and its provision levels, type of market, the payment vehicle and elicitation method also impact the reliability of CV studies.

4.6 Weak points and limitations of contingent valuation method

Although, the contingent valuation method has advantages in comparison to other methods such as travel cost method, it is important to pay attention to this point that it also has its weak points and can have error in its estimations. Researchers have carried out experiments in order to find out that some aspects of the instrument affect the WTP systematically. These experiments have tested the variation in payment vehicle, elicitation format, WTP versus WTA measure, different budget constraints and the effect of information provided to respondents.

Although early experiments show that CV studies are uniformly robust to such variations Mitchell and Carson (2005) indicate that early studies can not be used as reference as they do not have the sufficient sample size to reject the null hypothesis that there is no difference in treatment effect.

One of the most important critics about the contingent valuation method is that the data obtained through surveying in this method is based on hypothetical market and therefore, it

includes bias (Hausman, 1993) that the created bias could be due to wrong sampling selection, low response rate and different response rates in the subsections.

From the point of view of Arrow et al. (1993) identified biases in this method include: Design bias, operational bias, hypothetical bias and strategic bias. Design bias is due to the initial suggested amounts to the respondents through payment vehicle. Operational bias is due to the unfamiliarity of the respondents to the good which is going to be valued. Hypothetical bias is due to the fact that there is no real payment as the scenario is hypothetical and strategic bias happens when respondents do not reveal their true preferences. In other word, in strategic behavior people consciously try to impact their future payment through exaggeration or lowering the amount of their willingness to pay.

In another categorization by Venkatachalam (2004) observed biases in the contingent valuation method include: Embedding or scope effect, sequencing effect, information effect, elicitation effects, hypothetical bias and strategic bias.

Embedding bias happens when the good is valued as part of a whole instead of on its own. Sequencing effects means that amount of willingness to pay differs base on the order of the goods presented for the valuation. Information effect happens when the WTP for the good and services is affected by the information provided through scenario. Elicitation effect means that the amount of willingness to pay is affected by the type of elicitation format. Hypothetical effect is due to the hypothetical nature of the market in CVM and divergence between the real WTP and the hypothetical one. In strategic bias due to the free-riding and over pledging behavior of the respondent their true WTP is not revealed.

From the point of view of Roger Perman, Yue Ma, James Mc Gilvray and Michael Common (2003) biases in CV studies include two main classes: the first class is for getting respondents to answer to the elicitation question meant by researcher and second class is for getting the respondents to answer honestly. The first class includes biases such as amenity misspecification and second group include biases such as strategic bias. Amenity misspecification means that perceived good by respondent differ from what intended by researcher. Strategic bias happens if the respondent lowers his WTP to avoid probable future payment or increase his WTP in order to support the future provision of the good if he is in favor of the good.

The most comprehensive classification of the biases in contingent valuation has been done by Mitchell and Carson (2005). They have developed a bias typology that entails all the possible

biases in CVM. Notably, Mitchell and Carson do not consider hypothetical bias as one of the biases but consider it as a reliability problem. Their bias typology is based on what they call four principle sources of potential systematic error. These include: "1- Use of a scenario that contain strong incentives for respondents to misrepresent their true WTP amount. 2- Use of a scenario that contains strong incentives for the respondents to improperly rely on elements of scenario to help determine their WTP amounts.3- Misspecification of the scenario by incorrectly describing some aspect of it (according to the theory or policy relevant facts of the case) or, alternatively, by presenting a correct description in such a way that respondents misperceive it. 4- Improper sampling design or execution, and improper benefit aggregation. If adjustments are not made for sampling and aggregation errors, they can bias the aggregated benefit estimate. " (Mitchell and Carson 2005, P.235)

The typology by Mitchell and Carson 2005 includes: 1- Incentives to misrepresent responses that includes strategic bias and compliance bias. Compliance bias in turn includes sponsor bias and interviewer bias. 2- Implied value cues that includes starting point bias, range bias, relational bias, importance bias and position bias 3- Scenario misspecification that includes theoretical misspecification bias, methodological misspecification bias, Amenity misspecification bias that in turn includes Symbolic, part-whole, metric and probability of provision biases, context misspecification bias that includes payment vehicle, property right, method of provision, budget constraint, elicitation question, instrument context and question order biases. 4- Sample design and execution biases that include population choice bias, sampling frame bias, sampling non-response bias and sample selection bias. 5- Inference biases that include temporal selection bias and sequence aggregation bias. We will explain briefly these biases below.

Strategic bias is an effort to impact future payment or provision of the good presented or in other word, influencing the result of the study in the direction of respondent's personal interest. For instance, studies which stress on the hypothetical nature of the survey risk encountering the problem of overbidding by the respondents who wish the good be provided. Compliance bias happens if the respondents try to fulfill the will of the sponsor of the survey or interviewer. Pleasing the sponsor or interviewer usually happens when a respondent does not have a strong opinion about the good or service presented in the scenario. Two types of the compliance bias include sponsor bias when the respondent tries to meet expectation of the sponsor of the study and interviewer bias happens when the respondent tries to meet expectations of the interviewer or increase his status in the eye of the interviewer. Interviewer effect bias experiments are

difficult to be carried out as it is needed to assign the interviewers randomly to respondents and no CV study has done this up to now.

Implied value cues biases happen when respondent due to the complexity or length of the survey tries to simplify the task by relying on some cues in CV scenarios that is not intended by the researcher and use these cues to find out the approximate value of the good. If this cue is an initial amount such as in the bidding game elicitation format, it is called anchoring. The major sources of such cues in CV scenarios are: Elicitation format, payment vehicle and materials that are used to describe the amenity being valued (Mitchell and Carson, 2005).

Starting point bias happens when respondent's WTP is influenced by an initial amount proposed in the scenario of CV. This happens with bidding game and dichotomous elicitation formats that respondent might anchor his WTP amount on the proposed amount. In fact, there is a yea-saying tendency among the respondents to the initial amount and if the respondent rejects the initial amount and it is much higher than his own WTP that will increase the amount of his final WTP and if the initial amount is much lower than his WTP, it will decrease his final WTP (Robert, Thompson and Pawlyk, 1985). Unfortunately, there is no method that could be used to compensate for the effect of initial amount in bidding game and dichotomous formats.

Range bias happens when the payment card method is used. Although this method eliminate the starting point bias, it can create range bias which means that respondents consider the range of amounts revealed on the card as expected range of values by surveyor and thus bias his WTP.

Relational bias happens when the amenity being valued is linked to another public good in a way that this good implies a value for that amenity. This reference good might be invoked by the benchmarks on a payment card or may be invoked without any prompting by the scenario. Importance bias happens as the respondent thinks that the good which is going to be valued must worth something otherwise such an expensive and deliberate survey was not carried out. To minimize this effect, scenario must be designed in a way that respondent feel free to have the option of not paying anything otherwise the benefit will be overestimated. Some elements of the scenario can also create the importance bias by exaggerating the advantages or disadvantages of the amenity which is going to be valued.

Position bias happens when "respondents are being asked a sequence of valuation questions regarding provision of different levels of goods and take that sequence to imply something about the value of the levels or goods that is unintended" (Mitchell and Carson 2005, P.246).

Scenario misspecification happens when the respondent does not well understand the market or the good to be valued. It includes theoretical, methodological, amenity misspecification and context misspecification biases. Theoretical misspecification bias happens when the researcher describes a scenario that is not correct according to the economic theory. Methodological misspecification means that one or several elements of the market have not been explained well so that respondent does not perceive them well as it was supposed to by researcher.

Amenity misspecification bias happens when respondents ignore some or all of the details about the good or distort them unconsciously. Amenity misspecification bias can be classified as symbolic, part-whole, metric and probability of provision biases. Symbolic bias happens when respondents stick to the symbolic meaning of amenity instead of specific levels of provision described. This happens usually regarding amenities with high share of non-use values. Part-whole bias happens when the respondents can not differentiate between different sub values or between sub values and total value. Another type of part-whole bias happens when respondent instead of valuing a specific policy evaluate all the related policies. A method that could be used to minimize this bias is to explain about the larger entity in the scenario and asking the respondents to not confuse it with the amenity which is going to be valued. Metric bias happens when the respondent uses his own metric instead of using the one intended by researcher. Probability of provision bias happens when the respondent assumes a probability for the provision of the good that is not the same of the researcher's. If respondents believe that scenario might not be provided, the value of the amenity will be underestimated.

Context misspecification bias is regarding "different elements in the questionnaire that provides context for valuing the amenity" (Mitchell and Carson 2005, P.252) and includes payment vehicle, property right, method of provision, budget constraint, elicitation question, instrument context and question order biases.

Payment vehicle bias happens when the payment vehicle is valued in a way not intended by the researcher. The type of the payment vehicle affects the amount of willingness to pay of the respondents. Property right bias happens due to the ambiguity of the respondents that they have property right over the amenity or they have to pay for it. Method of provision bias

depends on the particular agent that provides the amenity. For instance WTP amounts would be higher if a charity provides the public good and would be lower if governmental agencies provide the good as people may not trust Government. Budget constraint bias happens when due to the hypothetical nature of market respondents do not pay attention to their ability to pay. Some types of budget constraint bias include the case when respondent considers his own income as constraint when the intended constraint is household income (or vice versa) or when WTP question is about an amenity that respondents are already paying for that through taxes and responses regard the WTP question as an addition to what they already pay.

Elicitation question bias happens when the elicitation question does not meet what it intended to which is eliciting the highest amount one would pay and his firm commitment to pay. In order to avoid this bias, attention should be paid to the wording of scenario. Instrument context bias happens when questions that precede the CV scenario such as familiarity with amenity, attitudes regarding preservation, etc. influence WTP amounts in a directional way. Question order bias happens when order of the question impact the responses in an unintended fashion that happens usually in CV surveys that value several goods or different levels of a good.

Sample design and execution biases include population choice bias, sampling frame bias, sample non-response bias and sample selection bias. Population choice bias occurs when researcher misidentifies the population from which value would be elicited. As the divergence between those who pay and those who benefit increases, the task of identifying the target population becomes more sophisticated.

Sampling frame bias happens when sampling frame and population defined by researcher differ. A frame could be list of sampling units or method of generating a list. Sample non-response bias happens when there are differential response rates in different categories of respondents. Sample selection bias drives from the fact that in the survey those who do not respond have different expected value and mostly occurs in the surveys that respondents have the choice to respond or not.

Inference biases occur when the result of a CV study is used to infer value for another policy change rather than the one already studied and include temporal selection bias and sequence aggregation bias. Temporal selection bias occurs when valuation of policy changes over the time. Sequence aggregation bias occurs “in trying to add the value of independently obtained small policy changes to obtain the value of a large policy.” (Mitchell and Carson 2005,

P.283) Such as a bigger geographical area or more public goods that respectively are called geographical sequence aggregation bias and multiple public goods sequence aggregation bias. Due to these possible biases CV studies should be carefully designed and implemented.

Steven Shavel (1993) has divided the criticism of contingent valuation into six claims: respondents are not well informed about what they are being asked to, they might misrepresent their opinions, they may not have enough intention to answer questions carefully, they answer might show something different from valuation, they answer might depend on the way the questions are posed and formed, that contingent valuation estimates might be very variable.

The first one refers to the fact that respondents need great amount of data or knowledge in order to estimate loss or value respondents. The second happens as individuals may benefit from giving answers different from their true value as they might think that the result of the CV survey affects public or private decision. Third happens as respondents might need substantial conscious effort to evaluate the amenity. Forth happens for instance when the respondent wants to please the interviewer or avoid stinginess or when the respondent receives a utility benefit from responding to CV survey or when he links the good to a more general goal and experience a warm glow effect. Fifth happens when the form of question affect the answers in different ways for instance information provided in question might affect the answer or the form of the question might be in a way that affects incentive of the respondent to distort the truth. Another possibility is that the form of question might affect the ability of respondent to relate value of an amenity to other amenities and values from other use of their wealth. Another instance would be the case that in the question name of a company be mentioned as cause of a resource loss and therefore, the respondent uses this opportunity to express his disapproval of the big businesses. Or if there is a numerical reference in the question such as are you willing to pay minimum amount of X$ that can also affect the responses. The sixth criticism refers to the fact that CV results vary from one survey to another that could be due to the designation of the surveys. Shavel refers to three studies targeting at valuing the visibility at the Grand Canyon by reducing sulfur dioxide emissions by a power plant that yielded to different amounts. Base on these criticisms Shavel conclude that results of contingent valuation might not be meaningful, that might include factors different from valuation, might be affected by survey design or be vulnerable to manipulation.

In a tradeoff between advantages and disadvantages of using CVM, Shavel comes to conclusion that it is better not to use CV method. He names it as “potential benefits or

disadvantage of hard to measure component". In his opinion, potential benefit of CV measure is that the estimate can reflect true value of the amenities and could be used for regulatory decisions. Disadvantages include: possible biases in CVM that might led to wrong decisions, creating risk into the general regulatory and liability environment, creating greater volume of litigation. In his opinion disadvantages outweigh advantages and therefore, CVM should not be used.

Although mentioned biases in CVM method could not be eliminated completely, as mentioned cautious and careful designation of the study and the surveying process can control the biases and minimize them. Therefore, our opinion is closer to that of Mitchell and Carson that CV studies could be used as a useful and informative tool and should be designed and implemented by paying attention to all possible biases.

4.7 Contingent valuation and public policy

In the past two decades there has been increasing public concern particularly regarding environmental issues. These concerns have already been translated into the legislative action. However, the question is that to what extent CV studies have been applied in the processes of decision-making or as mentioned by Loomis (2006) do the real decision makers use the result of CV studies? The answer to this question is difficult. Loomis mentions as policy decisions are result of many items beside economic efficiency, it is hard to pinpoint at a specific method in policy making process and mention it as definitive factor in decision making.

Surveys show that people put a high value for instance on the protection of the environment and maintenance of historic sites (CCE, 1992 and IPSOS Mori, 2000). However, there is no market value for these assets and in these cases, public intervention is needed. In addition, the need for valid and reliable benefit estimates such as CVM that are able to capture total value of these assets become evident.

Policy makers and project managers who could be major users of economic valuations are often resistant. At the policy level, economic valuation in particular contingent valuation is considered with doubts. Many countries have environmental impact assessment (EIA) laws and regulations that need consideration of different alternatives. Some countries are adding

strategic environmental assessments into their laws and regulations. However, the role of economic valuation in policy making processes has not been very strong except in US that situation has been more in favor of using these valuations.

At the level of multilateral organizations there is the same situation. Biller et al. (2006, P.355) mentions: "the World Bank's Operational Policy (OP) 10.04 on economic evaluation of investment operations and Bank Procedure (BP) 10.04 set out the requirements for investment projects economic analysis. BP10.04 specifies that the economic evaluation of projects integrates financial, institutional, technical, sociological, and environmental considerations. Yet, other World Bank documents recognize the difficulties associated with economic valuation of public goods, public bads, and externalities and its use is still limited regardless of the fact that a need has been underscored for over a decade (Silva and Pagiola, 2003) ".

Policy makers dismiss economic valuations due to uncertainties while these valuations can help in the process of priority settings and choice among alternatives while maximizing social welfare. Resistance to use of CV method also comes from the fact that it is costly but attention should be paid to the fact that there is no other choice to estimate non-use values (Biller et al., 2006).

