

Frey, Bruno S.; Pamini, Paolo

**Working Paper**

## World Heritage: Where Are We? An Empirical Analysis

CREMA Working Paper, No. 2009-31

**Provided in Cooperation with:**

CREMA - Center for Research in Economics, Management and the Arts, Zürich

*Suggested Citation:* Frey, Bruno S.; Pamini, Paolo (2009) : World Heritage: Where Are We? An Empirical Analysis, CREMA Working Paper, No. 2009-31, Center for Research in Economics, Management and the Arts (CREMA), Basel

This Version is available at:

<https://hdl.handle.net/10419/214458>

**Standard-Nutzungsbedingungen:**

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

**Terms of use:**

*Documents in EconStor may be saved and copied for your personal and scholarly purposes.*

*You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.*

*If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.*

***World Heritage: Where Are We?  
An Empirical Analysis***

Working Paper No. 2009 - 31

***WORLD HERITAGE: WHERE ARE WE?  
AN EMPIRICAL ANALYSIS***

by

Bruno S. Frey\*

University of Zurich

and

CREMA – Center for Research in Economics, Management and the Arts,  
Switzerland,

and

Paolo Pamini\*\*

ETH-Zurich

(this version 24<sup>th</sup> November 2009/BSF)

*Abstract*

An empirical overview of the UNESCO World Heritage List according to various characteristics is presented. The officially stated intention of the World Heritage List is to protect *global* heritage. Our focus is on the *imbalance* of the existing List according to countries and continents. The *existing* distribution is compared to *hypothetical* distributions considered “balanced” from different points of view. It turns out that the World Heritage List is unbalanced with respect to a distribution of Sites according to population, area or per capita income.

This paper wants *to reveal facts* about the existing distribution, and is designed to help a reasoned discussion to emerge.

---

\* Professor of Economics, Institute for Empirical Research in Economics, winterthurerstr. 30, CH-8006 Zurich, Switzerland. bsfrey@iew.uzh.ch.

\*\* Research Economist at the ETH Zurich, Chair in Law and Economics, HG E 62.2, Rämistr. 101, CH-8092 Zurich, Switzerland. ppamini@ethz.ch.

We are thankful to Maurizio Galli for the support provided in the data handling and Lea Cassar and Reto Cueni for useful comments.

## *I. World Heritage and UNESCO*

In 1959, UNESCO launched an international campaign to save the Abu Simbel temples in the Nile Valley. But already in the 1920s the League of Nations became aware of the growing threat to the cultural and natural heritage of the planet. However, nothing concrete emerged despite many years of intensive discussions and drafting of reports. In November 1972 the General Conference of UNESCO adopted the *Convention concerning the protection of the world cultural and natural heritage* at its 17<sup>th</sup> session in Paris. It came into force in 1977 when it was ratified by 20 nations. It has since been ratified by 186 countries.<sup>1</sup> The properties to be included in the List initially were evaluated in a somewhat *ad hoc* fashion by the Advisory Bodies to the World Heritage Committee. The Convention “seeks to encourage the identification, protection and preservation of cultural and natural heritage around the world considered to be of outstanding value to humanity”. This sole criterion of “outstanding value to humanity” is noble but proved to be almost impossible to clearly define. An important development has been to establish standards of ten criteria for the management, presentation and promotion of World Heritage Sites, as put down in detail in the *Operational Guidelines for the Implementation of the World Heritage Convention* (Unesco, 2005). It has been claimed that “The scrutiny of these systems by the two Advisory Boards is now rigorous...” (Cleere, 2006:xxii). The requirements for inclusion in the List is now based on 10 criteria. Six criteria refer to Cultural, and four to Natural Sites. The former must “represent a masterpiece of human creative genius” (criterion 1) and can either be a building, architectural ensemble or landscape, or events or living traditions. The latter should “contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance” (criterion 6). The full list of criteria is given in Appendix I of the *Operational Guidelines* and is reported in our appendix.

---

<sup>1</sup> States of the World Heritage Convention as of 16.4.2009 according to <http://whc.unesco.org/en/statesparties/>, accessed on 6.9.2009.

The World Heritage List in 2009 comprises 919 Sites,<sup>2</sup> 706 (or 77 percent) of which relate to culture, 187 to nature, and 26 are mixed, i.e. combine cultural and natural heritage (see Table 1).

Table 1: The World Heritage List according to types of heritage and continents, 2009.

The Table follows the UN distinction of continents. As can be seen, by far the largest part of all Sites (430 or 47 percent) on the List are located in Europe. The European predominance is larger for Cultural Sites (54 percent) and smaller for Natural Sites (22 percent). This imbalance was present from the very beginning. Therefore, in 1994 the World Heritage Committee started the *Global Strategy for a Balanced, Representative and Credible World Heritage List*. It intends to raise the share of Non-European Sites as well as the share of living cultures, especially “traditional cultures” included in the List.

The World Heritage List has become highly popular. Many World Heritage Sites are major attractions for cultural tourism, and are icons of national identity (Shackley, 2006:85). While the goal of the whole project is to protect Sites of central importance for humanity, not unexpectedly national interests dominate global interest. “The rhetoric is global: the practice is national” (Ashworth & van der Aa, 2006:148). Some countries are more active than others to secure Sites to be included in the List. 21 or 12 percent of the 178 nations participating in the Convention<sup>3</sup> have a seat in the World Heritage Committee. But these members nominated more than 30 percent of listed Sites between 1978 and 2004 (Van der Aa, 2005:81).

There is an extensive non-economic literature on World Heritage and on the UNESCO programme.<sup>4</sup> The following aspects have received special attention: the process of designation with respect to its formal nature, the stakeholder groups

---

<sup>2</sup> After the 33<sup>rd</sup> ordinary session of the World Heritage Committee, held in Sevilla on 22<sup>nd</sup>-30<sup>th</sup> June 2009, the World Heritage List contains a total number of 890 Sites. For our purposes, we count Sites extending over more than one country as many times as the number of countries involved, therefore obtaining a higher number of Sites. We also do not disregard the two delisted Sites. Methodological remarks are to be found in the notes to Table 1.

<sup>3</sup> There are 186 states parties in 2009 as mentioned above.

<sup>4</sup> Recent contributions are e.g. Leask and Fyall (2006), Harrison and Hitchcock (2005), van der Aa (2005), Leask and Yeoman (2004), Howard (2003).

participating, as well as its politics (e.g. Leask, 2006; Millar, 2006); the consequences of inclusion in the World Heritage List, especially with respect tourism (e.g. Cochrane & Tapper, 2006; Tunney, 2005); visitor management (e.g. McKercher & Cros, 2001; Shackley, 2006); as well as case studies of individual Sites (e.g. for the Yellow Mountain in China Li Fung & Sofield, 2006; for Stonehenge Mason & Kuo, 2006; or for Machu Picchu Regalado-Pezúa & Arias-Valencia, 2006).

In economics, only few works deal with UNESCO World Heritage, the doctoral dissertation by van der Aa (2005), the book by Santagata, de Caro and Marrelli (2008) and the paper by Frey and Pamini (2009) being exceptions. A comprehensive analysis of general heritage issues is provided in Peacock and Rizzo (2008). Other economic analyses mainly evaluate the utility of preserving the past as well as financial consequences.<sup>5</sup>

This paper endeavours to provide an overview of the UNESCO World Heritage List according to various characteristics. According to the World Heritage Convention of 1972, and the Strategy for a Balanced, Representative and Credible World Heritage List of 1994, the officially stated intention is to protect *global* heritage, and not the heritage of particular cultures or countries. Our focus therefore is on the imbalance of the existing List. We compare the *existing* distribution to *hypothetical* distributions which could be considered “balanced” from different points of view. Depending on what aspect of world heritage is considered to be relevant, different points of view emerge. This paper considers and discusses the deviation from an equal distribution per country (participating in the Convention), per capita, per area and per income unit. We conclude that the goals of a “balanced and representative” selection according to these points of view have not been achieved. We leave it to others, in particular to philosophers and ethnologists, to consider whether it *makes sense* and is *desirable* to have any of those “balanced” distributions of World Heritage Sites. Our intention is to present the facts for a reasoned discussion to take place.

