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SEARCHING FOR THE DETERMINANTS OF WORLD HERITAGE LISTING: AN ECONOMETRIC ANALYSIS

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Searching for the determinants of World Heritage Listing: an econometric analysis

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Abstract
The present paper provides empirical evidence of the main determinants affecting World Heritage listing across countries and time. While World Heritage represents the most relevant tangible cultural asset for the humankind, little research has been conducted to understand the conditions influencing the process of sites inscription. Using panel data, we provide a preliminary investigation about the relationship between world heritage sites per country and economic, social and institutional variables. In addition, we test whether additional political factors, such as the country involvement in the World Heritage Committee, influence inscription of national heritage sites in the list. The paper contributes to the cultural economics literature by addressing new insights on the determinants affecting the valorization of cultural heritage.

Keywords: World Heritage Sites, Unesco, Economic Development

JEL Codes: Z10, C23, C82

1. Introduction

Since the dawn of civilizations, humans have considered cultural heritage as a valuable endowment, whose appreciation often goes beyond cultures and national borders. For instance, the seven wonders of the ancient world were acknowledged as unique monuments or representations of the genius of humankind regardless the civilizations in which they originated.
In a similar vein, the 1972 UNESCO Convention on World Heritage represents an international effort that "seeks to encourage the identification, protection and preservation of cultural and natural heritage around the world considered to be of outstanding value to humanity".
The World Heritage Convention is today the most successful international legal instrument for the protection of immovable heritage. It has since been ratified by 186 countries, which have placed 890 sites under its protection.

Arguably, from an economic viewpoint the World Heritage has global public good attributes. Because of their uniqueness and representativeness of different cultures and ecosystems across time and space, the sites inscribed in the World Heritage List have option and existence values which should be preserved for the sake of mankind as a whole and for future generations.

However, the benefits to humankind accruing from the preservation of such common global good are strictly linked to the way in which World Heritage is defined and selected. Crucially, as recognized already in 1994 in the *Global Strategy for a Balanced, Representative and Credible World Heritage List*, the World Heritage lacks balance in the type of inscribed properties and in the geographical areas of the world that are represented. Among all the properties inscribed the great majority are cultural sites and most of world heritage is located in developed regions of the world, in particular in Europe.

As the process of inscription of World Heritage sites is based on selection criteria agreed by the Convention parties, not unexpectedly this may be influenced by several factors, which eventually affect the world heritage composition. First, many commentators have stressed the difficulty in defining the principle of "outstanding universal value", as well as finding out proper criteria for sites inclusion that are not culturally-biased, notably towards western conceptions of heritage (Musitelli, 2003).
Second, while the goal of the World Heritage Convention is global, the initiative to submit new properties in the List lies with individual countries. Interestingly, this means that at any one time the pattern of world heritage may be a reflection of economic, institutional and political factors specific to each country. As a result, some states may be more active or have more influence than others in the world heritage selection process.

With this perspective, our paper aims to analyze in particular this second group of determinants affecting World Heritage listing. We use panel data covering the whole period of activity of the World Heritage Convention in order provide preliminary evidence about the relationship between inscriptions of world heritage sites and economic, social and institutional factors of countries. In

particular, we test whether conditions in the political process leading to sites inscription, such as the country's involvement in the selection decision-making, influence the inscription of national heritage sites in the list.

While cultural economics has often focused on the economic nature of heritage goods evaluating the utility of preserving the past (e.g. Peacock and Rizzo, 2008), so far little research has been conducted on World Heritage and in particular on understanding the conditions influencing the process of sites inscription. In our knowledge, in the non-economic literature only Van der Aa (2005) extensively describes the conditions affecting the World Heritage nominations and the impacts of listing. His analysis provides very interesting insights on the dynamics of World Heritage nomination process, but it is mainly based on a qualitative approach or descriptive statistics.

By contrast, in the economic literature, investigating the causal relationship between tourism specialization and economic growth of countries, Arezki et al. (2009) explore potential biases in the process of selection of the WHL when introducing the number of world heritage sites as an instrument for tourism specialization. Their robustness analysis suggests that the number of heritage sites per 100.000 inhabitants is not correlated with level of income, as well as other measures of the quality of institutions in the modern period. More interestingly, Frey and Pamini (2010), using cross section data, have analyzed how the influences of country size, population and income level affect the actual distribution of World Heritage Sites. Their findings show that the three factors play a significant role in explaining the number of Sites in the World Heritage List.

In order to deepen this initial evidence, we contend that empirical analysis based on longitudinal data is better suited to unveil the relationship between world heritage listing and countries' characteristics. Because states have entered in the World Heritage Convention at different periods and sites are added yearly to the List, time becomes a relevant dimension.

The paper is divided as follows: section 2 describes the World Heritage Convention and the process of inscription of sites in the World Heritage List; section 3 presents the main determinants affecting the World Heritage Listing; section 4 describes the data; Section 5 provides the empirical evidence and section 6 concludes.

2. World Heritage Sites: selection process and gaps

Originally, the Unesco World Heritage Convention of 1972 is rooted in the international recognition that protection of cultural and natural heritage of outstanding universal interest often remains incomplete at the national level, as countries lack the economic, scientific, and technological resources for preservation. The implementing mechanism adopted by the Convention for identifying heritage sites of world status and place them under its protection is based on the formulation of the World Heritage List.

The List consists of cultural, natural and mixed properties of

"outstanding universal value", but in order to define such ambiguous concept ten criteria have been devised. Sites can be included in the list if satisfy at least one of the criteria. Six criteria refer to Cultural, and four to Natural Sites. The former address "masterpiece of human creative genius" or reflect exceptional testimony of cultures and civilizations such as human settlement, building, architectural ensemble or landscape, or events and living traditions related to immovable heritage. The latter refer to "superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance", the most important and significant natural habitats for in-situ conservation of biological diversity and outstanding examples of major stages of earth's history or ecological and biological processes.