OECD (2002, P.114) indicates that: "CVM [Method] is likely to be most reliable for valuing environmental gains, particularly when familiar goods are considered, such as local recreational amenities. . . The most reliable studies (i.e. those that have passed the most stringent validity tests and avoided severe 'embedding' whereby values are not sensitive to the quantity of the good being offered) appear to have been those that have valued high profile species or elements that are familiar to respondents. In other cases, the need to provide information to elicit reliable values is a limit to both CVM and other attribute based choice models. "

Experiences in EU and US in the last decades show that CV studies could be a good source for decision making. However, it has been more widely used in US as people are more concerned about environmental goods. Bonnieux and Rainelli (2001) mention that people are generally aware of environmental challenges and are familiar with contingent valuation studies. However, for integrating the result of these studies into policy, significant improvements in the reliability and validity of these studies is required.

In the opinion of Barde and Pearce (1991) three obstacles exit that benefit estimate methods particularly CV is more limited in EU. These include: ethical/philosophical; political; and

methodological/technical and Kapp (1970) mentioned that Willingness to pay is rejected both by conservationists and also by the school of institutionalist economists. However, as time has passed CV has gained more credibility and has more vastly been used for decision making and regulatory measures.

According to Kuik *et al.* (1992), the use of benefit estimates in decision-making can be examined through a matrix which combines four purposes and three decision levels. Four purposes include: 1- Value assessments stimulate public debate and creates public awareness. 2- Assists in the cost-benefit analyses 3- when there are several choices, it helps to choose optimal option 4- Supports the actions of government agencies as it provides policy-making guidance. In term of decision making three levels include: 1-policy: Distinction should be made between the policy focused on the specific good or service and other policies can have some side effects on that good or service 2- Regulations: At this level the need for benefit estimate depends on the institutional context and the need for benefit estimates such as CV is evident. 3-projects: Benefit assessment of a project may be due to the governmental decisions such as environmental impact assessment (EIA).

It is difficult to identify the factors that influence public decision making and particularly the role of CV estimates. Guidelines stress the role of cost-benefit analyses or environmental impact assessments but the use of CV has not been explicitly mentioned. One of the reasons that has probably affected the extent of application of CV in environmental issues has been unfamiliarity of those in charge of policies with environmental economics. Bonnieux and Rainelli (2001) mention that this has been true regarding UK and has probably been the major reason why the French minister of environment has been reluctant to carry out value assessment studies; however, the situation is improving and for instance, in Germany Schulz got promotion to Federal Environmental Agency due to the value assessment of air quality improvement in Berlin and in continue, launched the project of Benefits of Environmental Protection-Cost of Environmental Pollution.

Use of valuation techniques to obtain monetary measures started by UK but Netherland has been the first country in Europe that has applied CV. These studies revealed that environmental actions not only cause cost but can also have benefits. Overall, acceptance of the evaluation techniques in decision making processes has been limited in EU.

In the UK the first CBA has been undertaken by the Roskil commission for finding a site for the third London airport. In this study, an analysis of noise nuisance using a hedonic house-

pricing and CV approach was conducted. This study was criticized a lot. Since then use of CBA dramatically increased for appraisal of governmental projects in UK. In UK, market-oriented conservative Government which has had the power since 1979 has played an important role in the acceptance of Willingness to pay measures and the efficiency of related policies (Bonnieux and Rainelli, 2001) and Monetary value estimates entered into official Treasury and Scottish office guidelines and CV has been used by Forestry Commission, National Rivers Authority and Ministry of Agriculture.

Germany has been one of the countries that have used CV method widely for crafting environmental policies particularly in the fields of air pollution and water quality. This more positive approach has been due to a federal regulation (1969) that has stressed the use of methods such as CVM. While the stress has been on CBA studies, only a few sectors such as transport have carried out rigorous, extensive CBA studies (Bonnieux and Rainelli, 2001).

In Italy since 1960s major public bodies such as the Mezzogiorno Development agency and the Fondo Investimenti Occupazioni have used CBA. (Panella, 1991) Several commissions and public bodies regarding public agricultural and forest properties have used CBA for recreational purposes and CV has gained acceptance in public decision making at least at the regional level (Bonnieux and Rainelli, 2001).

Situation in Norway is similar to UK. Governmental CBA guidelines recommend consideration of unpriced effects (Navrud, 1991). The locally adopted Regulatory Impact analysis provides a CBA framework for obtaining measures to reduce emissions of pollutants (Navrud and Strand, 1992). In Sweden, number of CV studies in different domains has been carried out but a few of them have been applied in the decision making process.

Use of CV studies in the decision making processes has been more limited in other European countries. Bonnieux and Rainelli (2001) indicate that although there is lack of valuation studies in France, France has a good history of CBA. They also indicate that “for some years planning permission applications for oil refineries, non-nuclear power stations, steelworks, integrated chemical installations, special roads, long-distance railways, large aerodromes, various types of waste disposal, and intensive rearing installations have had to be accompanied by environmental assessments. The requirement for such assessment can be traced back to the 1917 Act on Hazardous Establishments. This legislation was brought up to date by the Classified Installations for Environmental Protection Act (1976) and a recent Ordinance (1992) concerning the protection of neighborhood amenities, health, security, agriculture,

natural resources, and the environment, and conservation of cultural sites and monuments. (Bonnieux and Rainelli 2001, P.599) ”

From what reviewed, it is concluded use of CV studies in Europe has not entered to the regulation level and overall its use in decision making processes has been limited. Now we turn to the case of US and consider the application of CV in the.

Contingent valuation has been used by federal and state agencies in the United States for two decades. CV first appeared as a method to value recreational use of natural resources. CV obtained acceptance in US rapidly. This has been partly due to the recommendation of Dywer in 1977 for using CV in cost benefit analysis of water projects. Another reason was the post that Robert Davis that previously had conducted CV for his dissertation at Harvard occupied in the Office of Policy analysis in the Department of Interior. He had an important role in integration of CV approach into the Water Resources Council cost-benefit regulations for water related Federal agencies such as US army Corps of engineers and US Bureau of reclamation.

The US army Corps of Engineer issued a handbook for performing CV studies and applied it for its different projects. The US Bureau of Reclamation used CV for two controversial projects: Glen Canyon Hydropower-Gran Canyon National Park study and the San Joaquin Valley Agricultural Drainage Programme. The US Forest Service Rocky mountain Forest has also performed several CV studies since 1980s.

Forest service has used CV measures to obtain what they called RPA or resource planning act values which meant a unit day value for recreation in forests. RPA values are used for the benefit estimation of alternative five-year strategic plans for the entire National Forest System and for the benefit estimate of individual forest plans. Forest service has also used the value obtained in CV studies in the literature for decision making (Loomis, 2001). The US fish and wildlife service also uses and publishes its CV analyses and also uses the available CV studies in literature. Loomis (2006) mentions 17 studies concerning threatened and endangered species that only a few have been conducted for the policy purpose. However, these academic researchers have been used by agencies. The National Park Service (NPS) has used CV in several studies concerning air quality at different national parks (Row and Chestnut, 1983).

In US CV studies have also been used for the law cases in which CV has acted as a strong tool for instance for a hydroelectric dam proposal for the Kootenai Falls area in Montana that CV results indicated that benefit of preservation is higher than building the dam. Another case was

Exxon Valdez that was explained in section 4.2.2. These cases revealed to the economists that CV can really matter.

One of the reasons of increase in the use of CV has been Reagan executive order 12291 which stressed use of CBA on major regulations. Following that many CV studies carried out concerning environmental regulation related to water quality, air quality, etc. For instance, the Environmental Protection Agency contracted the Research Triangle institute to estimate the benefits of proposed SPA regulations for reducing pollutant loading from pulp and paper mills on twelve river (Desvousges et al., 1983)

CV has been used by the individual states in the US as well as Federal Government. For instance, allocation of water is one of the subjects controlled by states. One water allocation issue that has caused that environmentalists become against municipal water diversions in Los Angeles relates to Mono Lake in the eastern Sierra Nevada Mountains near Yosemite National Park. Department of Water and Power was diverting several streams that would normally flow into Mono Lake and this lowered the level of Mono Lake about forty feet. Finally, the California Supreme Court ruled that the State must balance its authority to grant water rights. To find out what was a reasonable balance between Los Angeles's purchase of more expensive replacement water and the value of the Mono Lake environment, a CV study was carried out to assess total economic value of preserving Mono Lake (Loomis, 2001).

Several states fish and game agencies have also used CV for the evaluation of natural resources. For instance, State of Montana has used CV a lot for its studies and in 1985 assigned 300,000 dollar for a series of hunting and fishing economic studies (Duffield and Stewart, 1988). The state of Montana also carries out economic analysis for habitat acquisition in which CV has been used. Power companies such as Idaho Power have also carried out valuation studies by demand of state agencies.

Loomis (2001) describes the situation in US as follows: “The issuance of the regulations brought appeals by many parties. Industry groups challenged the use of CV to establish damage assessments. They claimed CV resulted in merely speculative values. The District Court of Appeals ruled that the Department of Interior (DOI) had carefully considered the strengths and weaknesses of CV and even eliminated the use of CV to measure willingness-to-accept values. The US Court of Appeals find DOI's promulgation of Contingent Valuation methodology reasonable and consistent with congressional intent, and therefore worthy of deference. The court went on to dismiss industry's challenge to rebuttable presumption for CV and the use of

CV for measuring option and existence values. In 1991 DOI issued proposed regulations that retained CV as a technique still having rebuttable presumption and one that can be used to measure existence values. ”

National Oceanic and Atmospheric Administration (NOAA) considered use of CV method for the valuation of natural resources under oil pollution act. NOAA Appointed a Blue-Ribbon Panel, co-chaired by two Noble Prize economists and in 1993 came to conclusion that carefully designed and implemented CV studies can be useful for juridical cases and decision making processes.

According to what was examined US has a long history of application of CV studies for decision making processes and for examining different regulations across US. Its application has been quite well recommended by formal guidelines and authorities. It has been used in different juridical cases as well and its use will probably expand even more in future.

Use of contingent valuation in developing countries has been extensive but its application for the purpose of public policy is not clear. However, Biller et al. (2006) in their study on the use of contingent valuation in developing countries indicate that policy makers are in general resistant to use this method for the value assessment and view it with suspicion. Several reasons have been given for that by Biller et al. include 1- The benefits of using economic valuation are not clear 2- there are many environmental issues that cannot be monetized 3 - CV is difficult to carryout and costly.

FAO (Food and Agriculture Organization of the United Nation) in their web site indicate that the need for cost benefit analyses and obtaining WTP estimates for reduced levels of pollution has increased in developing countries by Governments in order to help them to set standards and impose pollution control measures (FAO web site).

4.8 Synthesis of results

Synthesis of the results concerning validity and reliability of contingent valuation and biases in CVM are shown in the tables below.

Table 3: Types of validity test

Types of validity test	definition

Content Validity		Tests whether the measure covers the construct's domain well. It can be assessed usually by examination of wording of questions as it provides stimulus to which respondents reply.
Criterion Validity		It is concerned with whether the measure of construct is related to other measures which might be regarded as criteria and could be used as a proper test for considering validity of WTP measure.
Construct Validity	Convergent validity	Concerns the correspondence between a measure and other measures of the same theoretical construct or as mentioned by Carson et al. (1996) is by way of comparing the CV results with the values obtained through another revealed preference method.
	Theoretical validity	Investigates the degree to which findings of CVstudy meets theoretical expectations. To this mean, a regression is carried out to find out about different independent variables that can be determinative on the amount of dependent variable WTP. The size and sign of the estimated coefficient reveals the consistency or inconsistency of the results with theory.

Table 4: Types of reliability test

Types of reliability test	
Test-retest process	Carrying out survey in two different time intervals (expensive method)
Several sub-sample	Taking several sub-sample (expensive method)
R^2 in Regression	R^2 should be at least 0.15 in order to have a reliable CVM study (the most common method)

Table 5: Main classification of biases in CVM

Main classification of Biases in CVM studies
1- **Misrepresentation of Responses: These Biases happen when a respondent does not reveal his or her true willingness to pay for different reasons. For example strategic bias**
2- **Value hints: These biases happen when some elements of the scenario are used by the respondent as a hint for the possible value of the good or service. For example starting point bias**
3- **Scenario misunderstandings: These biases happen when the respondent does not understand the scenario as intended for example part-whole bias**
4- **Sample Design and Execution Biases: These biases happen when errors in designation and execution of samples occur for example population choice bias**
5- **Inference Biases: These biases happen when the result of a CV study is used to infer value for another policy change rather than the one already studied for example Sequence aggregation bias**

Conclusion

This chapter shows that CVM has a long history of application since 1963 that has been its first application by Davis. Its applications have been expanded in different fields from environment to transportation, health, biodiversity, art and historic sites and monuments. Its application for the historic sites and monument has been very limited. This method has a sound basis in welfare theory of economics as its econometric theory was discussed in this chapter. The validity and reliability of CVM that were discussed in this chapter are quite important. Notably, the related tests in available studies suggest that CVM is one the whole valid and reliable. Three types of validity test have been used for CV studies: Content validity, criterion validity and construct validity test. Construct validity in turn includes two tests: convergent validity test and theoretical validity test. All these tests do not have the same level of significance. The most important test is theoretical validity test. To this mean, a regression is carried out to find out about different independent variables that can be determinative on the amount of dependent variable WTP. The size and sign of the estimated coefficient reveals the consistency or inconsistency of the results with theory. Reliability that is tested through techniques that have been used for the assessment of variance in the CV studies such as test-retest process and using survey for several sub-sample are quite expensive and therefore, usually researchers do not carry out such tests. In the absence of such tests, researcher needs to prove that WTP amounts are not random responses and criterion that could be used to this mean is R^2 in regression between WTP and explanatory variables. Biases in CVM that have been discussed by different scholars and more extensively by Mitchell and Carson (2005) should be taken into account seriously when designing and implementing CV studies; otherwise, the result of CV study would be invalid. Use of CVM as a method for value assessment of total value (TEV) that could be used in cost-benefit analysis and decision making processes is growing in different countries but still limited; though, the application has been extensive in US.

Chapter 5: Data Analysis

Introduction

In this chapter, analysis procedure has been explained. Studies that have been used as reference as well as distinctions and add-on of the analysis part have been explained. Following that, the results of the study has been presented and discussed. Analysis includes 4 parts: Descriptive statistics, Attitudes, Value assessment (total value and sub-values) and inferential statistics that include regression analysis and correlation analysis.

5.1 Analysis procedure

The analysis has been done by SPSS 18 software and **includes 4 main parts: First part: Descriptive Statistics, Second Part: Attitudes, Third part: Value assessment of the Ferdowsi mausoleum, Fourth part: Inferential statistics**

As mentioned in chapter 3, survey has been taken from the people and tourists of Mashhad city in north east of Iran to assess the value they put on Ferdowsi mausoleum located in Tus historic area near Mashhad city. Mashhad is the second largest city in Iran and is a touristic city due to the presence of a holy shrine in it.

This city has some foreign tourists but due to the political reasons in the previous years, the number of foreign tourists had decreased but we are expecting a change due to the new policies. Therefore, we have not identified foreign tourists in our study.

For the analysis different Contingent Valuation studies regarding historic sites and buildings reviewed in Chapter 4 section 4.2.3 have been studied and two researches in the environmental economics have also been consulted as reference in our study: Edstrom, Nilsson and Stage (2012) have used contingent valuation method to assess WTP of the residents of the Heilongjiang province in China to maintain a natural forest protection program provided by Chinese Government using payment card elicitation format, Oglethorpe and Miliadou (2010) assessed the use and non-use values of the lake Kerkini in Greece and did a distinguished job

by estimating the total non-use values and some known sub non-use values. They applied bidding game elicitation format in their study.