---

<sup>5</sup> See, for instance Benhamou, 1996, 2003; Frey, 1997; Greffe, 1999; Klamer & Throsby, 2000; Mossetto, 1994; Mossetto & Vecco, 2001; Netzer, 1998; Peacock, 1978, 1995; Rizzo, 2006; Streeten, 2006; Throsby, 1997a, 1997b, 2003. The collection of articles in Hutter and Rizzo (1997), Peacock (1998), Rizzo and Towse (2002) also contain references to heritage, as do the more general monographs and collections by Frey (2003), Ginsburgh (2004), Ginsburgh and Throsby (2006), Towse (1997, 2003) and Throsby (2001). The consequences of being listed, in particular on the number of visitors frequenting these Sites, are studied e.g. in Bonet (2003) or Tisdell and Wilson (2002).

## *II. The distribution of Sites according to countries.*

It could be argued that *every country* in our planet should have the same importance with respect to its contribution to the heritage of mankind. This point of view emphasizes that every country should be of equal worth for an international organization such as the UN and its agency UNESCO. This applies to “culture” in its broadest definition but also to “nature”: each country can be considered to have aspects of Cultural and Natural Sites worth preserving. This particular point of view refrains from any attempt to compare the Sites between countries. Clearly, this is an extreme position as it does not take into account the size of a country as measured by population or geographical extension.

Some countries in the world have a large number of World Heritage Sites while other countries have few, and a considerable number have none. The distribution is highly skewed as can be seen in Table 2. It exhibits those countries with a large number of ten or more Sites on the World Heritage List.

Table 2: Countries with a large number (ten or more) of Sites on the World Heritage List, 2009.

The list contains 24 countries, 14 (or 58 percent) of which are located in Europe, and 5 each in America and Asia-Pacific. The very top is formed by five countries with more than 30 Sites. The largest number of Sites is in Italy, closely followed by Spain. Thereafter follow China, Germany and France. The group of 9 countries having more than 20 Sites is completed by Mexico, the United Kingdom, India and Russia. As can also be seen in the Table, by far the largest part of Sites in all these countries are Cultural. In contrast, there are some countries with a larger share of Sites defined as Natural rather than Cultural. This is especially the case for Australia (11 Natural vs 2 Cultural Sites), the United States (12 vs 8), Canada (9 vs 6). The US have the largest number of Natural Sites (12), closely followed by Australia (11), Canada, Russia, Brazil and China.

A large number of countries on the globe have no Site at all, be it Cultural or Natural. 41 of the 186 signature countries find themselves in this position. The facts are exhibited in Table 3.

Table 3: Countries with no Site on the World Heritage List, 2009

Most of them are in Africa (14) and in Asia-Pacific (13). It is rather surprising that a country such as Bhutan (which has been a member of the Convention since 2001) does not have one single Site on the UNESCO List, though it would seem obvious that its dzongs well deserve being part of the cultural heritage of the world. It is similarly surprising that countries with beautiful and often visited islands such as Fiji or the Maldives do not have a Natural Site in the World Heritage List. In contrast to the other continents, only four countries in Europe have no Site. These countries (Macedonia, Montenegro and Slovenia) are all rather small, and even very small (Monaco). More precisely, Montenegro, Macedonia and Slovenia presently do have Sites that have been listed at the time of the Yugoslavian Federation. As neither Macedonia, nor Montenegro nor Slovenia received any Site since their independence, they are treated as without Sites in our analysis.

#### *Cultural Sites*

Table 4 considers Cultural heritage Sites. In Africa, 23 nations have no such Site, and 10 nations have just one. The situation is quite similar in America and Asia-Pacific; there are a sizeable number of countries with no or only one Cultural Site on the World Heritage List.

Table 4: Countries with no or only one Cultural Site on the World Heritage List, 2009

#### *Natural Sites*

Table 5 considers Natural Sites on the UNESCO World Heritage List. It shows those countries with the largest number of such Sites.

Table 5: Countries with more than two Natural Sites on the World Heritage List, ranked by quantity and region, 2009



Table 5 shows that the distribution of Natural Sites in the World Heritage List is considerably more balanced than is the case for Cultural Sites. There are four sub-Saharan African countries with more than two Sites with the Democratic Republic of the Congo being on top with no less than five Sites, followed by Tanzania with four Sites. While Arabia is not well represented, the other three continents distinguished by the UN all have a substantial number of Natural Sites on the List. The United States, Australia, Canada and Russia are on top of the List, with 12, 11, 9 and 8 Natural Sites, respectively. Asia and Pacific has five countries, the Americas seven, and Europe five countries with more than two Natural Sites on the List. The more equal distribution of Natural compared to Cultural Sites thus is due to the fact that Africa is well represented, and not that the other continents (except Arabia) have few Sites listed.

### *III. Equal distribution according to population size*

It could be argued that the relevant unit to be considered on the World Heritage List is the *size of the population* per country rather than countries as such. This view takes into account that China with a population of 1,320 million should have more Sites on the List than a small, or very small country such as Monaco (32,700 inhabitants) or Luxemburg (480,000 inhabitants). This point of view may be considered to be most appropriate with respect to culture: each person of the world may be taken to have the same capacity to produce cultural goods. These goods may be of extremely different types and forms and would certainly not correspond to what are sometimes called “high” cultures, such as those of classical Egypt, Greece or Rome. However, we must take into account that the cultural production may have occurred far back in the past when the population size was quite different from today. This aspect varies from country to country, and we therefore focus on World Heritage Sites according to present population size.

Table 6 presents the data for all Sites on the List according to continents. The Table shows the number of total Sites, Cultural Sites, and Natural Sites per 100 million population.

Table 6: Total Sites per 100 million population on the World Heritage List per continent, 2009

Europe with 52 total Sites per 100 million population clearly tops the list. The four other continents (Africa, Americas, Asia-Pacific, and Arabia) have much less Sites per 100 million population (between 23 and 5). As the second and third columns of Table 6 show, the position of Europe is due to the strong position with respect to Cultural Sites. In this respect, the predominance of Europe is particularly striking. That continent has 46 Cultural Sites per 100 million inhabitants, while the others follow with a great distance: Arabia has 21, America 11, Asia-Pacific and Africa are below 6. Per capita, Europe has more than twice as many Cultural Sites than Arabia, and about ten times as many as Asia-Pacific and Africa. The inequality among countries with respect to Cultural Sites on the World Heritage List is thus very marked.

The situation is quite different with respect to Natural Sites. America is the continent with the largest number of such Sites per capita (6 per 100 million inhabitants), followed by Europe and Africa (5). With respect to Natural Sites, Europe has a similar number per capita as Africa, and more than twice as many as Arabia and Asia, with very few Sites per capita. Natural Sites are clearly more equally distributed per capita than are Cultural Sites. In particular, as is to be expected, Africa is doing much better. Somewhat surprisingly, there is only one country in Africa with a large number of Natural Sites per capita. Taking as a cut-off point 50 or more Natural Sites per 100 million inhabitants, there is only the Seychelles (with 2,352 Sites per 100 million inhabitants) which is due to having two such Sites and a population of only 85,000 (See Table 7).