The nomination process lasts at least eighteen months and relies on the initiative of the state parties, which submit proposals for their heritage sites to be included in the World Heritage List. Experts of two advisory bodies, respectively ICOMOS for Cultural Properties and IUCN for Natural Properties, then evaluate the nomination report, which is eventually sent to the World Heritage Committee for the final decision of inclusion of the heritage site in the List. Rejection can occur because the site does not meet the outstanding universal value condition, lacks sufficient protection of the heritage site by the national authority, or there have been procedural reasons in the nomination process (Van der Aa, 2005).

While the World Heritage Convention is recognized as one of the most successful international treaties based on a proactive approach by Member States (UNESCO, 2007), it is not perfectly clear what are the incentives to join the Convention and inscribing heritage sites in the List. Having national heritage sites with World Heritage recognition does not guarantee greater protection of or additional resources to the enlisted properties. For instance, the World Heritage Fund is about US$4 million per year, a sum insufficient to cope with the growing needs and international assistance requests (UNESCO, 2008). As a result, the protection of World Heritage properties mainly rests on national conservation programs and the benefits of having sites with world heritage status only accrue in forms similar to those of collective quality mark. Countries may benefit from World Heritage by signaling the quality of their cultural and natural properties, attracting further resources for heritage protection or marketing their world heritage sites as tourism destinations (Van der Aa, 2005).

The decision to leave to member states the initiative for proposing sites in the List has led to two main effects. First, World Heritage is not a static collection of national properties of outstanding value. On the contrary, the number of World Heritage Sites has grown over time. This is due to new countries that have ratified the Convention since its came into force and have brought new heritage sites worth of consideration at different stages. In addition, the nomination activity by member states has continued at a sustained pace, with an average of 30 sites inscribed every year, but at a decreasing marginal rate. As shown in Figure 1, the average number of new sites inscribed per country was 0,4 or greater in the first decade of the, while it has decreased under 0,4 new sites per country from 1988 onward.

FIGURE 1 ABOUT HERE

Second, and more interestingly, the World Heritage List is recognized to be unbalanced in the type of inscribed properties and in the geographical areas of the world that are represented (Rakic, 2007). As shown in Table 1, the great majority of inscribed properties are cultural sites and most of world heritage is located in developed regions of the world, in particular in Europe and North America.

TABLE 1 ABOUT HERE

While it can be contended that analyzing imbalances according to the spatial distribution of properties across states is only one point of view, Frey and Pamini (2010) point out that even considering the number of sites according to population, area and income unit of countries does not lead altogether to an equal distribution of World Heritage.

In order to rectify some of the representativeness gaps, since 1994 the World Heritage Committee has adopted a number of measures, which add new categories and slightly modify the criteria for sites selection in favor of unrepresented heritage expressions, or limit both the nomination capacity of states and the number of examined proposals. These actions are clearly to favor nominations from unrepresented parts of the world, such as Africa or Asia and the Pacific, where the significance of places often lay not in monumental structures or heritage sites are younger as far as the date of construction is concerned. (UNESCO, 2007). However, the goal of a balanced and representative selection is far from having been achieved. For instance, considering the new categories of cultural landscapes, modern twentieth century heritage, industrial heritage, or prehistoric heritage, Europe has benefited most from the opportunity to nominate sites in these categories (Van der Aa, 2005).

These shortcomings suggest that, albeit the measures undertaken by the World Heritage Committee, unbalances in the list may derive from other factors affecting the world heritage system.

3. Unveiling the determinants of World Heritage Listing

In order to understand why some countries own more cultural and natural properties enlisted as World Heritage we focus on a set of determinants, which encompass both countries' characteristics and their activity in the world heritage system. While the selected factors do not fit at the moment into a comprehensive model, they nevertheless provide useful insights for inferring on both the availability of heritage worth to be inscribed in every country and on the activity of member states in the World Heritage selection process.

Availability and quality of heritage

As the locations of heritage sites are the chance products of history and geography, the stock of cultural and natural heritage endowments should be the leading factor to determine the concentration of world heritage sites within a

country. In principle, it could be argued that the more the heritage in a region, the higher the probability for having it inscribed in the World Heritage List.
However, identifying the stock of heritage sites worth of inscription across countries faces two main problems.
First, especially for cultural properties, it is difficult to have an objective and shared definition of heritage, which it makes hard the comparison across countries. This shortcoming is also evident in the concerns raised by the World Heritage Committee about the risk of western-centric criteria for the inscription of heritage sites. For instance, using history as an indicator of cultural production and heritage, Van der Aa (2005) notices a strong correlation between the distribution of world heritage sites according to regions and time of construction, on one hand, and the attention to periods and regions by western history books, on the other hand. Second, lack of data on the quality of heritage endowments lead to more difficult estimates on the stock of heritage worth of inscription in the World Heritage List. For instance, while quantity of heritage is important, quality and the condition of its preservation are crucial. Authenticity and integrity are indeed two essential requirements for World Heritage inscription.

Population and size

Because of the lack of reliable and objective measures of the stock of heritage endowments worth to be inscribed in the List, *Population* and *Size* of countries are two indicators that can significantly affect the number of World Heritage Sites per state.
Population should be particularly relevant for cultural sites, as the greater the concentration of humans in a region, the higher the chance of cultural production in the past and heritage in that area.
Likewise, country area is expected to positively affect the number of World Heritage sites, because the larger a country, the more likely it is to find some Site worth including in the List. This argument seems to be more convincing for Natural than for Cultural Sites, because a large country can be expected to have more different natural environments and landscape.

Economic and Institutional factors

Economic conditions may be an additional factor affecting the number of sites per country. As noted by Frey and Pamini (2010), economic conditions, such as *GDP*, may express the political power of countries, used to lobby for inclusion of their own sites, regardless any objective evaluation of the quality and outstanding universal value of heritage.
Beyond this rent-seeking view, the development level of a country, measured by *Income per capita*, may be positively related to the number of Sites inscribed because arguably in the richest societies more resources can be devoted to heritage preservation.
In a similar vein, other institutional factors may affect countries in their willingness to propose and having inscribed World Heritage Sites. First, the level of education reflects human capital in a country and may influence the importance given to cultural goods and consequently to heritage preservation. For instance, it could be argued that the higher is the level of education, the greater is the interest for a country to propose sites in the List. Second, the quality of political systems and national institutions may affect the number of world heritage sites inscribed by a country. Indeed, it could be expected that states with the most illiberal and repressive regimes may be less interested in

allocating resources to heritage preservation and taking actively part to the World Heritage system.