We have used the contingent valuation to measure the total value of a mausoleum for the first time and this is the first time that this method has been applied for the purpose of value assessment of historic sites in Iran. The research done by Oglethorpe and Miliadou has been used as one of the main references in our research. We have measured the total value (use and non-use values) of the Ferdowsi mausoleum site and have used the same method that Oglethorpe and Miliadou have used to estimate the total non-use values and sub non-use values. As it was explained in chapter 3, people who announced that they were willing to pay an amount were then asked in the survey to assign percentages to different sub values (Dividing 100% between sub values). In order to minimize the error, sub values were explained very well to the respondents in order to help them in the process of value assessment. Though, this method might not be a precise measurement of the sub values, it can give us some weights and could be of value. This work has been done for the first time regarding a historic site and we have covered all the identified non-use values as provided in our value typology. Oglethorpe and Miliadou have divided the total value into use value, wildlife value, existence value, option value, bequest value and altruistic value in their study.

5.2-Descriptive statistics

5.2.1 Age distribution of the respondents

In table 6, we have the descriptive statistics about the age of the respondents.

Table 6:Age of the respondents

N	Valid	172
	Missing	38
Mean		32.70
Std. Deviation		10.54
Skewness		1.24
Std. Error of Skewness		.185
Minimum		15.00
Maximum		70.00

As you can see the average age of the respondents is about 33 years old. The lowest and highest ages are respectively 15 and 70 years old. As the skewness is 1.24 and positive, therefore, age of the respondents is right skewed and frequency of the people with low age is more than the high age that indicates that the population that sample has been taken from is young (Which is the same in population of Iran).

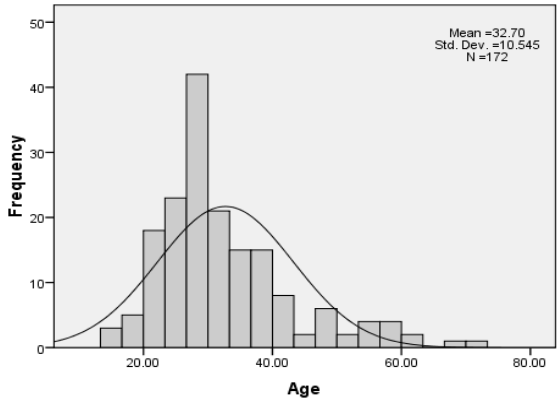


Figure 2: Age of the respondents

5.2.2 Distribution of the respondents sex

In table 7, descriptive statistics regarding the sex of the respondents have been shown.

Table 7: Sex of the respondents

Sex		Frequency	Percent	Valid Percent
Valid	**female**	99	47.1	**47.8**
	Male	108	51.4	**52.2**
	Total	207	98.6	100.0
Missing	System	3	1.4	
Total		210	100.0	

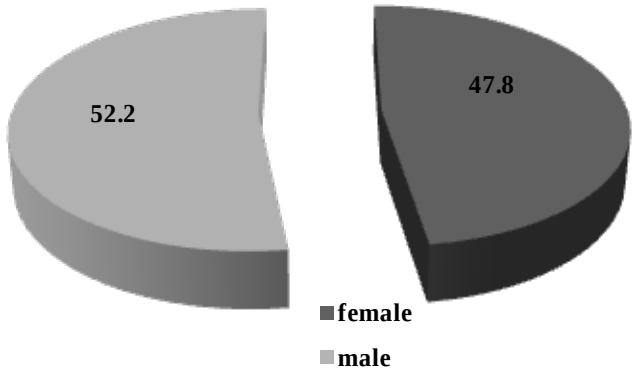


Figure 3: Pie chart for the sex of the respondents (%)

As it could be seen in the table 7 and figure 3, 47.8 percent of the respondents are female and 52.2 percent are male.

5.2.3 Distribution of the level of education of the respondents

In table 8, descriptive statistics regarding the education level of the respondents has been shown.

Table 8: Education level of respondents

Education		Frequency	Percent	Valid Percent
Valid	**No diploma**	11	5.2	**5.3**
	Diploma*	52	24.8	**25.1**
	Associate's diploma**	38	18.1	**18.4**
	Bachelor	69	32.9	**33.3**
	Master	26	12.4	**12.6**
	Ph.D	11	5.2	**5.3**
	Total	207	98.6	100.0
Missing	System	3	1.4	
Total		210	100.0	

*Certificate given after finishing high school **2 years of university studies

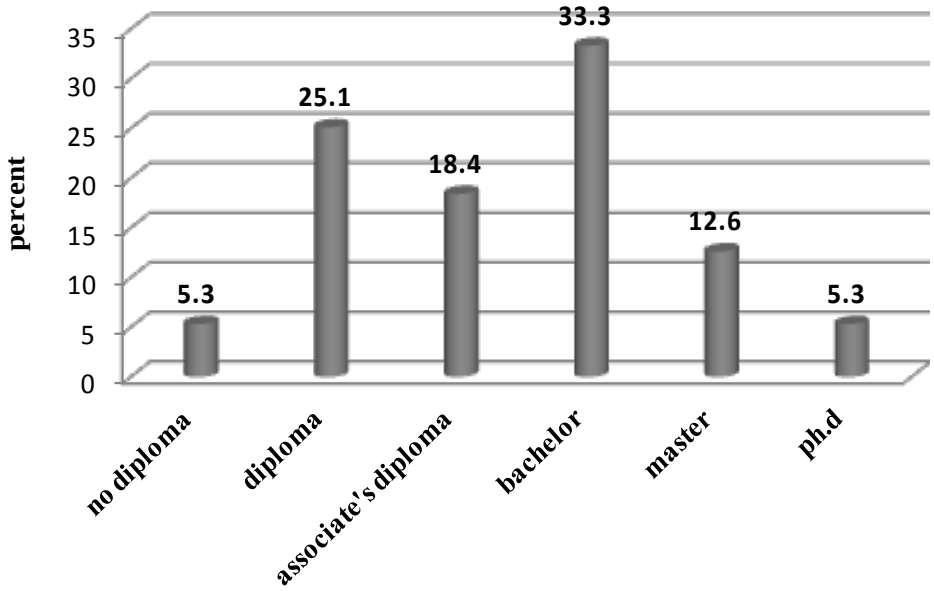


Figure 4: Bar chart of education level of the respondents (%)

As it is shown in table 8 and figure 4, 5.3 percent of the respondents have no diploma[4], 25.1 percent diploma, 18.4 percent associate's[5] diploma, 33.3 percent bachelor, and 12.6

[4] Diploma= high school certificate
[5] Associate diploma= 2 year university study

percent master and 5.3 percent have Ph.D. Therefore, the level of education of the most people in the sample is bachelor which corresponds to the population as there is a high tendency in Iran for the post secondary education.

5.2.4 Job distribution of the respondents

In table 9, descriptive statistics of the career of the respondents has been shown.

Jobs have been classified into four categories: 1-Unemployed, University Student, Housewife… 2-Workers (Sales workers, service workers…) 3- Technicians and Government employees 4-Professionals (doctors, engineers, consultants, artists…)

Table 9: Job distribution of the respondents

Job		Frequency	Percent	Valid Percent
Valid	**Unemployed, University student, Housewife**	52	24.8	**28.1**
	Workers (sales worker, service worker…)	50	23.8	**27.0**
	Technician and Government employee	44	21.0	**23.8**
	Professional (doctor, consultant, engineer, lawyer, artists…)	39	18.6	**21.1**
	Total	185	88.1	100.0
Missing	System	25	11.9	
Total		210	100.0	

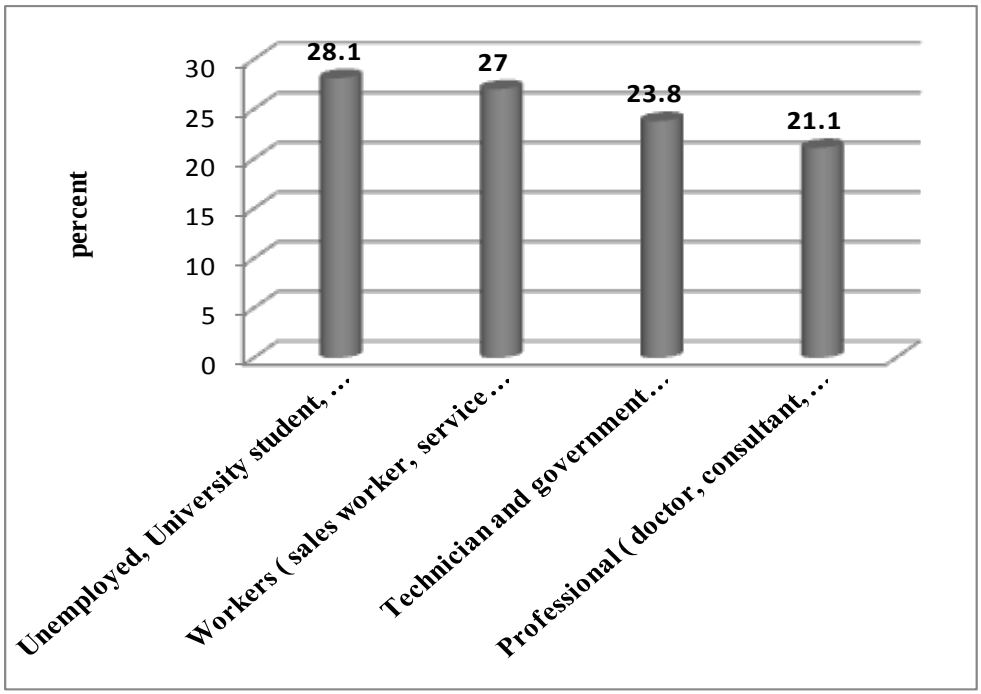


Figure 5: Bar chart of the job distribution of the respondents (%)

As it is shown in the table 9 and figure 5, the highest percentage of the careers belong to the category of unemployed, university student and housewife. The second highest is the workers category which comprises job 27% of the people surveyed.

5.2.5 Household number of the respondents

Table 10: Mean household number in the survey

N	Valid	201
	Missing	9
Mean		3.32
Std. Deviation		1.61
Skewness		1.65
Std. Error of Skewness		.172
Minimum		1.00
Maximum		11.00

As it is seen in the table 10, average household size is 3 people; the smallest and largest household size in this sample is respectively 1 and 11. As the skewness is 1.65 and positive; therefore, the size of household in this sample is right-skewed and this shows that the most families in this sample have a small household size.

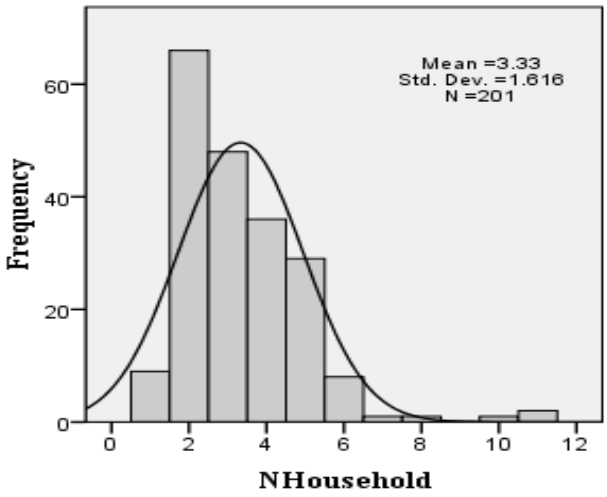


Figure 6 : Household number

5.2.6 Distribution of the monthly expenditure of respondents

Table 11: Monthly expenditure of the respondents

	Expenses	Frequency	Percent	Valid Percent
Valid	**less than 500000t**	56	26.7	**27.6**
	between 500000 and 1000000t	105	50.0	**51.7**
	between 1000000 and 2000000t	19	9.0	**9.4**
	between 2000000 and 3000000t	13	6.2	**6.4**
	more than 3000000t	10	4.8	**4.9**
	Total	203	96.7	100.0
Missing	System	7	3.3	
Total		210	100.0	

*1$ = 3036 toman 1€ = 4148 toman

Rial = Official currency of Iran Toman = Currency used by people 10 Rial = 1 Toman

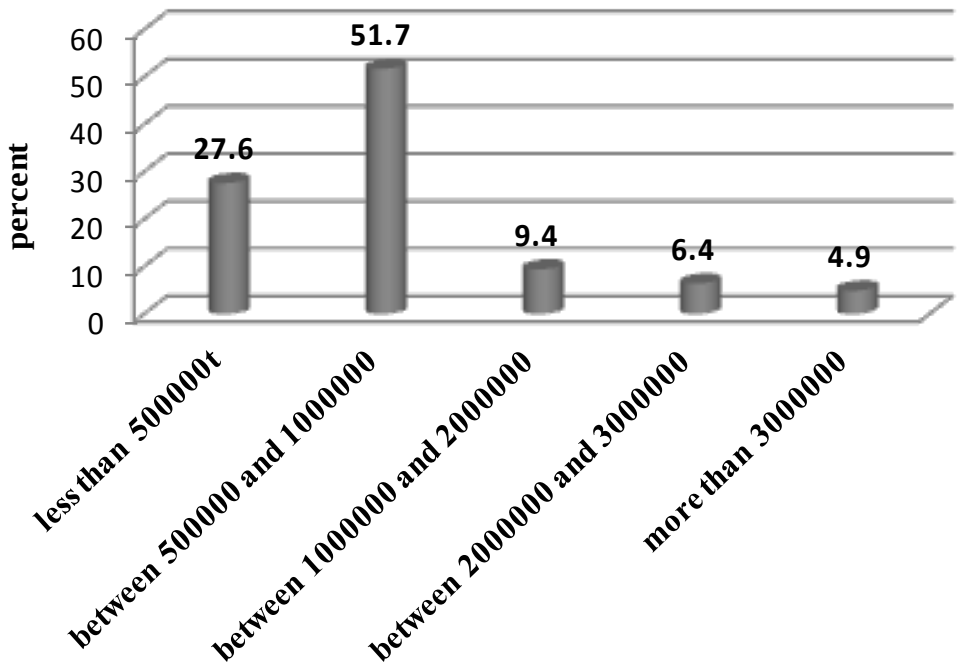


Figure 7: monthly expenditure of the respondents (t)

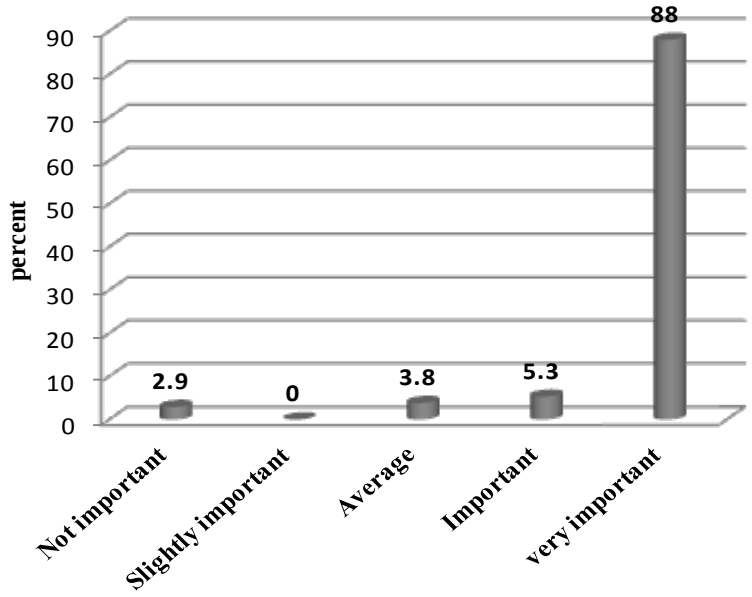
As it is seen in table 11 and figure 7, the amount of the monthly expenditure of the majority of the respondents (51.7 percent) is between 500,000 and 1,000,000.