Table 7: Countries with more than 50 Natural Sites per 100 million population on the World Heritage List, 2009

There are six countries in the Americas with more than 50 Natural Sites per 100 million inhabitants. This is due to one Site and small population size (Belize 300,000; Dominica 73,000; Saint Lucia 168,000 and Suriname 458,000), combined with having

three Sites (Costa Rica, Panama). Asia-Pacific has only two countries making the cut, Australia with no less than 11 Natural Sites, and the Solomon Islands with its small population of less than half a million persons. In Arabia, no country, and in Europe one country (Island with its small population) makes the cut.

It can be concluded that looking at the UNESCO World Heritage List in terms of per capita representation reveals a more equal distribution than the number per country but that there are still great differences. A per capita view favours small countries and to some extent improves the position of Africa, but this only holds for Natural, not for Cultural Sites.

#### IV. *Equal distribution according to area*

It could well be argued that the "balance" should relate to the *size of the country* as measured by the area in square kilometres. 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. A large country can be expected to have more different landscapes, some of which may fit the UNESCO criteria. Table 8 presents the distribution according to continents.

Table 8: Total Sites per million square kilometres on the World Heritage List per continent, 2009

The area of the five continent distinguished by the UN is more equally distributed than the population size with its large differences. Therefore, not surprisingly, Europe has by far the largest number of Cultural Sites by million square kilometres (16) compared to only 4 in Asia-Pacific and 2 in Africa. The probability that on a square kilometre land there is a Cultural Site in Europe is more than 7 times higher than in Africa, and more than 4 times larger than in Asia-Pacific. This finding is certainly relevant from the point of view of cultural tourism.

With respect to Natural Sites per sqkm, we notice a rather equal distribution. Europe still tops, but is immediately followed by Africa, America and Asia. Only Arabia is far behind. The probability of finding on a square kilometre land a Natural Site in Europe is indeed almost 5 times larger than in Arabia. This finding is of interest from the point of view of nature tourism.

Particular African countries also do well with respect to Natural Sites per sqkm.

Table 9: Countries with more than 10 Natural Sites per million square kilometres on the World Heritage List, 2009

As can be seen in Table 9, sub-Saharan Africa features four countries with more than 10 Natural Sites per million square kilometres. Two of these are countries with a small area: The Seychelles (460 sqkm) and Malawi (94,000 sqkm). The same holds for America where small countries (Belize, Costa Rica, Dominica, Panama, and Saint Lucia) dominate the List, with Cuba (109,000 sqkm) having the largest in area. Of the four Asian countries with more than 10 Natural Sites per million sqkm, three (Solomon Islands, South Korea and Sri Lanka) are again smaller than 100,000 sqkm. No Arabic country makes the cut-off point. Surprisingly, Europe does quite well. There are 9 countries with more than 10 Natural Sites per million square kilometres, The Slovak Republic and Switzerland surprise with their high number of Natural Sites in such a small territory.

#### V. *Equal distribution according to income*

The distribution of Sites on the UNESCO World Heritage List may also be looked at from yet another, totally different, perspective, namely *political power*. It may be argued that those continents and countries having the highest *per capita income* are better able to have a Site put on the List than do countries with more limited economic means. This view assumes that the choice of Sites for the UNESCO List is dominated by rent-seeking activities rather than by any objective factors as encapsulated in the ten official criteria. What matters are the resources available to lobby for inclusion in the List.

Table 10 shows the distribution according to continents when the per capita income level in constant 2000 US dollars is considered.

Table 10: Total Sites per 1,000 USD GDP per capita at constant 2000 USD on the World Heritage List per continent, 2009

Taking per capita GDP as an indicator for political power, Africa does very well both with respect to the total number of Sites, as for Cultural and Natural Sites. While Africa's per capita income is much smaller than that of, say, Europe, this finding suggests that Africans are per GDP better able to have heritage Sites put on the List than Europeans do. The Asia Pacific continent is also quite successful in this regard. Americans, on the other hand, are less able to translate their per capita economic power into inclusion in the List. In other words, the World Heritage List does not simply reflect political power based on per capita income. The cynical view that the whole List is simply a product of economic power is unwarranted. Rather, the List does take into account considerations beyond income levels. It goes beyond the scope of this paper to try to determine what these factors are but it may well be that the "objective" factors encapsulated in the 10 criteria for inclusion in the World Heritage List, have an influence.

#### **VI. *Econometric estimates***

The three points of view of how a "balance" in the distribution of continents and countries on the World Heritage List can be combined by estimating how the influences of these considerations affect the actual distribution of Sites. Table 11 shows the results for the distribution between continents.

Table 11: The influence of three considerations on the number of Sites on the World Heritage List, per continent, 2009

Table 11 shows the coefficients estimated via a Poisson count regression, the appropriate technique as the dependent variable (the number of Sites in a continent included in the World Heritage List) is only allowed to take natural numbers. The estimates in the first column show that all three considerations have a statistically significant effect (at the 99% level) on the *total* number of Sites per continent. This result suggests that inclusion in the UNESCO World Heritage List is the more likely the larger the population size, the smaller the area, and the higher average income are in the various continents.

The same holds for Cultural Sites (column 2). The probability of having such Sites on the World Heritage List rises with the population size and with the average income in

the various continents, but declines with the continent area. The situation is different for Natural Sites, as shown in column (3). Only the size of the area matters, this time playing a positive role, but not population size or average income. This corresponds to what we found when discussing the influences separately. The sign of the continent area coefficients may surprise. Small Europe, with its many Cultural Sites, could be deemed responsible for it.

Table 12 discusses how far considerations of population size, area, and income affect inclusion of particular countries in the UNESCO List. Since countries apply for the inclusion of a Site in the World Heritage List, the regressions of Table 12 are better suited for our econometric inquiry.

Tab: 12: The influence of three considerations on the number of total Sites on the World Heritage List, per country, 2009

To analyse the total number of Sites on the List, two different specifications are used. Model (1) in Table 12 presents the estimated coefficients of a negative binomial regression rather than those of a Poisson regression in order to cope with so-called overdispersion in the data, i.e. a variance greater than the expected value, which the Poisson model could not account for. It may be observed that the larger the population size, the area and average income of a particular country, the more Sites it is likely to have included in the World Heritage List.

The next two columns in Table 12 refer to model (2) and show the estimated coefficients based on a zero inflated negative binomial regression, appropriate for count data with many zeros (as discussed above, many countries do not have one single Site on the List). The first column of model (2) considers a Bernoulli process estimated by a logit regression. The estimated coefficients reflect whether the countries are *not* on the List, and this first part of the zero inflated count model is often called the inflation equation. We can see that population size, area, and income do not affect this probability in a statistically significant way. The second column of model (2) shows, *provided* that a country has a Site on the List, *how large* their number is, estimating a negative binomial count process. This second part of the zero inflated count model is often called the count equation. According to that estimate, once a country has at least one Site on the UNESCO List, the probability of getting

additional Sites on it is the higher, the larger the population size, the area and average income is.<sup>6</sup>

Table 13 presents the estimates for Cultural Sites per country and reflects the same modeling as in Table 12. Model (1) is a negative binomial regression and model (2) is a zero inflated negative binomial regression.

Table 13: The influence of three considerations on the number of Cultural Sites on the World Heritage List, per country, 2009

According to the estimates in model (1) of Table 13 based on a negative binomial regression, population size and average income positively affect the probability for a country of getting on the UNESCO List of Cultural Sites. The inflation equation of model (2) considers again a Bernoulli process estimated by a logit regression. The estimated coefficients reflect whether the countries are *not* on the List. The three considerations are either not statistically significant, or only at the 90% level. The count equation of model (2) shows, *provided* that a country has at least one Cultural Site on the List, *how large* their number is, estimating a negative binomial count process. According to that estimate, once a country has a Cultural Site on the UNESCO List, the probability of getting additional Sites on it is the higher, the larger the population size and average income while the size of the country's area does not have any effect.