Factors within the World Heritage System

Finally, there are some factors intrinsic to the activity of a country within the World heritage systems that may affect the distribution of World Heritage sites. First, since member states can propose each year new inscriptions of cultural and natural properties, the length of membership in the World Heritage Convention increase both directly and indirectly the probability of nominating and having inscribed sites. Directly, because older state members have more opportunities to nominate sites as compared to younger members. Indirectly, because the inherent learning process improves the ability of countries in dealing with the nomination procedures.
Second, countries that actively participate in the World Heritage Convention are often also represented on the World Heritage Committee, which comprises twenty-one member countries, in charge for about 4 years. Since the World Heritage Committee decides each year the sites to be inscribed or referred back, being member of this board may signal an active participation of the country to the World Heritage System or even influence the selection process. For instance, between 1978 and 2009, countries that are represented on the committee get on average 0,54 sites per year on the World Heritage List, as compared to the average of 0,15 sites listed per year by countries that were not in the Committee (Van Der Aa, 2005).

4. Empirical Evidence

The empirical analysis is based on an unbalanced panel data of 131 countries, of which 34 developed and 97 developing, in the period 1978-2008. Unlike the cross-country estimation, the panel data form allows us to indirectly take into account the heritage endowment of each country. Since this is difficult to measure and to model as an independent variable, we typify its effect by considering it an unobserved variable differing between-country but constant within-country; in other words, the effects of the regressors are considered keeping constant cultural and natural endowment. This is carried out by using fixed-effects estimations

The dependent variable, country's cumulative number of World Heritage sites, is regressed on six independent variables: country's GDP and, alternatively, per-capita income expressed in PPP and at constant prices; country's population size; the number of year since the country joined the World Heritage Convention; the number of year the country has been member of the World Heritage Committee; country's political rights and, alternatively, civil freedom ratings; country's average years of education.

TABLE 2 AROUND HERE

Since the cumulative number of World Heritage sites is a count variable, at first we estimate a Poisson regression. The results are showed in tables 3 and

4. As expected, the per-capita income has a positive and significant effect on the number of World Heritage sites. This suggests that the lower the development level of a country, the lower is the extent at which it internationally promotes and protects its heritage. As discussed above, there are various reasons behind this relationship. First of all, a country with a low development level and then scarce economic resources could have other political priorities rather than the promotion of cultural and natural heritage. Moreover, also the protection, management, authenticity and integrity of properties are taken into account by the selection process; however, heritage sites in poor countries often do not match these requirements. Furthermore, the weakness of institutions and the scarcity of social capital could prevent the capacity to convincingly propose new sites to enlist. Finally, this relationship could reflect the geographical distribution of the World Heritage sites and the possible Western-centric idea of what is or is not culture.

TABLE 3 and 4 AROUND HERE

The GDP coefficient is positive and highly significant, revealing that the economic size of a country influences its active participation to the World Heritage System: countries with a greater economic size could have a higher influence on international organizations; at the same time, the national resources available for the promotion of culture could be larger. On the contrary, the demographic size surprisingly has the opposite effect: the larger the population of a country, the lower the number of sites enlisted in the World Heritage. Even if it is counterintuitive, this result can be interpreted by three ways. First, countries with a similar economic size (for example Portugal and Bangladesh) but with a very different demographic size will have also different per-capita income; this implies that, ceteris paribus, the country with a larger population will have a lower number of World Heritage sites because of the per-capita income effect. Second, this can reflect the over-representation of developing countries in the sample, usually characterized by large population and high fertility rate, and the over-representation of developed countries in the World Heritage list, usually characterized by smaller population and lower fertility rate. Third, by looking at the within country time-effect, it is presumable that the growth rate of population has been higher than the growth rate of the World Heritage sites, especially for developing countries.

With regard to the influencing factors within the World Heritage System, i.e. the length of the membership in the World Heritage Convention and the number of years with a seat in the Committee, we find that both the coefficients are positive and highly significant. As expected, countries that are members of the World Heritage System for longer time had more possibilities of proposing their sites; moreover, it is probable that a process of learning-by-doing occurs and improves the ability of dealing with the application process. At the same time, countries with a higher experience in the Committee can absorb the necessary skills to deal with the selection process and have a direct influence on it.

Results also show the effects not only of strictly economic factors but also of country's social characteristics. However, their effect is weak and with an

unexpected sign. Both political and civil freedoms have a significant and positive coefficient, revealing that countries with less freedom are more represented in the World Heritage. This result is counter-intuitive for two reasons. First, from the cultural point of view, it is reasonable that free populations have greater possibilities to express themselves and then to produce culture. Second, less democratic regimes often are closed toward the international community and not willing to actively participate to international organizations' activities, even when they are members. However, this result can be explained by considering the over-representation of developing countries, usually less free with respect to developed economies. Moreover, among developing countries, many African states with a low degree of freedom joined the Convention in the first years after its declaration.

Results then suggest that countries actively contribute to the World Heritage in spite of their level of democracy. Also the average level of education of a country seems to have a significant but unexpected effect: the higher the education level, the lower is the number of World Heritage sites. On the one hand, as in the case of the population effect, this can be caused by the within country time-effect: since the average years of education have constantly and rapidly increased in the most part of countries (Thomas et al., 2000), it is possible that their rate of growth has been sharper than the rate of growth of enlisted World Heritage sites. On the other hand, the growth of the education level was higher for developing countries, because of the younger and new-educated population, than for developed countries, with an average education level kept down by an important presence of old-aged people; in some cases developing countries, even if with notable disparities, reached and surpassed the average education level of developed countries (see Barro-Lee dataset, Barro and Lee, 2001).

Since we are dealing with a sample of countries that are heterogeneous and show different characteristics, we estimated the fixed-effects model also by using a negative binomial regression. This allows us to take into account the potential overdispersion of our data. Results are reported in Tables 5 and 6. Even if some coefficients lose of high significance, the results do not significantly change and confirm those showed by the Poisson regression. The only notable difference is in the sign of population coefficient. When we regress the number of World Heritage sites on the six independent variables, we find that the effect of the demographic size is statistically positive, as expected. This result suggests that the negative coefficient found with the Poisson regression for the population size could be affected by overdispersion.