5.3 Attitudes

Questions in the attitude part of the questionnaire have been mentioned here followed by the results obtained.

Table 12 & Figure 8: In your opinion, what is the significance of maintaining and reviving historical and cultural monuments?

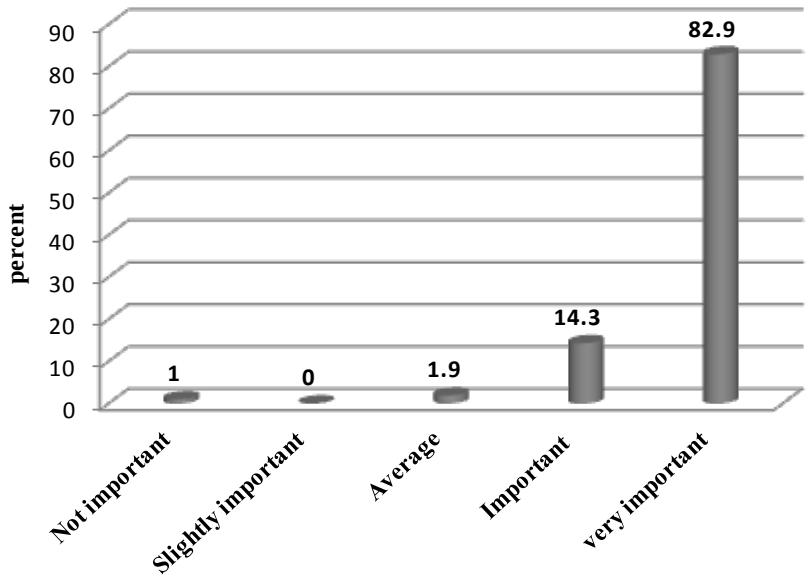
		Frequency	Percent	Valid Percent
Valid	**Not important**	6	2.9	**2.9**
	Slightly important	0	0	**0**
	Average	8	3.8	**3.8**
	Important	11	5.2	**5.3**
	very important	184	87.6	**88.0**
	Total	209	99.5	100.0
Missing	System	1	.5	
Total		210	100.0	



As it is shown in the table 12 and figure 8 above, the significance of maintaining and reviving historical monuments in the opinion of the most respondents (88.0 percent) is “very important”. This shows that in general people put high value on the restoration of historic sites and monuments.

Table 13 & **Figure 9: What is the significance of maintaining and reviving cultural complex of Ferdowsi mausoleum to you?**

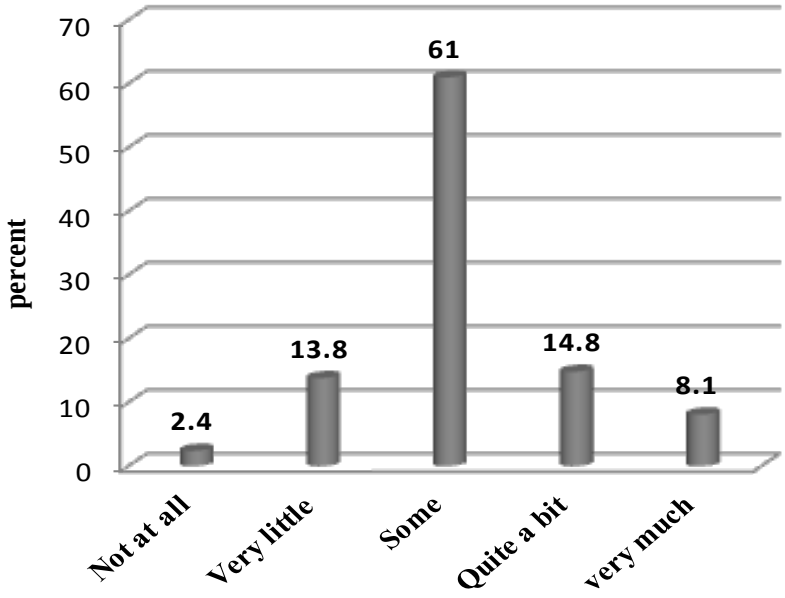
	Frequency	Percent
Not important	2	**1.0**
Slightly important	0	**0**
Average	4	**1.9**
Important	30	**14.3**
very important	174	**82.9**
Total	210	100.0



As it is shown in the table and figure above, most of the respondents, 82.9 percent consider that maintaining and reviving cultural complex of Ferdowsi mausoleum is very important while 14.3% mentioned that it is important to them; therefore, totally 97.2% of the people in the sample have put a high value on the maintenance and revival of the Ferdowsi mausoleum. This high percentage proves the high respect that people have for the Ferdowsi poet and his site as expected.

Table 14 & Figure 10: How much is your knowledge about Ferdowsi (poet)?

	Frequency	Percent
Not at all	5	**2.4**
Very little	29	**13.8**
Some	128	**61.0**
Quite a bit	31	**14.8**
very much	17	**8.1**
Total	210	100.0

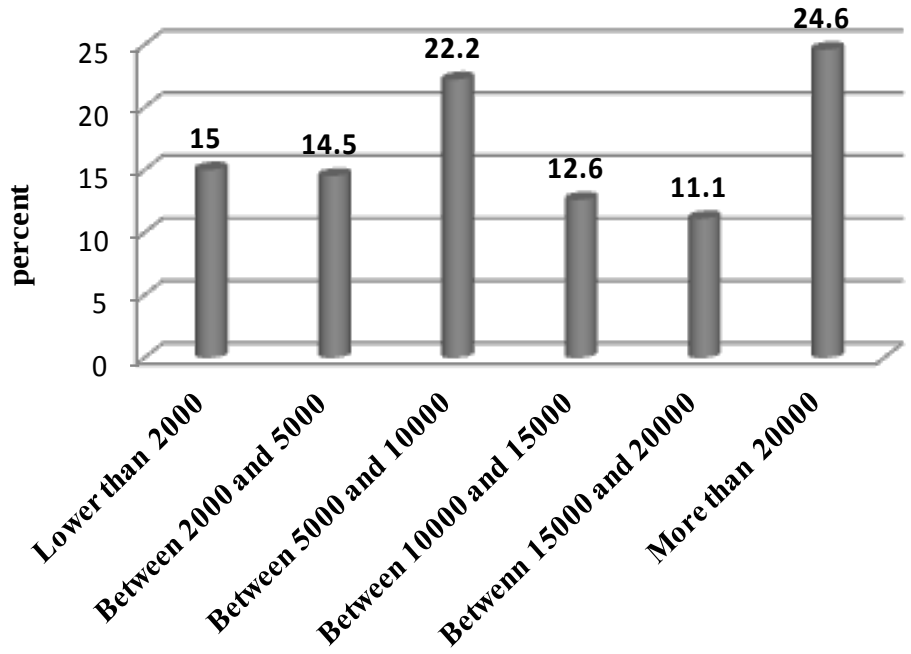


As it is shown in the table 14 and figure 10, the knowledge of the most respondents (61.0 percent) concerning the poet, Ferdowsi is about average. 83.9% have an average and above average knowledge about Ferdowsi.

Table 15 & Figure 11: How much do you spend yearly for visiting historic sites in Iran?

		Frequency	Percent	Valid Percent
Valid	**Lower than 2000t**	31	14.8	**15.0**
	Between 2000 and 5000t	30	14.3	**14.5**
	Between 5000 and 10000t	46	21.9	**22.2**
	Between 10000 and 15000t	26	12.4	**12.6**
	Between 15000 and 20000t	23	11.0	**11.1**
	More than 20000t	51	24.3	**24.6**
	Total	207	98.6	100.0
Missing	System	3	1.4	
Total		210	100.0	

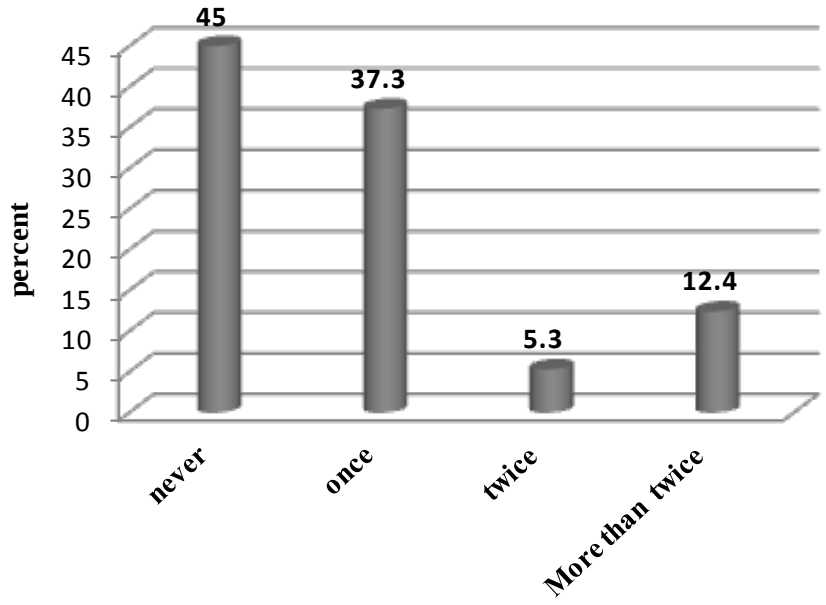
*1$ = 3036 toman 1€ = 4148



As it is shown in the table 15 and figure 11, two categories have the highest percentages. The highest percentage of the respondents (24.6 percent) spends yearly more than 20,000 tomans for visiting Iran's historic sites while 22.2 percent spend between 5000 and 1000 tomans.

Table 16 & Figure 12: How many times have you visited Ferdowsi mausoleum during last year?

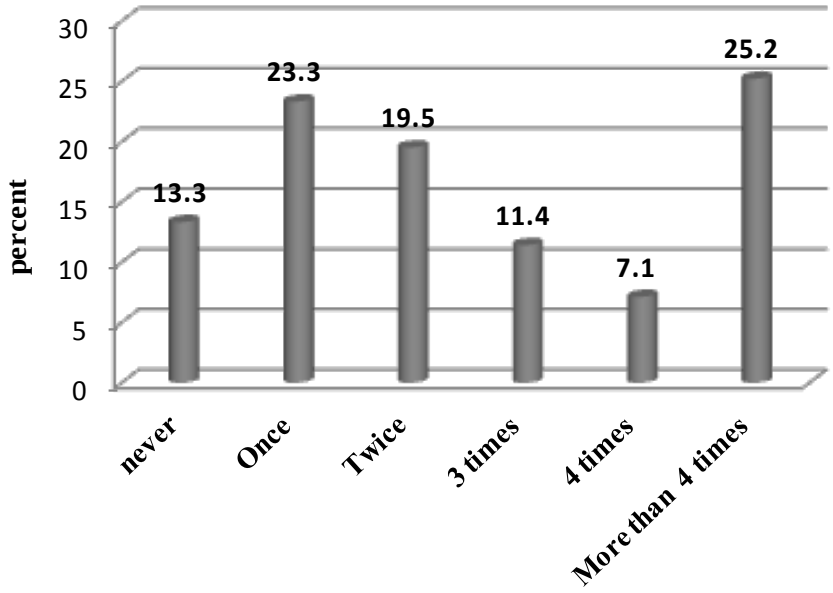
		Frequency	Percent	Valid Percent
Valid	**Never**	94	44.8	**45.0**
	Once	78	37.1	**37.3**
	Twice	11	5.2	**5.3**
	More than twice	26	12.4	**12.4**
	Total	209	99.5	100.0
Missing	System	1	.5	
Total		210	100.0	



As it is shown in the table and figure above, 55% of the people in the sample have visited Ferdowsi mausoleum at least once during the last year that is relatively a high percentage while among them 37.3% have visited the site only once. 45% of the respondents have not visited the site during the last year.

Table 17 & Figure 13: How many times have you ever visited Ferdowsi mausoleum?

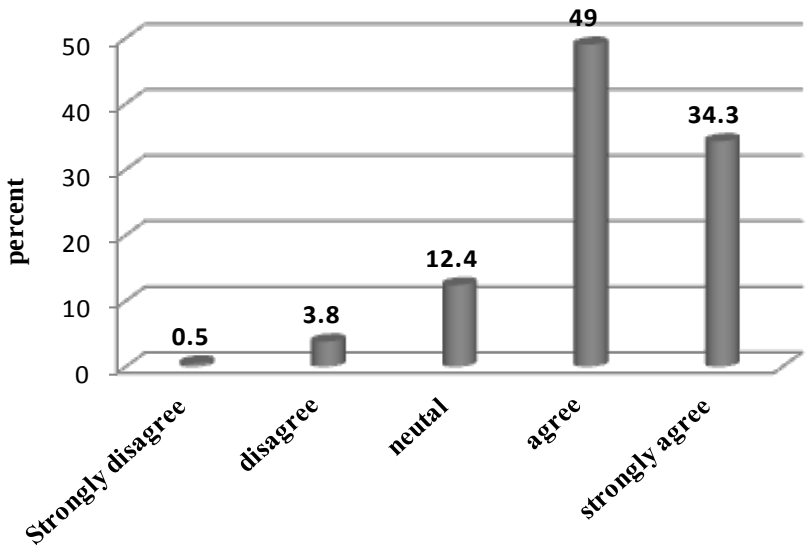
	Frequency	Percent
Never	28	**13.3**
Once	49	**23.3**
Twice	41	**19.5**
3 times	24	**11.4**
4 times	15	**7.1**
More than 4 times	53	**25.2**
Total	210	100.0



As it is shown in the table and figure above, the highest percentage of respondents (25.2 percent) have visited the mausoleum more than 4 times. 86.5% have visited the Ferdowsi mausoleum site at least once in their life that is a high percentage as expected as Ferdowsi is a national character for Iranian people. Only 13.3% have never visited the site.

Table 18 & Figure 14: In your opinion, does Ferdowsi Mausoleum has value for those not visiting it?

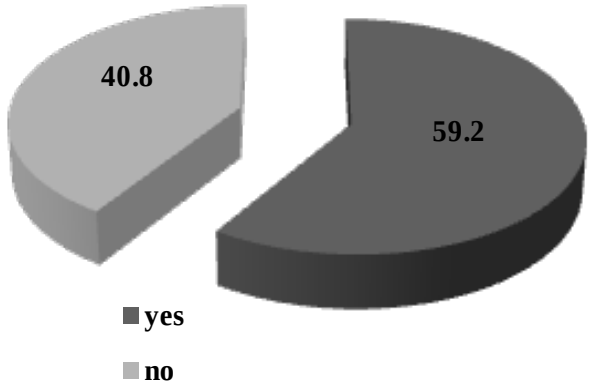
	Frequency	Percent
Strongly disagree	1	**.5**
disagree	8	**3.8**
neutral	26	**12.4**
Agree	103	**49.0**
strongly agree	72	**34.3**
Total	210	100.0



As it is shown in the table and figure above, most of the respondents (49.0 percent) agree with this idea that Ferdowsi mausoleum has also values for those who do not visit it. While 34.3% strongly agree that Ferdowsi mausoleum have also values for those who do not visit it. Totally, 83.3% agree that that Ferdowsi mausoleum has also values for those who do not visit it. This indicates that Ferdowsi mausoleum has high non-use values.

Table 19 & Figure 15: In your opinion, are there some other public affairs for investment that have priority over maintenance and revival of Ferdowsi mausoleum?