Table 14 deals with the question to what extent the three considerations affect the probability of a country of getting on the UNESCO List for Natural Sites.

Table 14: The influence of three considerations on the number of Natural Sites on the World Heritage List, per country, 2009

Model (1) shows the estimate of the negative binomial regression suggesting that all three considerations positively affect the number of Sites a country gets on the List of Natural Sites (though population size only at the 90% level of statistical significance). The size of the coefficients can be interpreted in the following way: We exponentiate the estimated coefficient and get the so-called incidence-rate ratio (IRR), i.e. the

---

<sup>6</sup> The size of the estimated effects are most interesting in the case of Natural Sites, and are therefore discussed following Table 14.

factor change in the expected count of Sites for a unit increase in the independent variable. The country population has for instance an  $IRR = e^{0.118} = 1.1258$ , which means that an increase in population by 100 mil. (i.e. one unit in our scale) leads to a relative increase of the expected number of Natural Sites of  $IRR - 1 = 12.58\%$ . The country area has an  $IRR = e^{0.225} = 1.2525$ . Increasing *ceteris paribus* the country area by one million sqkm leads to a relative increase of the expected number of Natural Sites of 25.25%. Finally, the GDP/capita has a  $IRR = e^{0.0221} = 1.0223$ . All things being equal, a country with a GDP/capita 1000 USD higher experiences an increase of 2.23% in its expected number of Natural Sites.

The inflation equation of model (2) considers again a Bernoulli process estimated by a logit regression. The estimated coefficients are the logits (logarithmic odds) for the probability of having zero Natural Sites on the List. The coefficient of -16.37\*\* indicates that, *ceteris paribus*, a country with a larger population is *more* likely to have at least one Natural Site on the List, while the two other considerations have no statistically significant effect. When the population size is increased by one unit (i.e. by 100 million persons in our scale), the factor change in the odds of not having any Site is  $e^{-16.37} = 0$ . The change in the odds of not having any Site is therefore  $e^{-16.37} - 1 = 0 - 1 = -100\%$ . It is thus almost impossible for a country with at least 100 million inhabitants not to have any Natural Site on the World Heritage List. This result confirms the great importance of a large population size to get on the List for Natural Sites.

The respective coefficient (0.0652\*\*) referring to population size in the count equation of model (2) of Table 14 shows that, *provided* that a country has at least one Natural Site on the List, the more populous a country is the more Natural Sites it is likely to possess on the World Heritage List of Natural Sites. The coefficient interpretation is as described in model (1). An increase in the population size by 100 million persons leads to a relative increase in the expected number of Natural Sites on the List by 6.73%. Country area and per capita income also play a positive role with respect to the number of Natural Sites. The coefficient of 0.151\*\*\* referring to area suggests that, *ceteris paribus*, an increase in the country area by one million sqkm leads to a relative increase of the expected number of Natural Sites of 16.29%. A country whose average income is higher by 1,000 USD is expected to have a 2.23% larger number of Natural Sites on the List. These percentage effects can, of course,



not be directly compared to each other because they refer to totally different determinants (100 million persons, one million sqkm, 1,000 USD per capita income) but the qualitative results of our estimates support the discussion of the previous parts of the paper.

## VII. *Conclusions*

The intention of this paper is to provide an overview of the UNESCO World Heritage List according to various characteristics. The officially stated intention of this world organization is to protect *global* heritage, and not the heritage of particular cultures or countries. Our focus therefore is on the *imbalance* of the existing List. We compare the *existing* distribution to *hypothetical* distributions considered “balanced” from a particular point of view. We show that the World Heritage List is indeed unbalanced with respect to a distribution of Sites according to population, area or per capita income. We find that the *distribution per inhabitant* of a continent or country is more equal than the number per country but there are still considerable differences. This view favours small countries and to some extent the position of Africa, but the latter only holds for Natural Sites. Europe and its individual countries have a much larger number of Cultural Sites per inhabitant than do the other continents.

With respect to the *distribution per area* there is a quite equal distribution for Natural Sites, except for Arabia.

*Income per capita*, which may be thought to be reflected in international power, and therefore in a larger number of Sites on the UNESCO List, is shown not to have the influence often supposed to exist. Indeed, Africa does well both with respect to the number of Cultural and Natural Sites per unit of income. The List thus takes into account aspects beyond income levels.

The considerations on the role played by the country population and area are supported when the three considerations are analysed simultaneously. In the simultaneous analysis, also income per capita plays a significant marginal role in explaining the number of Sites in the World Heritage List. Moreover, the three above considerations affect rather the number of Sites once a country gets on the WH List than the selection of countries that get on the WH List.

This paper does not judge whether the distributions of Cultural and Natural Sites on the UNESCO’s World Heritage List according to continents and countries is

appropriate or not. Nor does it intend to determine what political processes have led to the present distribution of Sites on the List. Rather, we want *to reveal facts* about the existing distribution. These facts are designed to help a reasoned discussion to emerge.

We leave it to others to evaluate whether it *makes sense* and is *desirable* to have any of those “balanced” distributions of World Heritage Sites. Our empirical analysis shows that the goals of a “balanced and representative” selection according to *these particular points of view* have not been achieved.

***Appendix – Ten selection criteria for inclusion in the WH List***

The following ten applicable selection criteria for inclusion in the World Heritage List are put down in detail in the *Operational Guidelines for the Implementation of the World Heritage Convention* (Unesco, 2005) and accessible online:<sup>7</sup>

1. to represent a masterpiece of human creative genius;
2. to exhibit an important interchange of human values, over a span of time or within a cultural area of the world, on developments in architecture or technology, monumental arts, town-planning or landscape design;
3. to bear a unique or at least exceptional testimony to a cultural tradition or to a civilization which is living or which has disappeared;
4. to be an outstanding example of a type of building, architectural or technological ensemble or landscape which illustrates (a) significant stage(s) in human history;
5. to be an outstanding example of a traditional human settlement, land-use, or sea-use which is representative of a culture (or cultures), or human interaction with the environment especially when it has become vulnerable under the impact of irreversible change;
6. to be directly or tangibly associated with events or living traditions, with ideas, or with beliefs, with artistic and literary works of outstanding universal significance. (The Committee considers that this criterion should preferably be used in conjunction with other criteria);
7. to contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance;
8. to be outstanding examples representing major stages of earth's history, including the record of life, significant on-going geological processes in the development of landforms, or significant geomorphic or physiographic features;
9. to be outstanding examples representing significant on-going ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals;
10. to contain the most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of outstanding universal value from the point of view of science or conservation.

---

<sup>7</sup> <http://whc.unesco.org/en/criteria/>, accessed on 13.11.2009

### ***Appendix – Population, Area and GDP of continents***

Table A: Population, Area and GDP of continents, 2007

#### ***Appendix – Countries per continent***

The country classification per continent follows the scheme used by the UNESCO World Heritage, with the single exception that we treat Canada and the United States as part of America instead of Europe. Africa considers only sub-Saharan countries, since those north of the Sahara are classified under Arabian countries.

In *sub-Saharan Africa* we have following 44 states parties of the World Heritage convention: Angola; Benin; Botswana; Burkina Faso; Burundi; Cameroon; Cape Verde; Central African Republic; Chad; Comoros; Congo; Cote d'Ivoire; Democratic Republic of the Congo; Djibouti; Eritrea; Ethiopia; Gabon; Gambia; Ghana; Guinea; Guinea-Bissau; Kenya; Lesotho; Liberia; Madagascar; Malawi; Mali; Mauritius; Mozambique; Namibia; Niger; Nigeria; Rwanda; Sao Tome and Principe; Senegal; Seychelles; Sierra Leone; South Africa; Swaziland; Tanzania; Togo; Uganda; Zambia and Zimbabwe.