TABLE 5 and 6 AROUND HERE

Until now we have used the panel form with fixed effects estimates. However, it is worth verifying our results by using cross-section estimates (Tables 7, 8 and 9). At this point of analysis, this presents at list three advantages. First, it allows us to add country geographical size as a new independent variable, which is time-invariant and then not embodied as a regressor in the fixed effects estimates. This independent variable could reasonably have an effect on the number of World Heritage sites, especially natural sites. Second, we can directly

compare our results with those of previous literature, based on cross-country estimates. Third, we can check the reliability of our results by using a zero-inflated negative binomial regression, which is appropriate when the dependent variable could suffer from excess of zeros, without incurring the technical problems of the panel form. We present results for 1987, 1997 and 2007. Unfortunately, we have not observations for all the three years regarding the education variable, so that we reduce the number of independent variables to five.

TABLE 7, 8 and 9 AROUND HERE

First of all, we find that the effect of the economic variables, GDP and per-capita income, is always positive and significant throughout the years considered for estimation. This result further remarks the importance of the economic size and development level in influencing at which extent a country is represented in the World Heritage, despite its cultural and natural endowment. The coefficient of the population is positive although not always significant. This confirms the results of the negative binomial panel regression in spite of those of the Poisson estimates: countries with large population have more sites enlisted in the World Heritage. Until now, our results are coherent to those of the previous literature (Frey and Pamini, 2009). The same is not true for the effect of the geographical size: we find indeed that its coefficient has negative sign; however, it is not significant, suggesting that the geographical size has not a notable impact on the number of World Heritage sites. Interestingly, the length of membership and Committee delegation have the usual positive effect, but they are significant just in 1997 and 2007. In 1987, just factors with an immediate effect –– such as GDP, per-capita income and population- –are found to be significant. This suggests that cumulative factors need a certain time in order to become effective. Surprisingly, when we move from the panel to the cross-section form the sign of political and civil liberties changes from positive to negative; however, these have not a significant effect.

Developed vs. developing countries

Table 10 shows the results of the Negative Binomial panel regression separately for developing and developed countries. Interestingly, we find very different results between the two groups of countries. Looking at developed countries, it seems that the only two significant factors are those within the World Heritage System: the length of the membership and Committee delegation, both with positive sign. The economic and social variables, on the contrary, have not a significant impact on the extent at which developed countries are represented in the World Heritage list. Of course, developed countries are a more homogeneous group from an economic and social point of view, so that the great difference is made by the active participation within the World Heritage System.

TABLE 10 AROUND HERE

Results for developing countries on the contrary reveal that for this group

all the variables we take into account play a fundamental and significant role in determining the number of a country's World Heritage sites. The impact of the economic variables is strong and significant, suggesting that developing countries with a larger economic size and a middle level of development are more involved in the World Heritage than very poor countries. Moreover, also for developing countries it is important to participate to the World Heritage activities and to be member of the Convention from a longer time. The positive effect of political and civil freedom, although not significant, is confirmed. The only two coefficients, which negatively affect the number of World Heritage sites are those of population size and average level of education, probably reflecting the fact that both registered a rate of growth greater than that of the number of World Heritage sites in developing countries.

Cultural vs. natural sites

Table 11 reports the results of the Negative Binomial panel regression separately for the cumulative number of cultural and natural sites by country as the dependent variable. The results for the cultural sites substantially remarks what we found for the World Heritage sites in general: countries with a higher level of development, a large economic size, a smaller population and a long and more active participation to the World Heritage System have on average more sites enlisted. Also in this case, the degree of freedom and the average level of education have not the expected sign; however their effects, surprisingly as the effect of the Committee delegation, are not significant. Interestingly, these considerations are no longer valid when we estimate the effect of the same six variables on the number of natural sites. In this case, just the length of the membership, the only significant variable, matters. The coefficients of the economic and social variables, as well as that of the number of years in the Committee, are not significant. This suggest that while the explanatory variables used in our study are important to explain the differences in the number of World Heritage sites in general and, especially, cultural sites, they are not sufficient to deal with the natural heritage.

TABLE 11 AROUND HERE

5. Conclusions

The aim of this paper has been to provide a preliminary evidence of the main determinants affecting World Heritage listing across countries and time.
According to our results, four main fundamental factors explain the distribution of World Heritage Sites across countries, namely the development level, the economic size, the length of membership in the Convention and the number of years within the World Heritage Committee. The two former conditions represent specific countries' characteristics and the latter suggest the presence of a learning process by states members in using the World Heritage system.
While the development level and the economic conditions positively affect the number of sites inscribed by countries, this does not hold for other social and political factors, such as the level of education and the quality of the political system and national institutions. Arguably, in 30 years of operation of the Convention, economic development has had a greater effect in determining the

inscription of World Heritage Sites than advances in social conditions of a country. Further, even the level of the population has an ambiguous effect on the number of World Heritage Sites. This may be due to the fact that over the last 30 years and especially in LDCs, population has grown at a greater pace as compared to the number of World Heritage Sites.

Our results are particularly significant when considering Cultural properties. By contrast, only the length of membership in the World Heritage convention was found significant when considering Natural properties. This suggests that the determinants affecting the number of Natural and Cultural sites may be different and therefore the two types of heritage should be treated in separate terms both in the policy and research agenda.

Finally, there exist differences in the determinants affecting world heritage listing between developed and less developed countries.
In the former group, where countries tend to have more homogeneous economic and social conditions, the differences in the number of World Heritage Sites is mainly affected by factors within the World Heritage system.
On the contrary, in the group of less developed countries, the development of the country and its economic size matter in determining the capacity to inscribe heritage sites worth of World status. This suggests that very poor countries risk to be unrepresented in the World Heritage List.