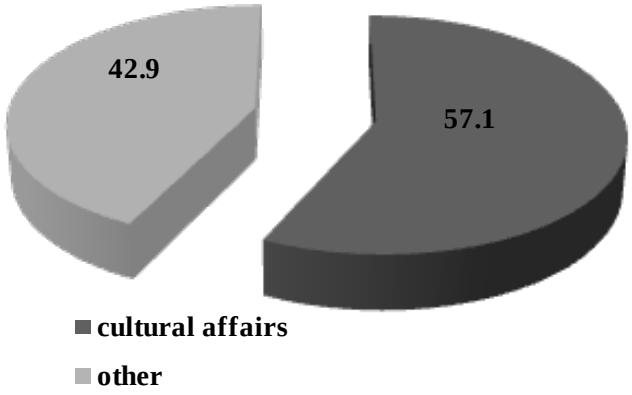
		Frequency	Percent	Valid Percent
Valid	**Yes**	122	58.1	**59.2**
	No	84	40.0	**40.8**
	Total	206	98.1	100.0
Missing	System	4	1.9	
Total		210	100.0	



As it is shown in the table and figure above, most of the respondents (59.2 percent) agree with this opinion that there are more important public affairs for investment than maintenance and restoration of Ferdowsi mausoleum. The reason has been asked in the next question.

Table 20 & Figure 16: If Yes, what affaires?

		Frequency	Percent	Valid Percent
Valid	**cultural affairs**	68	32.4	**57.1**
	Other	51	24.3	**42.9**
	Total	119	56.7	100.0
Missing	System	91	43.3	
Total		210	100.0	



As it is shown in the table and figure above (57.1 percent) believe that more investments should be done for the cultural affairs rather than maintenance and revival of the Ferdowsi mausoleum. The reason could be that there is a need for further investment for cultural centers, libraries and cultural programs.

5.4 Value assessment of Ferdowsi mausoleum

Totally, we had 250 usable questionnaires. Finally, 40 of them were omitted as protest bids[6]. The results have been shown below:

Table 21 : In accordance to the significance of Ferdowsi and the role that he has played in Iran's culture, are you willing to pay an amount of money for the maintenance and revival of his mausoleum?

Responses		Frequency	Percent	Valid Percent
	Yes	166	66.4	**67.5**
	no	80	32.0	**32.5**
	protest bids	40	16.0	**16.25**
	non-protest bids	40	16.0	**16.25**
	Total	246	82.4	100.0
Missing	System	4	1.6	
Total		250	100.0	

People that gave a No answer mentioned different reasons including : I am not interested in, I have other priorities as the cost of living is high, I need to solve first my personal problems or I do n't have enough financial mean and also some people indicated that this is Government responsibility.

The results after omitting the 40 protest bids are as follows:

[6] As mentioned in chapter 3, protest bids are untrue zero bids which means that the true value of the assessed good or service in not zero for that person but due to some reasons he does not reveal his real willingness to pay. Please refer to the section 3.5 in chapter 3 for the complete explanation.

Table 22: Yes/No responses to the WTP question after omitting protest bids

Responses		Frequency	Percent	Valid Percent
	Yes	166	79.0	**80.6**
	No	40	19.0	**19.4**
	Total	206	98.1	100.0
Missing	System	4	1.9	
Total		210	100.0	

As it could be seen in the table above, percentage of the respondents who are willing to pay an amount is 80.6 percent, that from this percentage 70.4 percent were visitors[7] and 10.2 percent were those that had never visited Ferdowsi mausoleum in their lifetime. 19.4 percent of the respondents gave a NO answer to this question and their reasons for unwillingness were 'not being interested in' and 'having other priorities'.

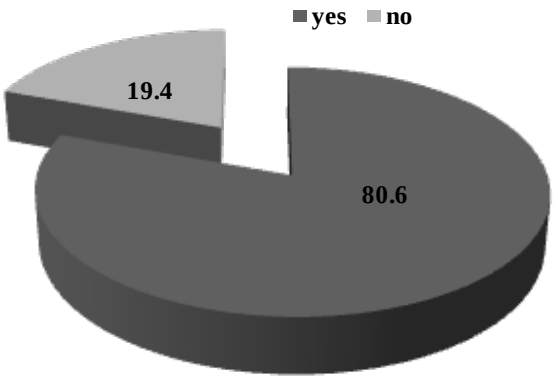


Figure 17: Pie chart of percentage of Yes/No answer to WTP question (after omitting protest bids)

[7] Those who have seen the mausoleum at least once in their life

5.4.1 Studying the distribution of WTP, mean and median WTP and total WTP.

In table 23, we can see the distribution of WTP.

Table 23: WTP Responses

Willingness to Pay(t[8])	Frequency	Percent
1000	33	19.4
2000	34	20.0
5000	31	18.2
10000	22	12.9
15000	8	4.7
20000	6	3.5
25000	5	2.9
30000	5	2.9
50000	8	4.7
100000	8	4.7
>100,000	10	5.9
Total	170	100.0
No. of non-protest 0 bids	40	19.0
Total	210	---
Mean WTP= 19957.1429t ≈199570 Rial ~ 5€~ 7$	**Median = 5000t =50000Rial ~1€ ~2$**	**Total WTP ≈ 326.33 milliard t ≈ 3.26 billion Rial ~78671649€~107486825$**

*1$ = 3036 toman 1€ = 4148 toman Rial = Official currency of Iran Toman = Currency used by people 10 Rial = 1 Toman

[8] . toman

Base on the results shown in table 23, it is shown that mean WTP for each respondent in the sample is equal to about 199570 Rial (19957 Toman) which corresponds to about 5€ or 7$ (base on the exchange rates at the moment of writing up the thesis) and the median is 50000 Rial (5000 Toman) which corresponds to 1€ or 2$. The amount of average is high for people. Also total WTP is calculated by multiplying the mean WTP into the population (Number of residents and tourists above 15 years old in Mashhad city = 16,351,637), and the result is approximately 3.26 billion Rial (326.33 milliard Toman) which corresponds to about 78671649€~ 107486825$.

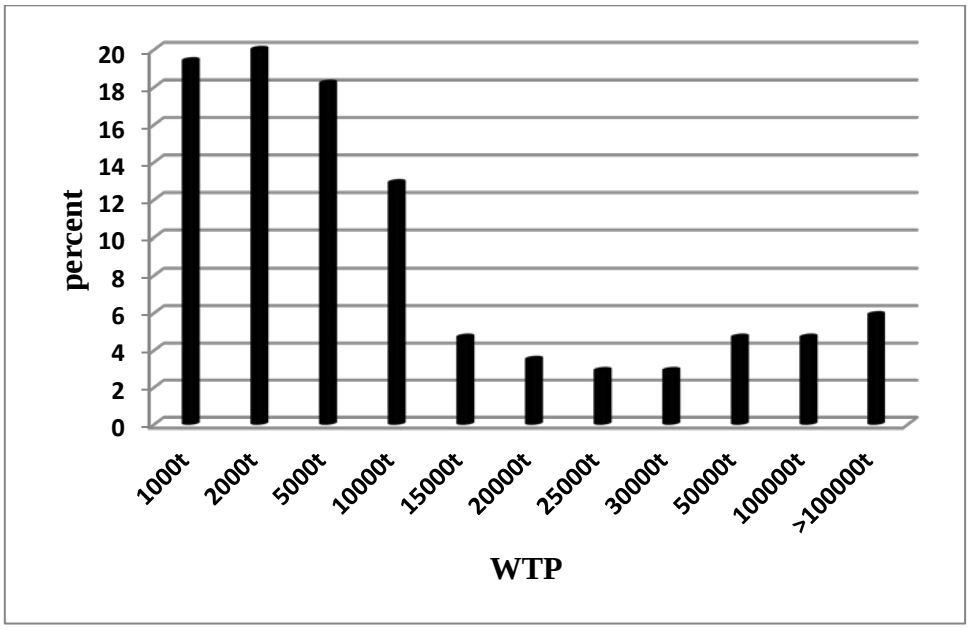


Figure 18: Distribution of WTP

5.4.2 Percentage of WTP as tickets and donations

Table 24: WTP as tickets and donations in the sample

	Ticket price*	Donation
Total	1312500t~316€~432$	2878500t~694€~948$
Mean	7720.5882~2€~3$	16932.3529~4€~6$
Percent	31.32	68.68
Valid	170	170
Missing	40**	40

*1$ = 3036 toman 1€ = 4148 toman Rial = Official currency of Iran

Toman = Currency used by people 10 Rial = 1 Toman ** 40 zero bids

According to the table above, 31.32 percent of the total WTP of the people in our sample is in the form of ticket and 68.68 percent in form of donations. Total WTP in the sample is the sum of 1312500 toman (= total WTP in form of ticket) and 2878500 toman (=WTP in form of donation), which is equal to 4191000 toman. Also, the mean amount that people in the sample are willing to pay in the form of ticket is about 7720 toman and the mean amount for donation per person in the sample is about 16932 toman. Total WTP in the form of ticket and in the form of donation is calculated by multiplying the mean WTP in form of ticket and mean WTP in form of donation by the total population (residents and tourists of Mashhad city above 15 years old = 16,351,637 people) which leads to 126.25 milliard toman total WTP in form of ticket and 276.86 milliard toman total WTP in form of donation. As we can see in table 25 below, 28.8 % of the people in the sample were willing to divide their WTP equally between ticket and donation and 25.5 percent in the form of ticket only and 14.1 percent in the form of donation. Totally, 57.7 percent of the people in the sample were willing to assign 50% or more percentage of their WTP into the ticket form.

Table 25: Distribution of different combinations of ticket and donation as percentages

Ticket%	Donation%	Frequency	Percent	Valid Percent
0%	**100%**	24	11.4	14.1
5%	**95%**	1	.5	.6
10%	**90%**	9	4.3	5.3
20%	**80%**	12	5.7	7.1
25%	**75%**	5	2.4	2.9
30%	**70%**	13	6.2	7.6
40%	**60%**	8	3.8	4.7
50%	**50%**	49	23.3	28.8
60%	**40%**	3	1.4	1.8
70%	**30%**	1	.5	.6
75%	**25%**	1	.5	.6
80%	**20%**	1	.5	.6
90%	**10%**	0	0	0
100%	**0%**	43	20.5	25.3
Total		170	81.0	100
Non-protest 0 bids		40	19.0	
Total		210	100	

5.4.3 Studying the Sub-WTP for the use and non-use values

In table 26, the mean WTP for the use and non-use values has been calculated.

Table 26: Mean and Median WTP for sub-values (t=Toman)

Question	Mean Percent	value	Mean value (t)
What proportion of your WTP would you like to be assigned to:			
What you have gained during your visits	27.65	468300	2230
Just for the existence of the Ferdowsi mausoleum	9.06	329850	1570.7143
That the complex be kept for the future generation	17.74	877600	4179.0476
To have the option to visit the mausoleum whenever you want	4.85	239200	1139.0476
To the aesthetic, symbolic and historic values of the mausoleum complex	11.38	567500	2702.3810
For national identity that creates	29.32	1708550	8135.9524
Total	100	4191000	19957.1429
Total non-use value of sample	3722700 t		-------
Total use value of sample	468300 t		-------
Total Percent non-use value of sample	88.82%		-------

*1$ = 3036 Toman 1€ = 4148 Toman Rial = Official currency of Iran 1 toman = 10 Rial

As it is shown in table above, mean WTP for use values is equal to 2230 Toman (27300 Rial)[9] per person in the sample and the total use value of the sample has been calculated 468300 Toman (4683000 Rial).

Cultural identity has the largest non-use value in the sample that mean WTP for this sub-value has been calculated as 8135.9524~8136 Toman (81360 Rial). Mean WTP for all non-use values that has been calculated as the sum of the mean of the sub non-use values is equal to

[9] Rial= official currency of Iran Toman =Currency used among people 1 Toman= 10 Rial

17727.14 ~17727 Toman or 177270 Rial. In addition, the total non-use value of the sample is 3722700 Toman (3722700 Rial).

It is shown that percentage of the total non-use values is 88.82 percent of the total value while this percentage is 11.18 for use-values. As the percentage of the non-use values is quite more than use values, we can conclude that people put a higher value on non-use values.

5.5 Inferential Statistics

5.5.1 Relation between WTP and demographic variables (Regression)

To this mean, we use the robust least square regression method. The results of regression of the dependent variable WTP and some demographic variables age, sex, education level, occupation, number of households and monthly expenditure has been shown in table 27. Age and occupation variables have been used as dummy variables as shown below:

$$\text{Sex} = \begin{cases} 1 & \text{if women} \\ 0 & \text{if men} \end{cases}$$

$$\text{Job1} = \begin{cases} 1 & \text{if Unemployed, University student, Housewife} \\ 0 & \text{otherwise} \end{cases}$$

$$\text{Job2} = \begin{cases} 1 & \text{if Workers (sales worker, service worker, ...)} \\ 0 & \text{otherwise} \end{cases}$$

$$\text{Job3} = \begin{cases} 1 & \text{if Technician and Government employee} \\ 0 & \text{otherwise} \end{cases}$$

Table 27: Regression of WTP and demographic variables

Coefficients[a]					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	**Beta**		
(Constant)	4.955	.727		6.814	.000
Age	**.060**	.015	**.410**	4.053	**.000**
Sex	.536	.278	.171	1.926	.057
Education	**.300**	.106	**.256**	2.836	**.005**
Job1	.341	.418	.097	.815	.417
Job2	.667	.411	.190	1.625	.107
Job3	-.011	.390	-.003	-.029	.977
NHousehold	-.059	.081	-.059	-.724	.471
Expenses	.231	.148	.151	1.565	.120
Adjusted R Square = 0.325		**R Square = 0.371**		**Model Sig = 0.000**	

a. Dependent Variable: ln WTP * denote statistical significance at the 1%

According to the level of significance of the model Sig = 0.000, it is revealed that the fitted model is meaningful by the confidence of 99 percent (error level %1) as Sig < 0.01. The resulted regression model is as follows:

WTP = 4.955 **+ .060 (Age)** + .536 (Sex) **+ .300 (Education)** +.341 (Job1) + .667 (Job2) - .011 (Job3) - .059 (NHousehold) +.231 (Expenses)

Base on the results obtained from the ordinary least square regression shown in table 27, age is important in the amount of variable y, Sig < 0.01 and has a direct impact on that as the amount of WTP increases by an increase in the amount of age. In the regression model above by supposing the other variables fixed, every year increase in the amount of age leads to 0.060 increase in the amount of WTP.

In addition, the amount of WTP has a positive relation with education level (Sig< 0.01). The more is the level of education of the people, their WTP increases. In the regression model given that other variables are fixed, one unit of increase in education level leads to 0.300

increases in WTP. We did not have the variable income in the model as people do not usually give a right answer. Instead we used the variable monthly expenditure.

Other variables in the model, sex, occupation, household numbers and monthly expenditure are not important in determining WTP. (Sig > 0.01)

According to the table 27, adjusted R square is equal to 0.325 and this indicates that about 30 percent of the variation of WTP is explained by variables age, sex, occupation, household number, monthly expenditure. Also by considering the standardized coefficients (BETA) with each other is resulted that age of the people has the most impact on the amount of WTP.

In providing and fitting the regression model above, pre-conditions of the regression model was considered and is provided below.

5.5.2 Pre-conditions of the regression model

5.5.2.1 Testing the normality of the distribution of residuals

For testing this hypothesis, histogram chart and p-p plot chart for the WTP variable have been drawn and also Kolmogorov-Smirnov carried out and we found out that the distribution of residuals of WTP are not normal and to solve this problem we used Logarithmic transformation (Ln WTP).