The *Americas* contain 34 countries which are member of the World Heritage Convention: Antigua and Barbuda; Argentina; Barbados; Belize; Bolivia; Brazil; Canada; Chile; Colombia; Costa Rica; Cuba; Dominica; Dominican Republic; Ecuador; El Salvador; Grenada; Guatemala; Guyana; Haiti; Honduras; Jamaica; Mexico; Nicaragua; Panama; Paraguay; Peru; Saint Kitts and Nevis; Saint Lucia; Saint Vincent and the Grenadines; Suriname; Trinidad and Tobago; United States; Uruguay and Venezuela.

The 18 *Arabian* countries that adhered the World Heritage Convention are Algeria; Bahrain; Egypt; Iraq; Jordan; Kuwait; Lebanon; Libya; Mauritania; Morocco; Oman; Qatar; Saudi Arabia; Sudan; Syria; Tunisia; United Arab Emirates and Yemen.

*Asia and Oceania* are classified together and account for 41 countries: Afghanistan; Australia; Bangladesh; Bhutan; Cambodia; China; Cook Islands; Fiji; India; Indonesia; Iran; Japan; Kazakhstan; Kiribati; Kyrgyz Republic; Laos; Malaysia; Maldives; Marshall Islands; Micronesia; Mongolia; Myanmar; Nepal; New Zealand; Niue; North Korea; Pakistan; Palau; Papua New Guinea; Philippines; Samoa;

Solomon Islands; South Korea; Sri Lanka; Tajikistan; Thailand; Tonga;  
Turkmenistan; Uzbekistan; Vanuatu and Vietnam.

49 state parties of the World Heritage Convention are in *Europe*: Albania; Andorra;  
Armenia; Austria; Azerbaijan; Belarus; Belgium; Bosnia and Herzegovina; Bulgaria;  
Croatia; Cyprus; Czech Republic; Denmark; Estonia; Finland; France; Georgia;  
Germany; Greece; Hungary; Iceland; Ireland; Israel; Italy; Latvia; Lithuania;  
Luxembourg; Macedonia; Malta; Moldova; Monaco; Montenegro; Netherlands;  
Norway; Poland; Portugal; Romania; Russia; San Marino; Slovak Republic; Slovenia;  
Spain; Sweden; Switzerland; Turkey; Ukraine; United Kingdom; Vatican and  
Yugoslavia (now Serbia).

## References

- Ashworth Gregory John, van der Aa Bart J.M. 2006. Strategy and policy for the world heritage convention: goals, practices and future solutions. In Anna Leask, Alan Fyall (Eds.), *Managing World Heritage Sites*: 147-158. Elsevier: London
- Benhamou Françoise. 1996. Is Increased Public Spending for the Preservation of Historic Monuments Inevitable? The French Case. *Journal of Cultural Economics* **20**: 115-131
- Benhamou Françoise. 2003. Heritage. In Ruth Towse (Ed.), *A Handbook of Cultural Economics*: 255-262. Edward Elgar: Cheltenham, UK, and Northampton, MA, USA
- Bonet Lluís. 2003. Cultural tourism. In Ruth Towse (Ed.), *A Handbook of Cultural Economics*: 187-193. Edward Elgar: Cheltenham, UK, and Northampton, MA, USA
- Cleere Henry. 2006. Foreword. In Anna Leask, Alan Fyall (Eds.), *Managing World Heritage Sites*: xxi-xxiii. Elsevier: London
- Cochrane Janet, Tapper Richard. 2006. Tourism's contribution to World Heritage Site management. In Anna Leask, Alan Fyall (Eds.), *Managing World Heritage Sites*: 97-109. Elsevier: London
- Frey Bruno S. 1997. The Evaluation of Cultural Heritage. Some Critical Issues. In Michael Hutter, Ilde Rizzo (Eds.), *Economic Perspectives on Cultural Heritage*. Macmillan: London
- Frey Bruno S. 2003. *Arts and Economics. Analysis and Cultural Policy*. Springer, 2nd ed: Berlin, Heidelberg and New York
- Frey Bruno S., Pamini Paolo. 2009. Making world heritage truly global: the culture certificate scheme. *Oxonomics*: November, forthcoming
- Ginsburgh Victor A. (Ed.). 2004. *Economics of Art and Culture*. Elsevier: Amsterdam
- Ginsburgh Victor A., Throsby David (Eds.). 2006. *Handbook of the Economics of Art and Culture*. (Vol. 1). Elsevier: Amsterdam
- Grefe Xavier. 1999. *La gestion du patrimoine culturel*. Anthropos: Paris
- Harrison David, Hitchcock Michael (Eds.). 2005. *The Politics of Heritage. Negotiating Tourism and Conservation*. Channel View Publications: Clevedon
- Howard Peter. 2003. *Heritage: Management, Interpretation, Identity*. Continuum: London
- Hutter Michael, Rizzo Ilde (Eds.). 1997. *Economic Perspectives on Cultural Heritage*. Macmillan: London
- Klamer Arjo, Throsby David. 2000. Paying for the Past: the Economics of Cultural Heritage, *World Culture Report*. New York: UNESCO, pp. 130-145
- Leask Anna. 2006. World Heritage Site designation. In Anna Leask, Alan Fyall (Eds.), *Managing World Heritage Sites*: 5-19. Elsevier: London
- Leask Anna, Fyall Alan (Eds.). 2006. *Managing World Heritage Sites*. Elsevier: Amsterdam
- Leask Anna, Yeoman Ian. 2004. *Heritage Visitor Attractions*. Thompson Learning: London
- Li Fung Mei Sarah, Sofield Trevor H. B. 2006. World Heritage Listing: the case of Huangshan (Yellow Mountain), China. In Anna Leask, Alan Fyall (Eds.), *Managing World Heritage Sites*: 250-262. Elsevier: London

- Mason Peter, Kuo I-Ling. 2006. Visitor management at Stonehenge, UK. In Anna Leask, Alan Fyall (Eds.), *Managing World Heritage Sites*: 181-194. Elsevier: London
- McKercher Bob, Cros Hilary du. 2001. *Cultural Tourism: The Partnership between Tourism and Cultural Heritage Management*. Haworth Press: Binghampton, New York
- Millar Sue. 2006. Stakeholders and community participation. In Anna Leask, Alan Fyall (Eds.), *Managing World Heritage Sites*: 37-54. Elsevier: London
- Mossetto Gianfranco (Ed.). 1994. *The Economic Dilemma of Heritage Preservation*. Kluwer: Dordrecht
- Mossetto Gianfranco, Vecco Marilena. 2001. *Economia del patrimonio monumentale*. F. Angeli: Venice
- Netzer Dick. 1998. International Aspects of Heritage Policies. In Alan Peacock (Ed.), *Does the Past Have a Future? The Political Economy of Heritage*: 135-154. Institute of Economic Affairs: London
- Peacock Alan. 1978. Preserving the past: an international economic dilemma. *Journal of Cultural Economics* 2: 1-11
- Peacock Alan. 1995. A Future for the Past: The Political Economy of Heritage. Keynes Lecture in Economics. *Proceedings of the British Academy* 87: 189-243. Reprinted in Ruth Towse (ed.) (1997). *Cultural Economics: the Arts, Heritage and the Media Industries*. Aldershot: Edward Elgar. 1387-1424
- Peacock Alan (Ed.). 1998. *Does the Past Have a Future? The Political Economy of Heritage*. Institute of Economic Affairs: London
- Peacock Alan, Rizzo Ilde. 2008. *The Heritage Game. Economics, Politics, and Practice*. Oxford University Press: Oxford
- Regalado-Pezúa Otto, Arias-Valencia Jesús. 2006. Sustainable development in tourism: a proposition for Machupicchu, Peru. In Anna Leask, Alan Fyall (Eds.), *Managing World Heritage Sites*: 195-204. Elsevier: London
- Rizzo Ilde. 2006. Cultural Heritage: Economic Analysis and Public Policy. In Victor A. Ginsburgh, David Throsby (Eds.), *Handbook of the Economics of Art and Culture*, Vol. 1: 983-1016. Elsevier: Amsterdam
- Rizzo Ilde, Towse Ruth (Eds.). 2002. *The Economics of Heritage*. Edward Elgar: Cheltenham, UK, and Northampton, MA, USA
- Santagata Walter, De Caro Stefano, Marrelli Massimo. 2008. *Patrimoni intangibili dell' umanità. Il distretto culturale del presepe Napolitano*. Guida Editore: Napoli
- Shackley Myra. 2006. *Visitor Management: Case Studies from World Heritage Sites*. Butterworth-Heinemann: Oxford
- Streeten Paul. 2006. Culture and Economic Development. In Victor A. Ginsburgh, David Throsby (Eds.), *Handbook of the Economics of Art and Culture*, Vol. 1: 399-412. Elsevier: Amsterdam
- Throsby David. 1997a. Seven Questions in the Economics of Cultural Heritage. In Michael Hutter and Ilde Rizzo (Ed.), *Economic Perspectives on Cultural Heritage*: 13-30. Macmillan: London
- Throsby David. 1997b. Sustainability and culture: some theoretical issues. *International Journal of Cultural Policy* 4: 7-20
- Throsby David. 2001. *Economics and Culture*. Cambridge University Press: Cambridge