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APPENDIX – List of Figures and Tables

Figure 1 – Average number of new sites inscribed per member states

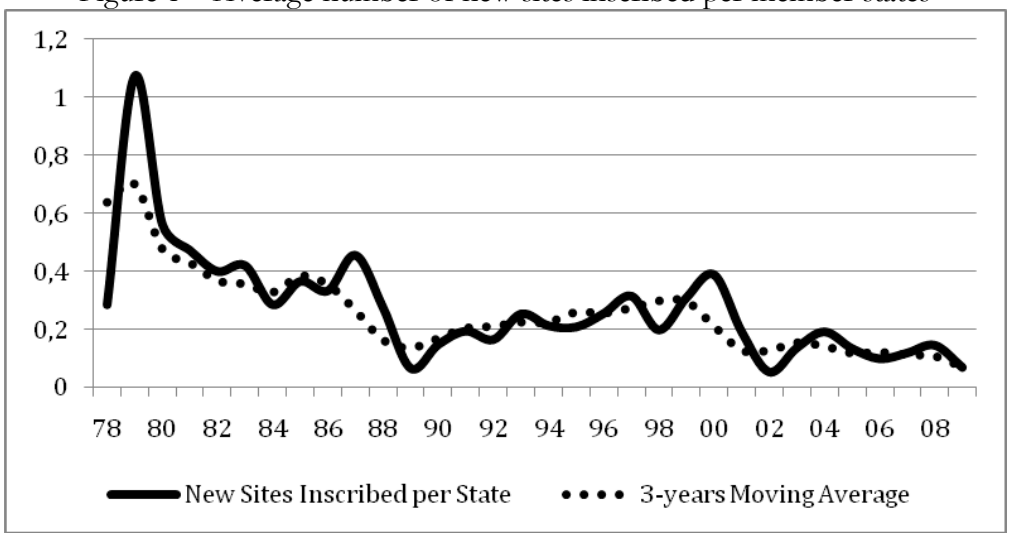

Table 1 – The World Heritage List according to type of Heritage and Regions

Regions	Cultural	Natural	Mixed	Totall	%
Africa	42	33	3	78	9%
Arab States	60	4	1	65	7%
Asia and the Pacific	129	48	9	186	21%
Europe and North America	375	56	9	440	49%
Latin America and the Caribbean	83	35	3	121	14%
TOTAL	689	176	25	890	100%

Table 2 – Data Description

Code	Description	Units	Source
World Heritage Sites	Number of World Heritage Sites per Country	number of sites	Unesco - World Heritage Center
GDP	Gross Domestic Product	GDP in PPP constant 2005 international US$	World Bank
PC	Income per Capita	Income per capita in PPP constant 2005 international US$	World Bank
SIZE	Surface area of the country	sq. Km	World Bank
POP	Population of the Country at mid year	Thousands (000) inhanbitants	World Bank
MEMBER	Years of membership to the World Heritage Convention	number of years	Unesco - World Heritage Center
COMM	Number of Years as member of the World Heritage Committee	number of years	Unesco - World Heritage Center
PFREE	Country score in political freedom (1= high to 7 = low)	Index Value	Freedom House
CFREE	Country score in civil liberties (1= high to 7 = low)	Index Value	Freedom House
EDU	Average year of education	number of years	Barro-Lee Dataset

Table 3: Results – Poisson regressions. Dependent variable: number of sites.

PC	**1.692632*** (0.0481196)**	**1.373702*** (0.0523292)**	**0.2090103*** (0.0703788)**	**0. .1803827** (0.0709691)**	**0.1652171* (0.0714439)**	**0.3371843** (0.1370529)**	**0.176967** (0.0709491)**	**0.3590002*** (0.1357687)**
POP		**1.30459*** (0.0906577)**	**-1.078156*** (0.135125)**	**-0.992541*** (0.1377106)**	**-1.018785*** (0.1380922)**	**-1.427384*** (0.2513113)**	**-1.058245*** (0.1392446)**	**-1.397247*** (0.2491586)**
MEMBER			**0.0653285*** (0.0027669)**	**0 .0590452*** (0.0033518)**	**0.0605751*** (0.0034473)**	**0.0862864*** (0.00734)**	**0.0626906*** (0.0035721)**	**0.0844873*** (0.0071615)**
COMM				**0.014358*** (0.0043487)**	**0.0134816*** (0.0043735)**	**0.0027671 (0.0071048)**	**0.0120101*** (0.004428)**	**0.0027426*** (0.0071102)**
PFREE					**0.0225855*** (0.0120745)**	**0.0396538* (0.0173368)**		
CFREE							**0.0458308*** (0.0152609)**	**0.0498604*** (0.0212396)**
EDU						**-0.0522236 (0.0532231)**		**-0.0451691*** (0.053223)**
Observations	**2848**	**2848**	**2848**	**2848**	**2848**	**1349**	**2848**	**1349**
N=	**130**	**130**	**130**	**130**	**130**	**80**	**130**	**80**
T=	**32**	**32**	**32**	**32**	**32**	**32**	**32**	**32**
Log-Likelihood	**-4621.4352**	**-4514.4779**	**-4220.6177**	**-4215.1483**	**-4213.4086**	**-2101.7508**	**-4210.6568**	**-2101.6062**

Notes: Values of standard errors in brackets. *, ** and * mean coefficients are significant respectively at 95%, 99% and 99.9%. The variables PC and POP are expressed in natural logarithms.**

Table 4: Results – Poisson regressions. Dependent variable: number of sites.