After doing this transformation, we drew the histogram chart and p-p plot and carrying out kolmogrove-smirnov test again, it was revealed that the distribution of the residuals has become normal. Results have been shown below:

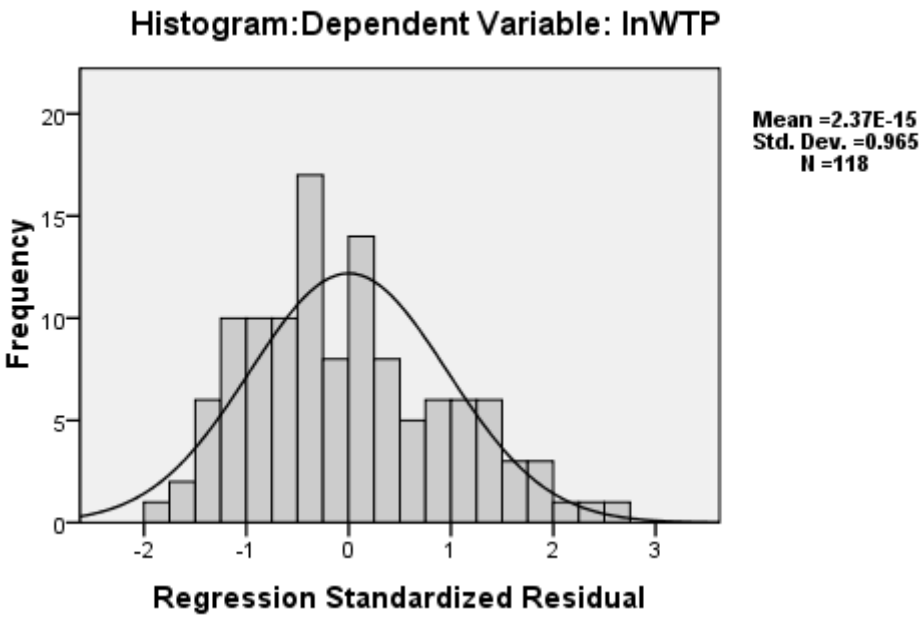


Figure 19: Histogram

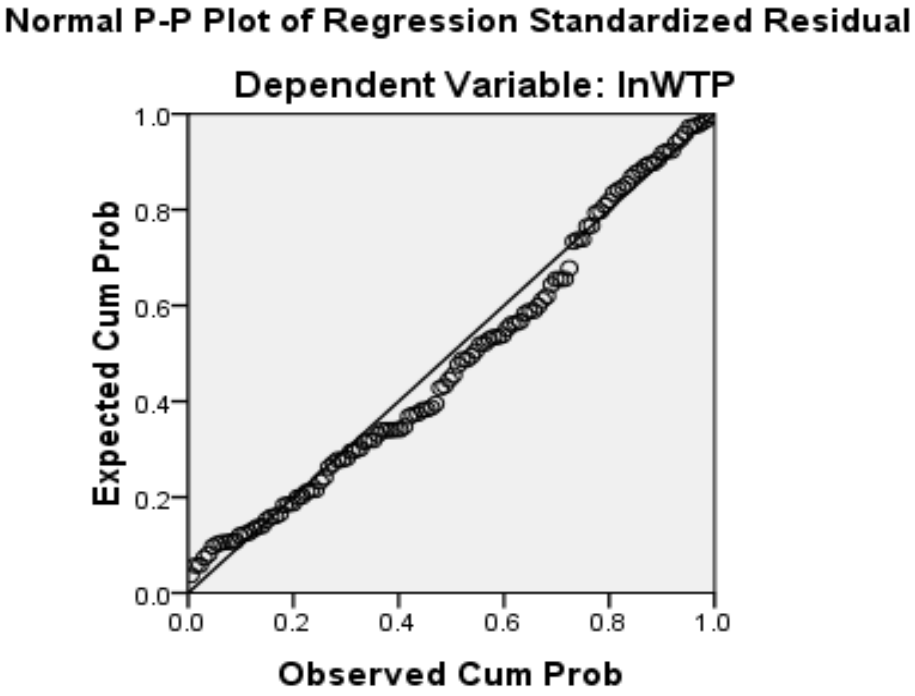


Figure 20: Normal P-P plot

Table 28: One- Sample Kolmogorov-Smirnov Test

		Standardized Residual
N		118
Normal Parameters[a]	.0000000	.0000000
	.96520668	.96520668
Most Extreme Differences	.083	.084
	.083	.084
	-.047	-.047
Kolmogorov-Smirnov Z		**.906**
Asymp. Sig. (2-tailed)		**.385**

According to one sample kolmogrove-smirnove test, the level of significance of the test is 0.385 and is more than 0.05. Therefore, the hypothesis of normality of the residuals is approved.

5.5.2.2 Constancy of variance

For considering this hypothesis, it is enough to draw the scatter chart of the standardized residuals against predicted values and if this chart does not show any pattern, it is the symptom of the constancy of variance.

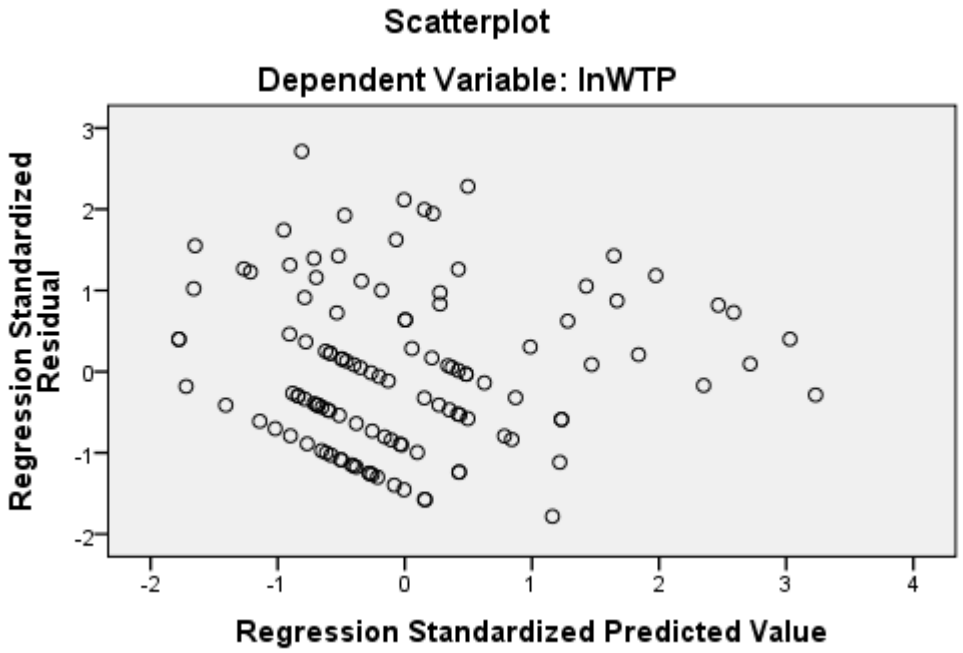


Figure 21: scatter plot – standardized residual/standardized predicted value

According to the scatter plot, there is n't a pattern in the figure. Therefore, the precondition of constancy of variance is confirmed.

5 5.2.3 Testing for Collinearity among the independent variables

In order to recognize if there is collinearity among independent variables, we use tolerance and VIF which are reverse of each other. In case, VIF is lower than 10 or tolerance is more than 0.1, it means that there is no collinearity. Results have been shown below.

Table 29: Tolerance/VIF

Model	Collinearity Statistics	
	Tolerance	VIF
(Constant)		
Age	.562	1.779
Sex	.733	1.364
Education	.706	1.416
Job1	.409	2.444
Job2	.424	2.361
Job3	.527	1.898
NHousehold	.863	1.159
Expenses	.621	1.610

According to the table, it is concluded that for the all variables VIF is lower than 10 (Tolerance is more than 0.1). Therefore, there is no collinearity among the independent variables in model.

5.5.3 Validity and Reliability of the study

The common way to test the validity and reliability of a contingent valuation as discussed in chapter 4 is through regression analysis. Content validity was tested during survey designation by paying attention to the wording of the survey. In order to have construct validity, in study there must be a positive and meaningful relation between the expected variables and WTP. In the regression analysis carried out in this chapter the variables age and education have meaningful relation with WTP as expected and therefore, the study is valid. In order to be reliable, as explained in chapter 4, R square in regression should be more than 0.15 that in our study it is 0.371. Therefore, the study is also reliable.

5.5.4 Relations between the demographic and socio- economic variables

First of all, we apply kolmogrove-smirnove normal fitting test for our variables. The results have been shown in the table below.

Table 30: One-Sample Kolmogorov-Smirnov Test

One-Sample Kolmogorov-Smirnov Test

		Age	Sex	Education	Job	NHousehold	Expenses
N		172	207	207	185	201	203
Normal Parameters[a]	32.7035	32.6977	1.5217	2.3784	7.0703	3.3284	2.0936
	10.54533	10.55542	.50074	1.10708	3.88985	1.61606	1.03221
Most Extreme Differences	.149	.149	.352	.185	.192	.192	.329
	.149	.149	.330	.185	.192	.192	.329
	-.087	-.087	-.352	-.161	-.115	-.161	-.188
Kolmogorov-Smirnov Z		**1.951**	**5.064**	2.825	2.518	**2.728**	**4.691**
Asymp. Sig. (2-tailed)		**.001**	**.000**	.000	.000	**.000**	**.000**

According to the table of one sample kolmogrove-smirnove test, it is revealed that the level of significance of the test (sig) for all the variables is lower than 0.05, therefore, these variables are not normal.

Among our variables, two variables namely, occupation and sex are nominal; however, occupation variable has been defined also as ordinal. Therefore, for considering the relation among occupation and sex, we use Chi – Square test while for considering the relation among the other variables (age, occupation, level of education, number of households and monthly expenditure of people) we use spearman correlation test as these variables are not normal.

In table 31, the result of spearman correlation test has been shown.

Table 31 : Spearman correlation test

Variable	Expenses	NHousehold	Job	Education	Age
Expenses	1				
NHousehold	.096 (.182)	1			
Job	.327** (.000)	-.030 (.688)	1		
Education	.264** (.000)	.037 (.599)	.451** (.000)	1	
Age	.376** (.000)	.093 (.232)	.457** (.000)	.115 (.133)	1

**Significantly different from zero at the 0.05, 0.10 level

The result of table 31 shows that there is a positive and meaningful relationship between occupation and monthly expenditure of the people and the higher the level of the category of the occupations, the more is the level of monthly expenditure. There is also a meaningful relationship between the level of education and the amount of monthly expenditure. The higher the level of education of the people, the more is the monthly expenditure. Also there is a positive and meaningful correlation between the age of the people and their monthly expenditure. As the age of the people increases, the amount of monthly expenditure increases as well.

We could see that there is also a meaningful relationship between the level of education and occupation and the higher the level of education of the respondents, a higher level job they occupy.

There is also a meaningful relationship between the age of people and their occupation as people with higher ages do have a higher level of occupation.

In table 32, the result of chi-square test for considering the relation between sex and occupation has been shown.

Table 32: Chi-square test – Relation between sex and occupation

		Unemployed, University student, Housewife	Workers (sales worker, service worker,…)	Technician and Government employee	Professional (doctor, consultant, engineer, lawyer, artists…)	Total
female	Count	42	8	15	23	88
	% within Sex	47.7%	9.1%	17.0%	26.1%	100.0%
male	Count	10	41	28	16	95
	% within Sex	10.5%	43.2%	29.5%	16.8%	100.0%
Chi – square = 46.904				Sig = .000		

According to the table 32, among the women 47.7% are unemployed, university student and housewife, 9.1% are sale worker, service worker,…17% are technicians and government employees, 26.1% are doctor, engineer, consultant… and among men 10.5% are unemployed, university student…, 43.2% are sale worker, service worker,…,29.5% are technicians and government employees and 16.8% are doctor, engineer, consultant…

The amount of chi-square statistics is 46.904 and the level of significance of the test is .000 which is lower than 0.05. Therefore, with the confidence of 95 percent we can say that there is a relation between sex and occupation of the people.

5.6 Analysis of our empirical work

The sample in our study has been taken from the people and tourist of Mashhad city over 15 years old located in north east of Iran by using stratified sampling. In the survey we paid attention to have people from different social classes, different range of ages. The quality of the survey taken depends on the skillfulness of the surveyor and we have tried to pay attention to the points regarding surveying. Socio-economic characteristic of the sample also reveals that our sample is representative of our population. In this study, we limited our population to the

people and tourists of Mashhad city. The extension of this study would be for the whole population of Iran.

Comparison with other countries is somewhat difficult as there are few studies available and the types of site in these studies have been very various and economic condition of the countries should be taken into account in theses comparisons. Average WTP for Ferdowsi mausoleum was €5 or $7. Santagata and Signorello (2000) in their value assessment of maintaining "Napoli Musei Aperti", obtained the average WTP of 16,995 Lire equal to about 9€. But Napoli Musei Aperti is a cultural program provided by city of Naples in order to make the visit of historic and artistic sites possible for people. This cultural program includes 29 churches, eight aristocratic palaces, eight historical squares, and one museum. Therefore, this case is not a good choice for comparison. Another case, is the value assessment of the Royal Theater in Copenhagen by Hansen (1997) that has obtained a median WTP of DKK 60 which is about 8€. This study has used median as reference but we have used average. The good point is that Royal Theater is also a national site. Chambers et al. (1998) valued Ste. Genevieve academy and obtained an average of $5.07 which is lower than our average of $7 for Ferdowsi mausoleum. The reason for that could be the fame of Ferdowsi mausoleum site. For the Nidaros Cathedral the average WTP for preservation was 318 NOK about 36€ and average WTP for restoration was 278 NOK about 31€ which are great amounts that could be due to the prosperity of the people in Norway and importance of this cathedral. Grosclaude and Soguel (1994) in assessing values for selected local historic buildings maintenance in Switzerland obtained mean WTP of SFR22 about €18 that is not also comparable as it has been for several historic buildings. Willis (1994) quantified only use value for the visitors of Durham Cathedral in England and got an average of £0.4352 equal to about €0.5 therefore, it is not comparable with our study as we measured total value, use and non-use values of the Ferdowsi mausoleum.

Martin (1994) used contingent valuation to estimate non-use values of Musée de la civilization in Québec and obtained an average of $7.95. This is close to our average of $7; however, Martin has just measured non-use values. Scarpa et al. (1998) estimated just use value for the visitors of the Contemporary Art Museum of the Castello and therefore, the result is not comparable with our study. Carson et al. (2001) just assessed the value of Fez Medina for foreigners and it was a city and obtained mean amount of $69.59 for visitors of the Fez and mean amount of $30.92 for the visitors of Morocco who did not visit Fez. Again it is not comparable with our study.

Therefore, as it is seen there is not a study that completely corresponds to the case of Ferdowsi mausoleum. There is no other similar CV study for historic sites in developing countries. To some extent, the case of Ste. Genevieve academy in Missouri as already mentioned is comparable and mean WTP for Ferdowsi mausoleum was higher and the case of Musée de la civilisation in Québec that the average WTP was close to our mean WTP but it had measured just non-use values and the case of Royal Theater in Copenhagen that the median WTP for that was higher than the average for Ferdowsi mausolem.

The result of our study is not biased. Biases in CVM occur due to the errors in survey designation and implementation. I have paid attention to surveying techniques and implemented the survey properly.