- Throsby David. 2003. Cultural sustainability. In Ruth Towse (Ed.), *A Handbook of Cultural Economics*: 183-186. Edward Elgar: Cheltenham, UK, and Northampton, MA, USA
- Tisdell Clement, Wilson Clevo. 2002. World Heritage Listing of Australian Natural Sites: Tourism Stimulus and its Economic Value. *Economic Analysis and Policy* **32**: 27-49
- Towse Ruth. 1997. *Cultural Economics: the Arts, Heritage and the Media Industries*. Edward Elgar: Aldershot
- Towse Ruth (Ed.). 2003. *A Handbook of Cultural Economics*. Edward Elgar: Cheltenham, UK, and Northampton, MA, USA
- Tunney James. 2005. World Trade Law, Culture, Heritage and Tourism. Towards a Holistic Conceptual Approach. In David Harrison, Michael Hitchcock (Eds.), *The Politics of Heritage. Negotiating Tourism and Conservation*: 90-102. Channel View Publications: Clevedon
- Unesco. 2005. Operational Guidelines for the Implementation of the World Heritage Convention, <http://whc.unesco.org/archive/opguide05-en.pdf>:
- Van der Aa Bart J.M. 2005. *Preserving the Heritage of Humanity? Obtaining World Heritage Status and the Impacts of Listing*. Netherlands Organization for Scientific Research: Amsterdam



Table 1: The World Heritage List according to types of heritage and continents, 2009.

Region	Total Sites	Cultural Sites	Natural Sites	Mixed Sites
Africa (sub-Saharan)	81	43	35	3
Americas	158	98	57	3
Asia and Pacific	185	128	48	9
Arabian Countries	65	59	5	1
Europe	430	378	42	10
<b>Total</b>	<b>919</b>	<b>706</b>	<b>187</b>	<b>26</b>

Note: 21 Heritage Sites go across two countries each, one Site goes across ten countries. This and all further tables count Sites as many times as the number of countries involved. We do not count the Old City of Jerusalem (ID 48), because it is associated with no country. Sites given to the Socialist Federal Republic of Yugoslavia are still counted under Serbia, although they now are listed under Croatia, Macedonia, Montenegro and Slovenia. Itchan Kala (ID 543) is counted under Russia, because in 1990 Uzbekistan still was part of it. We do not count the Bialowieza Forest (ID 33) for Belarus, because in 1979 neither Belarus nor USSR was in the WH Convention. We do not count the Historic Center of Rome (ID 91) for the Holy See, because in 1980 it was not yet member of the WH Convention. Since we are interested into the election process, we include the two delisted Sites (Arabian Oryx Sanctuary in Oman, listed in 1994 and delisted in 2007 ID 654, as well as Dresden Elbe Valley in Germany, listed in 2004 and delisted in 2009 ID 1156).

Source: <http://whc.unesco.org/en/list>, accessed on 16.7.2009.

Table 2: Countries with a large number (ten or more) of Sites in the World Heritage List, 2009.

Region	Country	Entry Year	Total	Cultural	Natural	Mixed
Americas	Brazil	1977	17	10	7	0
	Canada	1976	15	6	9	0
	Mexico	1980	29	25	4	0
	Peru	1982	11	7	2	2
	United States	1973	20	8	12	0
Americas Selection Total			92	56	34	2
Asia and Pacific	Australia	1974	17	2	11	4
	China	1985	38	27	7	4
	India	1977	27	22	5	0
	Iran	1975	10	10	0	0
	Japan	1992	14	11	3	0
Asia and Pacific Selection Total			106	72	26	8
Europe	Belgium	1996	10	10	0	0
	Czech Republic	1989	12	12	0	0
	France	1975	33	30	2	1
	Germany	1976	34	32	2	0
	Greece	1981	17	15	0	2
	Italy	1978	44	42	2	0
	Poland	1976	13	12	1	0
	Portugal	1980	13	12	1	0
	Russia	1988	24	16	8	0
	Spain	1982	41	36	3	2
	Sweden	1985	14	12	1	1
	Switzerland	1975	10	7	3	0
	United Kingdom	1984	28	23	4	1
Yugoslavia	1977	11	7	3	1	
Europe Selection Total			304	266	30	8
Selection Total			502	394	90	18
WH Total			919	706	187	26

Note: The same remarks as for Table 1 apply. Under Yugoslavia we consider the Sites of the whole Socialist Federal Republic of Yugoslavia and those of Serbia after the country disintegration.

Source: <http://whc.unesco.org/en/list>, accessed on 16.7.2009.

Table 3: Countries with no Site in the World Heritage List, 2009

Region	Country	Entry Year	Region	Country	Entry Year
Africa (sub-Saharan)	Angola	1991	Asia and Pacific	Bhutan	2001
	Burundi	1982		Cook Islands	2009
	Chad	1999		Fiji	1990
	Comoros	2000		Kiribati	2000
	Congo	1987		Maldives	1986
	Djibouti	2007		Marshall Islands	2002
	Eritrea	2001		Micronesia	2002
	Guinea-Bissau	2006		Myanmar	1994
	Lesotho	2003		Niue	2001
	Liberia	2002		Palau	2002
	Rwanda	2000		Samoa	2001
	Sao Tome and Principe	2006		Tajikistan	1992
	Sierra Leone	2005		Tonga	2004
	Swaziland	2005			
Americas	Antigua and Barbuda	1983	Arabian Countries	Kuwait	2002
	Barbados	2002		Qatar	1984
	Grenada	1998		United Arab Emirates	2001
	Guyana	1977	Europe	Macedonia	1997
	Jamaica	1983		Monaco	1978
	Saint Vincent and the Grenadines	2003		Montenegro	2006
	Trinidad and Tobago	2005		Slovenia	1992

Note: The same remarks as for Table 1 apply. Montenegro has two Sites and Macedonia and Slovenia one each that were listed at the time of the Socialist Federal Republic of Yugoslavia and are not counted here.

Source: <http://whc.unesco.org/en/list>, accessed on 16.7.2009.