GDP	**1.349616*** (0.0352268)**	**1.36279*** (0.0513988)**	**0 .1845958*** (0.0704964)**	**0 .1598482** 0.0709487**	**0.1453921* (0.0713642)**	**0.3679376*** (0.1379511)**	**0.1583567* (0.0709249)**	**0.3885869*** (0.1368679)**
POP		**-0.0424694 (0.1205605)**	**-1.264238*** (0.1311586)**	**-1.150952*** (0.1354825)**	**-1.163628*** (0.1354558)**	**-1.769922*** (0.2662216)**	**-1.214528*** (0.1368988)**	**-1.759731*** (0.265667)**
MEMBER			**0.0657681*** (0.0028249)**	**0.0592502*** (0.0034124)**	**0.0608117*** (0.0035057)**	**0.0854914*** (0.0073763)**	**0.0628727*** (0.0036238)**	**0.083688*** (0.0071995)**
COMM				**0.0146855*** (0.0043397)**	**0.0137651*** (0.0043659)**	**0.0027943 (0.0071)**	**0.0123096*** (0.0044197)**	**0.0027841 (0.0071043)**
PFREE					**0.0230846 (0.0120636)**	**0.0396829* (0.0172902)**		
CFREE							**0.0461226*** (0.015258)**	**0.0499908** (0.0212128)**
EDU						**-0.0525464 (0.0531664)**		**-0.0453486 (0.0531613)**
Observations	**2854**	**2854**	**2854**	**2854**	**2854**	**1349**	**2854**	**1349**
N=	**131**	**131**	**131**	**131**	**131**	**80**	**131**	**80**
T=	**32**	**32**	**32**	**32**	**32**	**32**	**32**	**32**
Log-Likelihood	**-4514.0404**	**-4513.9783**	**-4227.6032**	**-4221.8577**	**-4220.0373**	**-2101.2203**	**-4217.3075**	**-2101.072**

Notes: Values of standard errors in brackets. *, ** and * mean coefficients are significant respectively at 95%, 99% and 99.9%. The variables GDC and POP are expressed in natural logarithms.**

Table 5 Results – Negative Binomial regressions. Dependent variable: number of sites.

PC	**1.713198*** (0.0526064)**	**0.3738224*** (0.0677493)**	**0.1334333 (0.0826339)**	**0.1239063 (0.081525)**	**0.1082869 (0.0821168)**	**0.1845038 (0.1558996)**	**0.115781 (0.0821903)**	**0.197644 (0.1547787)**
MEMBER		**0.0492581*** (0.0018621)**	**0.067519*** (0.0028837)**	**0.0617435*** (0.003469)**	**-1.107904*** (0.1327068)**	**-1.512056*** (0.2446909)**	**-1.148767*** (0.1340741)**	**-1.499817*** (0.2421474)**
POP			**-1.160881*** (0.1314924)**	**-1.08749*** (0.1320965)**	**0.0632055*** (0.0035616)**	**0.089005*** (0.0073361)**	**0.0656155*** (0.003706)**	**0.0875814*** (0.0071655)**
COMM				**0.0128892*** (0.0044454)**	**0.01207*** (0.0044687)**	**0.0011207 (0.0072713)**	**0.0104275* (0.004528)**	**0.0006838 (0.0072919)**
PFREE					**0.0228271 (0.0122709)**	**0.0412592** (0.0176502)**		
CFREE							**0.0489394*** (0.0155165)**	**0.0552664** (0.0216386)**
EDU						**-0.040635 (0.0549138)**		**-0.0310807 (0.0547031)**
CONSTANT	**-6.951677*** (1.274291)**	**11.99123 (99.79144)**	**2.013268*** (2.013268)**	**15.91754*** (1.983027)**	**16.19359*** (1.993835)**	**20.54279*** (3.641718)**	**16.48666*** (2.012822)**	**20.14561*** (3.598653)**
Observations	**2848**	**2848**	**2848**	**2848**	**2848**	**1349**	**2848**	**1349**
N=	**130**	**130**	**130**	**130**	**130**	**80**	**130**	**80**
T=	**32**	**32**	**32**	**32**	**32**	**32**	**32**	**32**
Log-Likelihood	**-4620.9585**	**-4252.4711**	**-4214.7689**	**-4210.5608**	**-4208.8397**	**-2096.5688**	**-4205.6028**	**-2096.0364**

Notes: Values of standard errors in brackets. *, ** and * mean coefficients are significant respectively at 95%, 99% and 99.9%. The variables PC and POP are expressed in natural logarithms.**

Table 6: Results – Negative Binomial regressions. Dependent variable: number of sites.

GDP	**1.349614*** (0.0352269)**	**0.046088 (0.0691679)**	**0.0993062 (0.0831709)**	**0.0955684 (0.0820018)**	**0.0811484 (0.0824762)**	**0.2201812 (0.157892)**	**0.0900198 (0.0825739)**	**0.2313694 (0.1570238)**
MEMBER		**0.0552774*** (0.0025785)**	**0.068283*** (0.0029658)**	**0.0622933*** (0.0035604)**	**-1.198959*** (0.127111)**	**-1.708812*** (0.2535976)**	**-1.247489*** (0.1282972)**	**-1.707798*** (0.2508959)**
POP			**-1.274026*** (0.125012)**	**-1.192689*** (0.1268672)**	**0.0637695*** (0.0036483)**	**0.0882483*** (0.0073804)**	**0.0661317*** (0.0037855)**	**0.0868517*** (0.0072155)**
COMM				**0.0130574*** (0.0044488)**	**0.0122021*** (0.0044729)**	**0.0010925 (0.0072581)**	**0.0105701** (0.0045315)**	**0.0006734 (0.0072787)**
PFREE					**0.0233131 (0.0122677)**	**0.0410678** (0.0175929)**		
CFREE							**0.0492528*** (0.0155224)**	**0.0550956** (0.0216025)**
EDU						**-0.0415855 (0.0548471)**		**-0.0320125 (0.0546359)**
CONSTANT	**-17.4129 (25.40355)**	**13.78526 (118.7752)**	**16.40074*** (2.447621)**	**15.55773*** (2.404622)**	**15.92648*** (2.41683)**	**18.48068*** (4.348208)**	**16.13505*** (2.435184)**	**18.01866*** (4.307358)**
Observations	**2854**	**2854**	**2854**	**2854**	**2854**	**1349**	**2854**	**1349**
N=	**131**	**131**	**131**	**131**	**131**	**80**	**131**	**80**
T=	**32**	**32**	**32**	**32**	**32**	**32**	**32**	**32**
Log-Likelihood	**-4514.0412**	**-4273.3493**	**-4221.3557**	**-4217.0463**	**-4215.2506**	**-2096.2943**	**-4212.0293**	**-2095.7634**

Notes: Values of standard errors in brackets. *, ** and * mean coefficients are significant respectively at 95%, 99% and 99.9%. The variables GDC and POP are expressed in natural logarithms.**

Table 7: Results – Cross-Country Zero Inflated Negative Binomial regressions. Dependent variable: number of sites. Year 1987.