Conclusion

Base on the analysis done in this chapter which included 4 main parts, descriptive statistics, attitudes, value assessment and inferential statistics, we can find out that in general, people put high value on the maintenance and restoration of historic monuments (88% of the people in the sample mentioned that it is very important to them) and in particular, on maintenance and revival of Ferdowsi mausoleum as 82.9 percent of the people in the sample indicated that restoration and revival of the Ferdowsi mausoleum is very important to them while 14.3% mentioned that it is important to them; therefore, totally 97.2% of the people in the sample have put a high value on the maintenance and revival of the Ferdowsi mausoleum as it could be expected as Ferdowsi is a national character for Iranians and therefore, its mausoleum is also very important to them. Moreover, 80.6 % of the people in the sample after omitting the protest bids[10] were willing to pay an amount for the maintenance and revival of the Ferdowsi mausoleum that also confirms the great importance of the site for the people. The mean WTP in the sample has been calculated 199570 Rial (19957 toman) which is about 5€ (7$). The total WTP has been obtained by multiplying the mean WTP of the sample by our total population[11] and it is equal to 3.26 billion Rial or 78671649 € (107486825$). It should be noted that due to

[10] Protest bids : unreal zero bids which means that the respondent's willingness to pay is not zero but for some reasons they do not reveal their true willingness to pay, more information has been provided in chapter 3, section 3.5.

[11] People and tourists of Mashhad city

the economic problems and sanctions the value of the Iranian money has become low in the exchange rates, and this should be noted while using the euro equivalents. The mean WTP of the sample which was 199570 Rial is a quite high amount that it also confirms the significance of the site. Moreover, we tried to capture the non-use values and use value of the sample and measure different sub-values. Total non-use value of the sample is 3722700 t ~ 897.47€ and total use value of the sample is 468300 t ~112.90 €. Non-use values consisted about 88.82% of the total WTP of the sample which means that non-use values are more important to people. Among the non-use values, cultural identity by the mean percentage of 29.32 has the highest share among the non-use values which is true due to the fame of Ferdowsi (poet) and its role in the revival of the Persian language.

We also studied the relation between WTP and demographic variables by carrying out a regression analysis. Among the different demographic variables that were used in our model (age, sex, education level, job, number of household and monthly expenditure), age and educational level had a meaningful impact on the amount of WTP. We have then studied the validity and reliability of study through regression analysis. As the explanatory variables that had a meaningful positive relation with WTP were as expected (age and education) the study is valid and as R square was more than 0.15 the study was reliable as well.

In addition, we considered the relation between some demographic and socio-economic variables and to this mean, we used spearman correlation test and chi-square test. We found out that there is a meaningful relation between occupation and monthly expenditure as well as between level of education and monthly expenditure and age and monthly expenditure. There was also a meaningful relationship between level of education and occupation and age and occupation of the people in the sample. Age and occupation of the people were also correlated.

Final Conclusion

In chapter 1, we considered whether historic sites and monuments could be considered as public goods or not. We came to the conclusion that they could be assigned to somewhere within the range of pure and impure public goods on the defined spectrum of the goods as they are de facto non-exclusive. Whether a site could be considered as a pure or impure public goods depends on the level of rivalness that it shows. If the site is partially non-rival due to the congestion problem, then it should be considered as impure public good. In such cases, carrying capacity problem arises, which means that the site could be subject to congestion due to the high number of visitors. This could happen regarding the highly important sites located in a touristic area.

Whether a site, building or city tissue could be considered as a global public good or not was another question that was answered in this thesis. We came to the conclusion that a historic site could be considered as global public good if in addition to the 2 main characteristics of the public goods (non-rivalrousness of consumption and non-excludability of benefits), it shows 3 other characteristics: It covers more than a group of countries as well as broad spectrum of global population and meets the needs of the current population without jeopardizing those of future generation. In other words, range of the beneficiaries of a site determines if it could be considered as a global public good. We did also study the possibility of international cooperation and administrative unification for heritage management, especially for sites with global fame that could be considered as global public goods. Though, technical cooperation has ever existed, there has been little financial cooperation among the countries. We came to conclusion that reaching to a consensus in this regard is difficult due to the different system of value and economic conditions in different countries. Different propositions such as tradable world heritage certificate given to the countries that cooperate financially for the restoration of a site seems not feasible for this moment as it hurts the national identity of the countries.

Considering the historic monuments as public goods, demands different kind of planning for these assets. As usually public goods are managed by Governments, it is strongly recommended to apply an identical value typology and assessment method for historic sites in order to be able to prioritize the restoration of the available sites in each country base on the total value of the sites, use and non use values. Therefore; in chapter 1, we studied thoroughly different types of values that could be generated from the historic sites, use and non-use values.

Use value is accrued to the people by visiting a historic site while non-use values are those values that are not accrued to the people by visiting the site and are mostly related to those attributes of the built heritage that are non-rival and non-excludable. The problem that we encountered was that each scholar has divided the total value in a different way. Therefore, we made an effort to develop a comprehensive value typology in chapter 2 that could be used in different studies afterwards (section 2.3).

In chapter 2, we also considered different methods that have been used so far for the mean of value assessment of the historic sites and identified the spectrum of value that each method is capable to measure. These methods are classified into two main groups, namely revealed preference methods and stated preference methods. Revealed preference methods are based on the observed behavior of the people while stated preference methods are survey based and ask people to make their choices in a hypothetical market. The choice of the method hence depends on the spectrum of the values that a researcher ought to measure. As our target was measuring the total value of a historic site, we searched for the most proper method to this mean. We came to the conclusion that stated preference methods including choice modeling and contingent valuation are capable to measure the total value of the sites. However, choice modeling breaks down the total value into the function and services. Therefore, whether to use contingent valuation or choice modeling depends on the purpose of the study. In general, contingent valuation is recommended as the most proper method to assess the total value of the sites.

As the quality of a contingent valuation study (CVM) depends on the quality of the survey designation and implementation, we assigned a chapter (chapter3) into the survey designation and implementation in CVM and explained all the details and hints regarding that. In continue, we explained the survey designation process of our case study, Ferdowsi mausoleum site located in Tus historic area near Mashhad city in Iran which is the second largest city in Iran. Cultural Heritage Organization of Iran is planning to register the Tus historic area that includes our site in the UNESCO world heritage list. Our questionnaire was designed base on the guidelines and base on the characteristics of our site and people culture in Iran. The first part of our questionnaire, introduces the Ferdowsi mausoleum site to the respondents (some pictures were provided as well). As it was mentioned before, Ferdowsi (poet) and his mausoleum is quite well-known in Iran and these information acted mostly as a reminder to the people as Ferdowsi is a national character for Iranians as he has revived Persian language. The questionnaire continued by attitudes part, value assessment part and socio-economic data part. The designed questionnaire could be consulted for other studies as an example.

In chapter 4, we studied history of contingent valuation methods in which initial contingent valuation studies in different areas have been presented. Particularly in section 4.2.3 we studied the available contingent valuation studies regarding historic sites and monuments. Then econometric theory of contingent valuation was studied. Validity, reliability and biases in CVM are some other issues that were well discussed in this chapter. Following that use of the CVM studies for the purpose of public policy was studied.

In chapter 5, we showed the result of the CVM carried out for our case study, Ferdowsi mausoleum site. Our analysis included 4 main parts: First part: Descriptive Statistics, Second Part: Attitudes, Third part: Value assessment of the Ferdowsi mausoleum and Fourth part: Inferential statistics (Regression and correlation analysis). This study gave us valuable information regarding this site. The average age of our respondents has been 33 years old with the positive skewness of 1.24 which indicates that the population in the sample is almost young and this is true about population of Iran. 33.3 percent of our respondents have had a bachelor degree (highest rate) that is also true as university education is very important in Iran (extracted from the descriptive statistics part). The part on the attitudes of the respondents gave us some insight about the value that people put on historic sites and monuments in Iran in general and on the Ferdowsi mausoleum in particular. 88% of the people in the sample mentioned that maintenance and restoration of the historic sites is "very important" to them and 82.9% mentioned that maintenance and revival of the Ferdowsi mausoleum is "very important" to them (99% more than average). 86.7% of the people in our sample have seen the Ferdowsi mausoleum at least once in their life and 55% have seen it at least once during the last year. We did also asked the respondents to mention if in their opinion the Ferdowsi mausoleum has value for those not visiting it, targeting non-use values through this question and 83.3% of the people in our sample were whether agree or strongly agree with that.

In addition, the knowledge of the most people in the sample about Ferdowsi is average and 83.9% of the people had an average or more knowledge about him. 80.6% of the people in the sample (after omitting the protest bids[12]) were willing to pay an amount for the maintenance and revival of the Ferdowsi mausoleum. These results prove the great importance of the Ferdowsi character and its mausoleum to the people. This site is a national site and part of the

[12] Protest bids : unreal zero bids which means that the respondents willingness to pay is not zero but for some reasons they do not reveal their true willingness to pay, more information has been provided in chapter 3, section 3.5.

cultural identity of any Iranian as it is proved in the section of assessment of sub values (section 5.4.3 in chapter 5) that people have given the highest rate to the sub-value national identity.

People in our sample were willing to pay on average 199570 Rial (19957 toman) or about 5€ (7$) for the maintenance and revival of the Ferdowsi mausoleum and the aggregated amount for the people and tourists of Mashhad has been calculated as 3.26 billion Rial or 78671649 € (107486825$). The exchange rate between Euro and Iranian Rial is as 1€ ~ 41480 Rial (4148 toman) base on the rates at the moment of writing this thesis[13]. Due to the sanctions and economic problems the value of money has decreased in Iran and this should be taken into account while considering the euro equivalent. The resulted mean and total WTP for the Ferdowsi mausoleum is quite high. If we consider the monthly expenditure of the people in the descriptive statistics part, we can observe that 51.7 percent of the people in the sample have a monthly expenditure between 500,000 and 1,000,000 Toman while 24.6% of the people in the sample expend more than 20,000 Toman yearly for visiting the historic sites in Iran (obtained in section 5.3, attitudes part). The total WTP for the whole population of Iran is expected to be really great and its calculation could be an extension of this research. We have also studied the distribution of WTP in the form of ticket and donation. In our questionnaire we asked the respondent to identify what percentage of the WTP that they mentioned would be in the form of ticket and what percentage in the form of donation. On the whole, 31.32 percent of the total WTP of the people in our sample was in the form of ticket and 68.68 percent in form of donations. However, 57.7 percent of the people in the sample were willing to assign 50% or more percentage of their WTP into the ticket form

One of the most prominent parts of our research was an effort to assess the sub-values. Among the sub non-use values national identity and bequest value had the highest shares. This has been done for the first time regarding a historic site. Non-use values consisted 88.82% of the total value in the sample which proves that non use values are more important to the people (Please refer to the 5.4.3 in chapter 5 for more details). Notably, same values as were defined in our value typology in chapter 2 was used in our survey except that we did not use the quasi option value which is for the sites that currently do not have a high value but might be considered valuable in future in our study as our site was already very famous.

The regression analysis showed that our model was statistically meaningful and among the independent variables in the model (age, sex, level of education, occupation, number of

[13] Iranian Rial= official currency of Iran Toman= currency used by people 10 Rial = 1 Toman

households and monthly expenditure), age and level of education have meaningful impacts on the amount of WTP which is completely logical. The correlation analysis among the demographic and socioeconomic variables was carried out as well and we found out meaningful correlations among some variables such as age and monthly expenditure, level of education and monthly expenditure, etc. that they also proved the validity of the survey and provided us some useful information (Please refer to the section 5.5.4 in chapter 5 for the complete results).

Previously, non-use values were not included in the assessment of economic values of the historic sites. However, recent efforts have made the assessments closer to the reality. Previously, archeologists blamed the economists for not taking into accounts values such as aesthetic, spiritual, etc. in their assessments. Therefore, here again we can see that different branches of science are getting closer to each other.

While this research has well discussed the available literature on the public goods and different values that are generated from the historic sites and has considered historic sites as public goods, it has also put a step forward by creating a comprehensive value typology to be used in future studies and by making an effort to assess the sub-values, in particular sub-non use values that in turn, can shed light on the level of significance of each sub-value to people. This could be quite important in terms of planning for the site and its management and restoration.

This study also shows that historic sites and monuments of high value can enrich the culture of the people of a country and create cultural differentiation which is felt by people and create individual and collective values that in turn affects the social welfare of people.

As discussed in section 1.4, the possibility of cooperation between countries for preservation of the valuable built heritage is a subject that needs further study. Looking at the valuable architectural heritage of the countries as global public goods can dramatically change the financing and administration process of them. Registration of the sites in the World Heritage List can have an important role in the recognition of the valuable sites of the countries as global public goods. UNESCO has increased international cooperations but its financial aids have been minor. Frey and Pamimi's (2009) proposal of tradable world heritage certificates in return of cooperation for preservation of the world's valuable heritage is an interesting proposal that could be studied further. However, for the moment it seems unfeasible as still built heritage of the countries is considered as a national affair. This would be the situation until the trend of

globalization reach to a point that decrease nationalism and then may be the international cooperations such as Frey and Pamimi's proposal become feasible.

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Appendix 1: historical monuments of Iran listed in the world heritage list

Iran

- Meidan Emam, Esfahan
- Persepolis
- Tchogha Zanbil
- Takht-e Soleyman
- Bam and its Cultural Landscape
- Pasargadae
- Soltaniyeh
- Bisotun
- Armenian Monastic Ensembles of Iran
- Shushtar Historical Hydraulic System
- Sheikh Safi al-din Khānegāh and Shrine Ensemble in Ardabil
- Tabriz Historic Bazaar Complex

Appendix 2: NOAA Survey Guideline (Arrow et al., 1993)

In this part, the survey guidelines part of report of NOAA panel on contingent valuation has been extracted.

General survey guidelines

Sample Type and Size: Probability sampling is essential for a survey used for damage assessment. The choice of sample specific design and size is a difficult, technical question that requires the guidance of a professional sampling statistician.

If a single dichotomous question of the yes-no type is used to elicit valuation responses, then a total sample size of 1000 respondents will limit sampling error to about 3% plus or minus on a single dichotomous question, assuming simple random sampling. However, this or any other sample size needs to be reconceptualized for three reasons. First, if face-to-face interviewing is used, as we suggest above, clustering and stratification must be taken into account. Second, if dichotomous valuation questions are used (e.g., hypothetical referenda), separate valuation amounts must be asked of random sub-samples and these responses must be unscrambled econometrically to estimate the underlying population mean or median. Third, in order to incorporate experiments on interviewer and wording effects, additional random sub-sampling is required. For all these reasons, it will be important to consult sampling statisticians in the design of a CV survey intended for legal or policy-making purposes.

Minimize Nonresponses: High nonresponse rates would make

the survey results unreliable. To the extent that a CV study is expected to represent the adult population of the United States or a portion of it, minimizing both sample non-response and item non-response are important. The former is unlikely to be below 20% even in very high quality surveys; the latter has also been large in some CV surveys because of the difficulty of the task respondents are being asked to perform. These sources of potential bias can be partially justified on the grounds that they also occur with official referenda, in both cases with the loss especially of the least educated parts of the population. The further reduction of the final sample

by elimination of "protest zeros," "unrealistic high values," and other problematic responses may lead to effective final total response rates so low as to imply that the survey population consists of interested and specially instructed quasi-experts. This consideration reinforces the desirability of combining a reasonable response rate with a high but not forbidding standard of information, as discussed in Section III above.

Personal Interview: The Panel believes it unlikely that reliable estimates of values could be elicited with mail surveys. Face-to-face interviews are usually preferable, although telephone interviews have some advantages in terms of cost and centralized supervision.

Assuming a CV survey is to represent a natural population, such as all adults in the United States, or those in a single urban area or a state, it is desirable that it be carried out using either face-to-face or telephone interviews. Mail surveystypically employ lists that cover too small a part of the population (e.g., samples based on telephone directories omit approximately half the U.S. population because of non-listed numbers, incorrect numbers, and non-phone households), and then miss another quarter or more of the remainder through nonresponse.