Table 4: Countries with no or only one Cultural Site in the World Heritage List, 2009

Region	Without Any Cultural Site		With Only One Cultural Site	
	Country	Entry Year	Country	Entry Year
Africa (sub-Saharan)	Angola	1991	Benin	1982
	Burundi	1982	Botswana	1998
	Cameroon	1982	Burkina Faso	1987
	Central African Republic	1980	Cape Verde	1988
	Chad	1999	Madagascar	1983
	Comoros	2000	Malawi	1982
	Congo	1987	Mozambique	1982
	Cote d'Ivoire	1981	Namibia	2000
	Democratic Republic of the Congo	1974	Togo	1998
	Djibouti	2007	Uganda	1986
	Eritrea	2001		
	Gabon	1986		
	Guinea	1979		
	Guinea-Bissau	2006		
	Lesotho	2003		
	Liberia	2002		
	Niger	1974		
	Rwanda	2000		
	Sao Tome and Principe	2006		
	Seychelles	1980		
Sierra Leone	2005			
Swaziland	2005			
Zambia	1984			
Americas	Antigua and Barbuda	1983	Dominican Republic	1985
	Barbados	2002	El Salvador	1991
	Belize	1990	Haiti	1980
	Costa Rica	1977	Honduras	1979
	Dominica	1995	Nicaragua	1979
	Grenada	1998	Paraguay	1988
	Guyana	1977	Saint Kitts and Nevis	1986
	Jamaica	1983	Suriname	1997
	Saint Lucia	1991	Uruguay	1989
	Saint Vincent and the Grenadines	2003		
Trinidad and Tobago	2005			
Asia and Pacific	Bhutan	2001	Kyrgyz Republic	1995
	Cook Islands	2009	Malaysia	1988
	Fiji	1990	Mongolia	1990
	Kiribati	2000	North Korea	1998

	Maldives	1986	Papua New Guinea	1997
	Marshall Islands	2002	Vanuatu	2002
	Micronesia	2002		
	Myanmar	1994		
	New Zealand	1984		
	Niue	2001		
	Palau	2002		
	Samoa	2001		
	Solomon Islands	1992		
	Tajikistan	1992		
	Tonga	2004		
Arabian Countries	Kuwait	2002	Bahrain	1991
	Qatar	1984	Mauritania	1981
	United Arab Emirates	2001	Saudi Arabia	1978
			Sudan	1974
Europe	Macedonia	1997	Andorra	1997
	Monaco	1978	Iceland	1995
	Montenegro	2006	Luxembourg	1983
	Slovenia	1992	Moldova	2002
			San Marino	1991
			Vatican	1982

Note: The same remarks as for Table 1 apply. Montenegro has a Cultural Site that has been listed at the time of the Socialist Federal Republic of Yugoslavia and is not counted here.

Source: <http://whc.unesco.org/en/list>, accessed on 16.7.2009.

Table 5: Countries with more than two Natural Sites in the World Heritage List, ranked by quantity and region, 2009

Africa (sub-Saharan)		Asia and Pacific	
Country	Natural Sites	Country	Natural Sites
Democratic Republic of the Congo	5	Australia	11
Tanzania	4	China	7
Cote d'Ivoire	3	India	5
South Africa	3	Indonesia	4
		Japan	3
Americas		Europe	
Country	Natural Sites	Country	Natural Sites
United States	12	Russia	8
Canada	9	United Kingdom	4
Brazil	7	Spain	3
Argentina	4	Switzerland	3
Mexico	4	Yugoslavia	3
Costa Rica	3		
Panama	3		

Note: The same remarks as for Table 1 apply. The three Yugoslavian Natural Sites were listed in 1979 (ID 98, now Croatia), in 1980 (ID 100, now Montenegro) and in 1986 (ID 390, now Slovenia) at the time of the Socialist Federal Republic of Yugoslavia.

Source: <http://whc.unesco.org/en/list>, accessed on 16.7.2009.

Table 6: Total Sites per 100 million population in the World Heritage List per continent, 2009

Region	Total Sites	Cultural Sites	Natural Sites
Africa (sub-Saharan)	10.80	5.73	4.66
Americas	17.61	10.92	6.35
Asia and Pacific	4.93	3.41	1.28
Arabian Countries	22.73	20.64	1.75
Europe	51.95	45.67	5.07
World	14.12	10.84	2.87

Note: The same remarks as for Table 1 apply. The population figures are for 2007 and refer only to the countries parties of the World Heritage Convention in 2009. Afghanistan, the Cook Islands, Iraq, Niue and the Vatican are not considered because of missing population data.

Source: <http://whc.unesco.org/en/list>, accessed on 16.7.2009. World Bank Development Indicators.

Table 7: Countries with more than 50 Natural Sites per 100 million population in the World Heritage List, 2009

Region	Country	Population	Natural Sites	Sites per 100 million population
Africa (sub-Saharan)	Seychelles	85,032	2	2,352.06
Americas	Belize	303,991	1	328.96
	Costa Rica	4,462,193	3	67.23
	Dominica	72,793	1	1,373.75
	Panama	3,340,605	3	89.80
	Saint Lucia	167,976	1	595.33
	Suriname	457,686	1	218.49
Asia and Pacific	Australia	21,000,000	11	52.34
	Solomon Islands	495,362	1	201.87
Europe	Iceland	310,997	1	321.55

Note: The same remarks as for Table 1 apply. Sites per capita are reported per 100 million inhabitants. The population figures are for 2007. Afghanistan, the Cook Islands, Iraq, Niue and the Vatican are not considered because of missing population data.

Source: <http://whc.unesco.org/en/list>, accessed on 16.7.2009. World Bank Development Indicators.



Table 8: Total Sites per million square kilometres in the World Heritage List per continent, 2009

Region	Total Sites	Cultural Sites	Natural Sites
Africa (sub-Saharan)	4.14	2.20	1.79
Americas	4.11	2.55	1.48
Asia and Pacific	5.25	3.63	1.36
Arabian Countries	5.07	4.60	0.39
Europe	18.58	16.33	1.82
World	7.11	5.46	1.45

Note: The same remarks as for Table 1 apply. The country area figures are for 2007 and refer only to the countries parties of the World Heritage Convention in 2009. The Cook Islands, Niue and the Vatican are not considered because of missing area data.

Source: <http://whc.unesco.org/en/list>, accessed on 16.7.2009. World Bank Development Indicators.

Table 9: Countries with more than 10 Natural Sites per million square kilometres in the World Heritage List, 2009

Region	Country	Area in sqkm	Sites	Sites per 1 million km <sup>2</sup>
Africa (sub-Saharan)	Malawi	94,080	1	10.63
	Senegal	192,530	2	10.39
	Seychelles	460	2	4,347.83
	Uganda	197,100	2	10.15
Americas	Belize	22,810	1	43.84
	Costa Rica	51,060	3	58.75
	Cuba	109,820	2	18.21
	Dominica	750	1	1,333.33
	Panama	74,430	3	40.31
	Saint Lucia	610	1	1,639.34
Asia and Pacific	Nepal	143,000	2	13.99
	Solomon Islands	27,990	1	35.73
	South Korea	98,730	1	10.13
	Sri Lanka	64,630	1	15.47
Europe	Bulgaria	108,640	2	18.41
	Denmark	42,430	1	23.57
	Hungary	89,610	1	11.16
	Netherlands	33,880	1	29.52
	Portugal	91,500	1	10.93
	Slovak Republic	48,100	2	41.58
	Switzerland	40,000	3	75.00
	United Kingdom	241,930	4	16.53
	Yugoslavia	254,863	3	11.77

Note: The same remarks as for Table 1 apply. Sites per area are reported per million square kilometres. The population figures are for 2007. The Cook Islands, Niue and the Vatican are not considered because of missing area data. The three Yugoslavian Natural Sites were listed in 1979 (ID 98, now Croatia), in 1980 (ID 100, now Montenegro) and in 1986 (ID 390, now Slovenia) at the time of the Socialist Federal Republic of Yugoslavia. The reported Yugoslavian area is the sum of the 2007 areas of the countries that Yugoslavia was composed of. Source: <http://whc.unesco.org/en/list>, accessed on 16.7.2009. World Bank Development Indicators.