	Probit	Inflated	Probit	Inflated	Probit	Inflated	Probit	Inflated
PC	**0.1991845***	**-42.84765**	**0.2445416*****	**-30.6959**				
GDP					**0.2507924*****	**-33.0919**	**0.2989662*****	**-25.6582**
POP	**0.3600787*****	**-40.04655**	**0.3793609*****	**-23.81327**	**0.1408934**	**1.632196**	**0.115455**	**5.106033**
SIZE	**-0.0610175**	**11.45948**	**-0.0706222**	**11.10321**	**-0.0796997**	**8.929625**	**-0.0916165**	**9.311953**
MEMBER	**0.0247223**	**-16.41901**	**0.025154**	**-10.89301**	**0.0281183**	**-13.02327**	**0.0288877**	**-9.3232**
COMM	**0.0349373**	**-3.340878**	**0.0335782**	**-0.5333093**	**0.0280975**	**-2.873898**	**0.0263918**	**-0.63524**
PFREE	**-0.0634413**	**-17.65784**			**-0.0492761**	**-13.35414**		
CFREE			**-0.0213731**	**-15.08301**			**-0.0070506**	**-12.3118**
CONSTANT	**-3.233984*****	**700.8723**	**-3.825716*****	**439.0444**	**-5.545457*****	**775.1709**	**-6.507286*****	**549.6415**
Observations	**85**		**85**		**85**		**85**	
N=	**54**		**54**		**54**		**54**	
T=	**31**		**31**		**31**		**31**	
Log-Likelihood	**-131.4664**		**-132.1989**		**-130.125**		**-130.614**	

Notes: Values of standard errors in brackets. *, ** and * mean coefficients are significant respectively at 95%, 99% and 99.9%. The variables PC, GDP, POP and SIZE are expressed in natural logarithms.**

Table 8 Results – Cross-Country Zero Inflated Negative Binomial regressions. Dependent variable: number of sites. Year 1997.

	Probit	Inflated	Probit	Inflated	Probit	Inflated	Probit	Inflated
PC	**0.3197878*** **	**2.668343**	**0.348885*** **	**3.246897**				
GDP					**0.3673725*** **	**2.674723**	**0.4047132*** **	**2.719626**
POP	**0.398361*** **	**-0.6609176**	**0.4105856*** **	**-1.125496**	**0.0523161**	**-3.28111**	**0.0253813**	**-3.711572**
SIZE	**-0.0035815**	**0.9261668**	**-0.011674**	**1.266437**	**-0.0169531**	**0.896845**	**-0.026129**	**1.053474**
MEMBER	**0.032508** **	**-0.488621**	**0.0338206** **	**-0.6738619**	**0.0335828** **	**-0.4783969**	**0.0347167** **	**-0.5393053**
COMM	**0.0355853** **	**-4.465603**	**0.0341872** **	**-2.822578**	**0.0316832* **	**-4.554523**	**0.030021* **	**-2.759988**
PFREE	**-0.0563168**	**1.265096**			**-0.0445526**	**1.252634* **		
CFREE			**-0.0360287**	**1.981187**			**-0.0155105**	**1.649941**
CONSTANT	**-5.72594*** **	**-31.2795**	**-6.057662*** **	**-38.80415**	**-8.758481*** **	**-49.98853**	**-9.419222*** **	**-50.81769**
Observations	**139**		**139**	**139**	**139**		**139**	
N=	**103**		**103**	**103**	**103**		**103**	
T=	**36**		**36**	**36**	**36**		**36**	
Log-Likelihood	**-250.8103**		**-251.4028**	**-250.8103**	**-247.7942**		**-248.349**	

Notes: Values of standard errors in brackets. *, ** and * mean coefficients are significant respectively at 95%, 99% and 99.9%. The variables PC, GDP, POP and SIZE are expressed in natural logarithms.**

Table 9: Results – Cross-Country Zero Inflated Negative Binomial regressions. Dependent variable: number of sites. Year 2007.

	Probit	Inflated	Probit	Inflated	Probit	Inflated	Probit	Inflated
PC	**0.366233*** **	**-2.696814**	**0.3675595*** **	**-2.27281**				
GDP					**0.4056076*** **	**-1.92908**	**0.4082618*** **	**-2.53995**
POP	**0.3952149*** **	**-33.40941**	**0.3983102*** **	**-39.5091**	**0.007247**	**-29.1125**	**0.0074054**	**-46.692**
SIZE	**-0.0032954**	**-2.50509**	**0.000827**	**1.675947**	**-0.01477**	**-3.20442**	**-0.0104743**	**0.162222**
MEMBER	**0.0158915**	**-8.912517**	**0.0186398***	**-6.66753**	**0.016324**	**-8.64677**	**0.0189251***	**-7.12228**
COMM	**0.0302174*** **	**5.915559**	**0.0291452*** **	**6.675908**	**0.0278439*** **	**5.012454**	**0.0266934*** **	**6.989844**
PFREE	**-0.0715201***	**22.32132**			**-0.06052**	**21.18263**		
CFREE			**-0.0922421***	**28.75452**			**-0.0789748**	**37.7404**
CONSTANT	**-5.780064*** **	**296.9979**	**-5.890051*** **	**245.0205**	**-9.00367*** **	**297.0692**	**-9.143905*** **	**328.8831**
Observations	**162**		**162**		**162**		**162**	
N=	**127**		**127**		**127**		**127**	
T=	**35**		**35**		**35**		**35**	
Log-Likelihood	**-309.6014**		**-312.166**		**-306.24**		**-308.5467**	

Notes: Values of standard errors in brackets. *, ** and * mean coefficients are significant respectively at 95%, 99% and 99.9%. The variables PC, GDP, POP and SIZE are expressed in natural logarithms.**

Table 10: Results –Negative Binomial regressions. Dependent variable: number of sites.