In addition, since the content of a mail questionnaire can be reviewed by targeted respondents before deciding to return it, those most interested in a natural resource issue or in one side or the other can make their decision on that basis. It is also impossible using mail surveys to guarantee random selection within households or to confine answering to a single respondent,and it is difficult (though not impossible) to control questionorder effects. Thus, mail surveys should be used only if another supplementary method can be employed to cross-validate the results on a random sub-sample of respondents.

The choice between telephone and face-to-face administration is less clear. Face-to-face surveys offer practical advantages in maintaining respondent motivation and allowing use of graphic supplements. Both coverage and response rates are also usually somewhat higher than with telephone surveys. However, telephone surveys can cut interviewing costs by between a third and a half; for CV purposes, it may be a disadvantage that most survey investigators believe telephone interviews need to be kept shorter in length than face-to-face interviews because respondent attention and cooperation are more difficult to maintain. In addition, random-digit-dial telephone surveys approximate simple random sampling. Face-to-face surveys must be based on cluster sampling and, therefore, the results provide less precise estimates than do telephone surveys of the same size.

Pretesting for Interviewer Effects: An important respect in which CV surveys differ from actual referenda is the presence of an interviewer (except in the case of mail surveys). It is possible that interviewers contribute to "social desirability" bias, since preserving the environment is widely viewed as something positive. In order to test this possibility, major CV studies should incorporate experiments that assess interviewer effects.

To test for interviewer effects, two modifications might be made to a standard face-to-face CV survey. In one variant on current practice, respondents would stop when they come to the valuation question, write their "vote" on a ballot, and fold and deposit it in a sealed box. However, since this practice would not mimic the complete anonymity of the voting booth, for a subsample of respondents a second modification should be made.

Respondents would be allowed to mail their "ballots" in unmarked envelopes directly to the survey organization, even though that will preclude any but the simplest analysis of responses. Tests of the effect of both these modifications of current practice will indicate whether they are needed routinely or whether at least some calibration should be introduced to compensate for interviewer effects. (The more modest of these proposed modifications -- a simulated ballot box, or even voting on a portable computer -- has few if any disadvantages and might be made standard if it shows any reliable departure at all from answers given orally to the interviewer.)

Reporting: Every report of a CV study should make clear the definition of the population sampled, the sampling frame used, the sample size, the overall sample non-response rate and its components (e.g., refusals), and item non-response on all important questions. The report should also reproduce the exact wording and sequence of the questionnaire and of other communications to respondents (e.g., advance letters). All data from the study should be archived and made available to interested parties (see Carson et al. (1992), for an example of good practice in inclusion of questionnaire and related details; as of this date, however, the report has not been available publicly and the data have not been archived for open use by other scholars).

Careful Pretesting of a CV Questionnaire: Respondents in a CV survey are ordinarily presented with a good deal of new and often technical information, well beyond what is typical in most surveys. This requires very careful pilot work and pretesting, plus evidence from the final survey that respondents understood and accepted the main description and questioning reasonably well.

Parenthetically, the claim sometimes made by CV proponents that particular methods of piloting, such as focus groups, are essential should be viewed with skepticism, since these claims are unsupported by any systematic evidence. Nor is it clear that what are called "state-of-the-art" CV surveys constitute something entirely new or different from other types of serious survey investigations. Thus, although evidence that questionnaire development has been carried out carefully is certainly important, it cannot be taken as a self-sufficient basis of validity -- the more so because we know that many people will answer survey questions without apparent difficulty, even when they do not understand them well. A way of reducing pressure to give answers of questionable meaningfulness would be to provide respondents an explicit "no opinion" type of alternative when a key valuation question is posed.

GUIDELINES FOR VALUE ELICITATION SURVEYS

The following guidelines are met by the best CV surveys and need to be present in order to assure reliability and usefulness of the information that is obtained.

Conservative Design: Generally, when aspects of the survey design and the analysis of the responses are ambiguous, the option that tends to underestimate willingness to pay is preferred. A conservative design increases the reliability of the estimate by eliminating extreme responses that can enlarge estimated values wildly and implausibly.

Elicitation Format: The willingness to pay format should be used instead of compensation required because the former is the conservative choice. In experimental settings, the gap between stated intentions to support a particular referendum and actual behavior in the voting

booth can be very great. This gap might be treated by "calibration" if there were historical data on the relationship between such intentions and behavior. Unfortunately, we are aware of no data that is close enough to the CV context that could be used to calibrate CV responses.

In the absence of historical data that can be used to calibrate the intentions reported in the CV surveys, the survey instrument has to be designed with extraordinary care so that it can stand on its own.

Referendum Format: The valuation question should be posed as a vote on a referendum. As is now generally recognized by most CV proponents, asking respondents to give a dollar valuation in response to an open ended question presents them with an extremely difficult task.

At the same time, CV proponents also recognize that presenting respondents a set of dollar amounts from which they are to choose is likely to create anchoring and other forms of bias. Thus, we recommend as the most desirable form of CV elicitation the use of a dichotomous question that asks respondents to vote for or against a particular level of taxation, as occurs with most real referenda. As already noted, such a question form also has advantage in terms of incentive compatibility. (If a double bounded dichotomous choice or some other question form is used in order to obtain more information per respondent, experiments should be developed to investigate biases that may be introduced.)

Accurate Description of the Program or Policy: Adequate information must be provided to respondents about the environmental program that is offered. It must be defined in a way that is relevant to damage assessment.

Ideally a CV survey would elicit attitudes toward three alternative (future) recovery scenarios: (A) "immediate" restoration, (b) accelerated restoration, and (c) natural restoration. Damages would be the difference between (a) and (b) on the assumption that accelerated restoration is provided by the responsible party. Unfortunately, respondents may not find "immediate" restoration very plausible and they may resist the notion that they should be expected to contribute to accelerated restoration when it is an oil company that is at fault. If respondents are unable or unwilling to deal hypothetically with the most relevant "clean-up" scenarios, alternative "prevention"scenarios will have to be used in the survey instrument. For

example, respondents may be asked to vote for a referendum that offers reduced risk of another spill for a specified period of time. The weaker is the linkage between the "prevention" scenarios and the "clean-up" scenarios, the more unreliable are the survey results. Rhetorically: Is a decade of prevention equal in value to the difference in value between accelerated and immediate clean-up?

Pretesting of Photographs: The effects of photographs on subjects must be carefully explored. One effective means for conveying information and holding interest in a CV interview has been the use of large and impressive photographs. However, this technique is a two-edged sword because the dramatic nature of a photograph may have much more emotional impact than the rest of the questionnaire. Thus it is important that photographs be subjected to even more careful assessment than verbal material if the goal is to avoid bias in presentation.

Reminder of Undamaged Substitute Commodities: Respondents must be reminded of substitute commodities, such as other comparable natural resources or the future state of the same natural resource. This reminder should be introduced forcefully and directly prior to the main valuation question to assure that respondents have the alternatives clearly in mind.

Adequate Time Lapse from the Accident: The survey must be conducted at a time sufficiently distant from the date of the environmental insult that respondents regard the scenario of complete restoration as plausible. Questions should be included to determine the state of subjects' beliefs regarding restoration probabilities.

Survey respondents who would not suffer interim passive-use loss may not regard full restoration as very plausible; therefore, they may report substantial passive-use loss even if told that full restoration in some reasonable amount if time is certain. Misunderstanding of the restoration probability is most acute when the accident has recently occurred and before any substantial restoration takes place. It would be ideal to assess steady state passive-use loss after natural and human restoration is complete or nearly so, since then presumably respondents would believe in the restoration. If that is not a possibility, surveys might be conducted over

time until the reported willingness to pay settles down (assuming that it does), as the respondents come to believe more and more in the probable success of the restoration effort. Alternatively, respondents might be asked to value a menu of alternative possible scenarios, without being told explicitly which is applicable for the environmental insult under study. The menu should be designed to force them to consider the difference between interim and steady-state passive use value.

Temporal Averaging: Time dependent measurement noise should be reduced by averaging across independently drawn samples taken at different points in time. A clear and substantial

Time trend in the responses would cast doubt on the "reliability" of the finding."No-answer" Option: A "no-answer" option should be explicitly allowed in addition to the "yes" and "no" vote options on the main valuation (referendum) question.

Respondents who choose the "no-answer" option should be asked non-directively to explain their choice. Answers should be carefully coded to show the types of responses, for example: (i) rough indifference between a yes and a no vote; (ii) inability to make a decision without more time or more information; (iii) preference for some other mechanism for making this decision; and (iv) bored by this survey and anxious to end it as quickly as possible.

Yes/no Follow-ups: Yes and no responses should be followed up by the open-ended question: "Why did you vote yes/no?" Answers should be carefully coded to show the types of responses, for example: (i) It is (or isn't) worth it; (ii) Don't know; or (iii) The oil companies should pay.

Cross-tabulations: The survey should include a variety of other questions that help to interpret the responses to the primary valuation question. The final report should include summaries of willingness to pay broken down by these categories. Among the items that would be helpful in interpreting the responses are:

Income

Prior Knowledge of the Site

Prior Interest in the Site (Visitation Rates)

Attitudes Toward the Environment

Attitudes Toward Big Business

Distance to the Site

Understanding of the Task

Belief in the Scenarios

Ability/Willingness to Perform the Task

We believe that these cross tabulations will prove useful in interpreting and lending credibility to the responses and possibly also in forming adjustments that can enhance reliability.

Checks on Understanding and Acceptance: The above guidelines must be satisfied without making the instrument so complex that it poses tasks that are beyond the ability or interest level of many participants. Since CV interviews often present information that is new to respondents, the questionnaire should attempt at the end to determine the degree to which respondents accept as true the descriptions given and assertions made prior to the valuation question. Such an inquiry should be carried out in detail but non-directively, so that respondents feel free to reject any part of the information they were given at earlier points.

GOALS FOR VALUE ELICITATION SURVEYS

The following items are not adequately addressed by even the best CV surveys. In the opinion of the Panel, these issues will need to be convincingly dealt with in order to assure the reliability of the estimates.

Alternative Expenditure Possibilities: Respondents must be reminded that their willingness to pay for the environmental program in question would reduce their expenditures for private goods or other public goods. This reminder should be more than perfunctory, but

less than overwhelming. The goal is to induce respondents to keep in mind other likely expenditures, including those on other environmental goods, when evaluating the main scenario.

Consumers can be expected to make expenditure decisions that are adequately sensitive to other expenditure possibilities with which they are familiar. But environmental referenda of the type presented in CV surveys are unfamiliar and respondents may not be aware of the large set of other expenditure possibilities that might be offered in future CV surveys or future referenda.

Unless informed otherwise, respondents may suppose that there is only one environmental scenario that will ever be offered and they may overspend on it. It is not at all clear how exhaustive should be the list of alternative public goods that are explicitly presented. If the list is too brief, overspending can be expected. If the list is too long, respondents will be encouraged to spread expenditures to public goods for which there is not adequate total demand and which therefore cannot really be offered to them. Also, if the list gets large enough to encompass a significant fraction of income, the gap between willingness to pay and willingness to accept may widen.

It is also not clear what form the reminder should take. It does not seem enough merely to list other environmental goods since respondents would then have to guess the level of expenditure that would be necessary to pay for the alternatives.

The survey should probably include some statement about the price of the alternatives, for example, the per capita expenditure that would be required to provide the items.

Deflection of Transaction Value: The survey should be designed to deflect the general "warm-glow" of giving or the dislike of "big business" away from the specific environmental program that is being evaluated. It is possible that the referendum format limits the "warm glow" effect, but until this is clear the survey design should explicitly address this problem.

Economic models of consumer behavior generally are based on the assumption that value derives from the goods and services that are consumed, not from the process by which these goods are allocated. But happiness that derives from charitable giving may come mostly from the act of giving rather from the material changes that follow from the gift. To give another example, consumers may get pleasure from the act of shopping as well as from ownership of

the goods they purchase. Words that might be useful to distinguish between these utility-producing events are "consumption value" and "transaction value," the latter referring to the process or transaction that establishes ownership. We do not question the validity of "transaction value" or differentiate it from "consumption value" as far as damage assessment is concerned. But for both forms of value, respondents need to be thinking clearly about the substitutes,

Since the closer are the substitutes the less the damage that is done. In the case of "transaction value," there are many close substitutes to cleaning up oil spills since there are many other charitable activities that can generate the same "warm glow" and there are many other ways to express hostility toward big business and modern technology.

Steady State or Interim Losses: It should be made apparent that respondents can distinguish interim from steady-state losses. The quality of any natural resource varies daily and seasonally around some "equilibrium" or "steady state" level.

Active-use value of a resource depends on its actual state at the time of use (and at other times), not on its equilibrium. But passive-use value of a natural resource may derive only or mostly from its steady state and not from its day-to-day state. If so, full restoration at some future date eliminates or greatly reduces passive-use loss. Surveys accordingly need to be carefully designed to allow respondents to differentiate interim from steady state passive-use loss.

Present Value Calculations of Interim Losses: It should be demonstrated that, in revealing values, respondents are adequately sensitive to the timing of the restoration process. As discussed in Section III above, the time profile of restoration following an accident potentially is an important determinant of active-use loss and interim passive-use loss, but respondents may have little ability to distinguish between and to evaluate different profiles.

Advance Approval: Since the design of the CV survey can have a substantial effect on the responses, it is desirable that -- if possible -- critical features be preapproved by both sides in a

legal action, with arbitration and/or experiments used when disagreements cannot be resolved by the parties themselves.

Burden of Proof: Until such time as there is a set of reliable reference surveys, the burden of proof of reliability must rest on the survey designers. They must show through pretesting or other experiments that their survey does not suffer from the problems that these guidelines are intended to avoid. Specifically, if a CV survey suffered from any of the following maladies, we would judge its findings "unreliable": -- A high nonresponse rate to the entire survey instrument or to the valuation question.

-- Inadequate responsiveness to the scope of the environmental insult.

-- Lack of understanding of the task by the respondents.

-- Lack of belief in the full restoration scenario.

-- "Yes" or "no" votes on the hypothetical referendum that are not followed up or explained by making reference to the cost and/or the value of the program.

Reliable Reference Surveys: In order to alleviate this heavy burden of proof, we strongly urge the Government to undertake the task of creating a set of reliable reference surveys that can be used to interpret the guidelines and also to calibrate surveys that do not fully meet the conditions.

Title: **The value of historic built heritage**

The case of Ferdowsi mausoleum in Iran

Abstract

This study considers whether historic sites could be considered as public goods or not. It also studies the characteristics of a site to be considered as a global public good. Considering historic sites as public goods demands different kind of planning and management as these sites are usually

are managed by Governments and Governments incur high cost for their restoration and maintenance. Therefore, it would be important to assess the value of the different sites to prioritize restoration of these sites. To this mean, in this research different kind of values generated from historic sites has been considered and the most proper method in order to assess the total value of the sites has been proposed. Then an empirical study has been carried out by constituting original data for the value assessment of the Ferdowsi mausoleum site in Iran and the total value of the site as well as its sub values has been assessed.

Résumé

Cette thèse examine si les sites historiques pourraient être considérés comme des biens publics. Les biens publics exigent que les gouvernements engagent des coûts élevés pour leur restauration et leur entretien. Il est donc important d'évaluer la valeur des différents sites et d'établir des priorités pour leur restauration. Cette recherche analyse les différents types de valeurs générées par des sites historiques et évalue la valeur totale de ces sites. Une étude empirique a été réalisée en constituant des données originales pour l'évaluation de la valeur du site du mausolée de Ferdowsi en Iran, sa valeur totale ainsi que ses sous valeurs.

DISCIPLINE : Economie

MOTS-CLÉS: public goods, value assessment, contingent valuation, use and non-use values

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