Table 10: Sites per 1,000 USD GDP per capita at constant 2000 USD in the World Heritage List per continent, 2009

Region	Total Sites	Cultural Sites	Natural Sites
Africa (sub-Saharan)	135.08	71.71	58.37
Americas	9.50	5.89	3.43
Asia and Pacific	64.34	44.51	16.69
Arabian Countries	27.73	25.17	2.13
Europe	31.28	27.49	3.05
World	156.60	120.31	31.87

Note: The same remarks as for Table 1 apply. The GDP per capita figures are for 2007 and refer only to the countries parties of the World Heritage Convention in 2009. Afghanistan, Andorra, United Arab Emirates, Bahrain, Barbados, the Cook Islands, Cuba, Dominica, Iraq, Kuwait, Monaco, Myanmar, Niue, Oman, North Korea, Qatar, Sao Tome and Principe, Turkmenistan, the Vatican and Zimbabwe are not considered because of missing GDP/capita data.

Source: <http://whc.unesco.org/en/list>, accessed on 16.7.2009. World Bank Development Indicators.

Table 11: The influence of three considerations on the number of Sites included in the World Heritage List, per continent, 2009

	(1)	(2)	(3)
	Total Sites	Cultural Sites	Natural Sites
Population (100 mil.)	0.0788*** (0.00558)	0.0977*** (0.00680)	0.00715 (0.0116)
Area (mil. sqkm)	-0.0952*** (0.00717)	-0.129*** (0.00868)	0.0333* (0.0170)
GDP/capita (USD 1,000)	0.177*** (0.00944)	0.215*** (0.0110)	0.0222 (0.0229)
Constant	5.138*** (0.118)	5.130*** (0.141)	2.408*** (0.263)
Observations	5	5	5
Log likelihood	-29.53	-19.08	-23.63

Note: Standard errors in parentheses: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . Coefficients refer to Poisson Count Regressions. The same remarks as for Table 1 apply. The population, area and GDP per capita figures are for 2007 and refer only to the countries parties of the World Heritage Convention in 2009. Afghanistan, Andorra, United Arab Emirates, Bahrain, Barbados, the Cook Islands, Cuba, Dominica, Iraq, Kuwait, Monaco, Myanmar, Niue, Oman, North Korea, Qatar, Sao Tome and Principe,

Turkmenistan, the Vatican and Zimbabwe are not considered because of missing data.

Source: <http://whc.unesco.org/en/list>, accessed on 16.7.2009. World Bank Development Indicators.

Table 12: The influence of three considerations on the total number of Sites in the World Heritage List, per country, 2009

	(1)	(2)	
	Count eq. (Neg. Bin.)	Inflation eq.	Count eq. (Neg. Bin.)
Population (100 mil.)	0.247*** (0.0947)	-51.89 (31.58)	0.202*** (0.0682)
Area (mil. sqkm)	0.111** (0.0469)	-5.827 (6.766)	0.0898** (0.0375)
GDP/capita (USD 1,000)	0.0539*** (0.00912)	-0.294 (0.279)	0.0454*** (0.00804)
Constant	0.872*** (0.116)	1.597* (0.918)	1.110*** (0.114)
ln(alpha)	-0.122 (0.148)		-0.466*** (0.165)
Observations	166		166
Log likelihood	-420.0		-404.6

Note: Standard errors in parentheses: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . The same remarks as for Table 1 apply. The population, area and GDP per capita figures are for 2007 and refer only to the countries parties of the World Heritage Convention in 2009. Afghanistan, Andorra, United Arab Emirates, Bahrain, Barbados, the Cook Islands, Cuba, Dominica, Iraq, Kuwait, Monaco, Myanmar, Niue, Oman, North Korea, Qatar, Sao Tome and Principe, Turkmenistan, the Vatican and Zimbabwe are not considered because of missing data.

Source: <http://whc.unesco.org/en/list>, accessed on 16.7.2009. World Bank Development Indicators.

Table 13: The influence of three considerations on the number of Cultural Sites in the World Heritage List, per country, 2009

	(1)		(2)	
	Count eq. (Neg. Bin.)		Inflation eq.	Count eq. (Neg. Bin.)
Population (100 mil.)	0.271** (0.111)		-98.00* (52.52)	0.218*** (0.0776)
Area (mil. sqkm)	0.0719 (0.0502)		-3.234 (4.024)	0.0490 (0.0406)
GDP/capita (USD 1,000)	0.0607*** (0.0107)		-0.218 (0.154)	0.0508*** (0.00942)
Constant	0.582*** (0.134)		2.288** (0.974)	0.859*** (0.132)
ln(alpha)	0.139 (0.152)			-0.195 (0.166)
Observations	166		166	
Log likelihood	-382.3		-365.2	

Note: Standard errors in parentheses: \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1. The same remarks as for Table 1 apply. The population, area and GDP per capita figures are for 2007 and refer only to the countries parties of the World Heritage Convention in 2009. Afghanistan, Andorra, United Arab Emirates, Bahrain, Barbados, the Cook Islands, Cuba, Dominica, Iraq, Kuwait, Monaco, Myanmar, Niue, Oman, North Korea, Qatar, Sao Tome and Principe, Turkmenistan, the Vatican and Zimbabwe are not considered because of missing data.

Source: <http://whc.unesco.org/en/list>, accessed on 16.7.2009. World Bank Development Indicators.

Table 14: The influence of three considerations on the number of Natural Sites in the World Heritage List, per country, 2009

	(1)	(2)	
	Count eq. (Neg. Bin.)	Inflation eq. (Logit)	Count eq. (Neg. Bin.)
Population (100 mil.)	0.118* (0.0634)	-16.37** (7.011)	0.0652** (0.0306)
Area (mil. sqkm)	0.225*** (0.0441)	-3.689 (2.991)	0.151*** (0.0225)
GDP/capita (USD 1,000)	0.0221** (0.00884)	-0.0364 (0.0238)	0.0220*** (0.00674)
Constant	-0.576*** (0.136)	1.946*** (0.554)	-0.00649 (0.135)
ln(alpha)	-0.623 (0.417)		-3.058* (1.781)
Observations	166		166
Log likelihood	-207.6		-186.9

Note: Standard errors in parentheses: \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1. The same remarks as for Table 1 apply. The population, area and GDP per capita figures are for 2007 and refer only to the countries parties of the World Heritage Convention in 2009. Afghanistan, Andorra, United Arab Emirates, Bahrain, Barbados, the Cook Islands, Cuba, Dominica, Iraq, Kuwait, Monaco, Myanmar, Niue, Oman, North Korea, Qatar, Sao Tome and Principe, Turkmenistan, the Vatican and Zimbabwe are not considered because of missing data.

Source: <http://whc.unesco.org/en/list>, accessed on 16.7.2009. World Bank Development Indicators.

Table A: Population, Area and GDP of continents, 2007

Region	Population (100 mil.)	Area (mil. sqkm)	GDP (bn. USD)
Africa (sub-Saharan)	7.5027	19.5668	449.9070
Americas	8.9747	38.4179	14,926.2990
Asia and Pacific	37.4945	35.2575	10,781.7653
Arabian Countries	2.8591	12.8153	670.3000
Europe	8.2767	23.0854	11,379.0200
World	65.1076	129.1429	38,207.2913

Note: GDP is measured in billion constant 2000 USD. The figures refer to 2007 and to the countries that signed the World Heritage Convention for which data were available.

Source: World Bank Development Indicators.