	SAMPLE: DEVELOPED COUNTRIES				SAMPLE: DEVELOPING COUNTRIES			
PC	-0.483457	-0.4339143			0.3178788*	0.3285764*		
	(0.5160684)	(0.5173407)			(0.1576175)	(0.1586447)		
GDP			-0.2741555	-0.3047055			0.359664*	0.3696593**
			(0.461592)	(0.46794)			(0.1580691)	(0.1589947)
MEMBER	0.0991126***	0.1039951***	0.1286012***	0.1321871***	0.0773794***	0.075125***	0.0764367***	0.0741685***
	(0.0150211)	(0.0144501)	(0.014286)	(0.0139237)	(0.0094095)	(0.0091815)	(0.0094152)	(0.0091943)
POP	0.0244447	-0.0202458	-3.90618***	-4.057014***	-0.8772681***	-0.8478768***	-1.201476***	-1.180702***
	(0.2670216)	(0.2741589)	(0.6389445)	(0.6220158)	(0.2847024)	(0.2840036)	(0.292815)	(0.2903154)
COMM	-0.0378328***	-0.0409852***	-0.0289753**	-0.0294223***	0.0525018***	0.0532321***	0.0525753***	0.0533607***
	(0.0128413)	(0.0126774)	(0.0113994)	(0.0113333)	(0.0113493)	(0.0114219)	(0.0113257)	(0.0113994)
PFREE	-0.1771437		-0.100012		0.0339776		0.0337936	
	(0.1113689)		(0.104587)		(0.0181676)		(0.0181164)	
CFREE		0.0679195		0.019181		0.0327296		0.032365
		(0.0687966)		(0.0635853)		(0.0238472)		(0.0237765)
EDU	0.174388	0.14372	0.0110792	0.0058276	-0.2861661***	-0.2783631***	-0.2884939***	-0.2808852***
	(0.0906839)	(0.0912999)	(0.0912788)	(0.0909705)	(0.075976)	(0.0764998)	(0.0757608)	(0.0763543)
CONSTANT	5.876862	5.755155	61.04321***	63.88969***	13.14071***	12.62915***	9.949821*	9.367691*
	(4.928618)	(4.983973)	(8.053131)	(7.710929)	(3.88998)	(3.833897)	(4.530828)	(4.496749)
Observations	420	420	420	420	929	929	929	929
N=	27	27	27	27	53	53	53	53
T=	32	32	32	32	32	32	32	32
Log-Likelihood	-794.26543	-795.03568	-771.00281	-763.18714	-1285.884	-1286.6897	-1285.3656	-1286.1774

Notes: Values of standard errors in brackets. *, ** and * mean coefficients are significant respectively at 95%, 99% and 99.9%. The variables PC, GDP and POP are expressed in natural logarithms.**

Table 11: Results –Negative Binomial regressions. Dependent variable: number of cultural-natural sites.

	SAMPLE: CULTURAL SITES				SAMPLE: NATURAL SITES			
PC	**0.4583581*** **	**0.4717977*** **			**-0.068588**	**-0.0441147**		
	(0.170116)	**(0.1701505)**			**(0.3100974)**	**(0.3101539)**		
GDP			**0.469273*** **	**0.4821493*** **			**0.0092311**	**0.0302058**
			(0.1710295)	**(0.1715036)**			**(0.3122356)**	**(0.3125243)**
MEMBER	**0.0837935*** **	**0.0825553*** **	**0.0832772*** **	**0.0819954*** **	**0.0920669*** **	**0.0860575*** **	**0.0909349*** **	**0.0850515*** **
	(0.0082231)	**(0.0080419)**	**(0.0082685)**	**(0.0080929)**	**(0.0196379)**	**(0.0190812)**	**(0.0196772)**	**(0.0191286)**
POP	**-1.450823*** **	**-1.44536*** **	**-1.894154*** **	**-1.900553*** **	**-1.045433**	**-0.9018675**	**-1.029216**	**-0.9089877**
	(0.2781973)	**(0.2763305)**	**(0.296108)**	**(0.2944094)**	**(0.6728736)**	**(0.6620688)**	**(0.6952909)**	**(0.6878067)**
COMM	**0.009406**	**0.0084081**	**0.0095903**	**0.0086128**	**-0.0217304**	**-0.0169574**	**-0.0221675**	**-0.0174603**
	(0.0081716)	**(0.0082589)**	**(0.0081695)**	**(0.0082571)**	**((0.0169088)**	**(0.0165805)**	**(0.0168877)**	**(0.0165503)**
PFREE	**0.0343559**		**0.0350493**		**0.0779329***		**0.0760705**	**0.075896**
	(0.0201692)		**(0.0201114)**		**(0.0391691)**		**(0.0390194)**	**(0.04852)**
CFREE		**0.0458447**		**0.0463441**		**0.0779494**		
		(0.0246807)		**(0.0246553)**		**(0.0486803)**		
EDU	**-0.0867001**	**-0.0757735**	**-0.0864266**	**-0.0752593**	**0.066622**	**0.0649456**	**0.0617369**	**0.0603376**
	(0.0632315)	**(0.0632442)**	**(0.063187)**	**(0.0631929)**	**(0.1334742)**	**(0.133872)**	**(0.1330777)**	**(0.1334793)**
CONSTANT	**19.81213*** **	**19.2428*** **	**16.18976*** **	**15.50638*** **	**26.47114**	**24.27499**	**26.21421**	**24.45964**
	(4.284094)	**(4.092278)**	**(4.88324)**	**(4.724308)**	**(160.2501)**	**(147.9317)**	**(136.1631)**	**(161.0336)**
Observations	**1191**	**1191**	**1191**	**1191**	**831**	**831**	**831**	**831**
N=	**71**	**71**	**71**	**71**	**49**	**49**	**49**	**49**
T=	**32**	**32**	**32**	**32**	**32**	**32**	**32**	**32**
Log-Likelihood	**-1740.962**	**-1740.6838**	**-1740.8534**	**-1740.6012**	**-773.6059**	**-774.30248**	**-773.62992**	**-774.30791**

Notes: Values of standard errors in brackets. *, ** and * mean coefficients are significant respectively at 95%, 99% and 99.9%. The variables PC, GDP and POP are expressed in natural logarithms.**