# Cultural heritage and growth

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**Abstract**: In an attempt to measure the impact of cultural heritage on growth, this paper matches the definition of culture as a stock with the cultural heritage list provided by UNESCO, as it is a variable that changes at a very low pace. We test the hypothesis on whether the existence of a strong cultural heritage, that is, where culture has had a large impact on people's life, leads to higher growth. We find evidence that the impact of cultural heritage on growth is positive and it is smaller for countries that either suffer a high degree of political instability or enjoy a high degree of rule of law.

**Key words**: Economic growth; Social norms; Culture.

**JEL Classification Numbers**: D99, O50, Z13

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## 1.Introduction

Economic growth is a complex process. Although current economic models, such as the ones based on the neoclassical growth models of Ramsey (1928), Solow (1956) and Romer (1986), have emphasized the role of a few core variables over growth - such as technological innovations, investment in private inputs such as physical capital, human capital, the population growth rate and the productivity of these inputs - economists have to control for a variety of other factors that may influence the growth process directly [e.g., Sala-i-Martin, 1997]. These factors, related to government policies and social institutions, are described as the economic environment where growth takes place. Among them we frequently find public expenditures (Barro, 1990), political institutions (Alesina and Perotti, 1996), openness to international trade (Krishna et al., 2003) and many others.

Additionally, there are some forces that influence economic growth through its impact on the core variables of growth. For instance, 'self-control' that affects saving behavior and the fertility choice that consequently impact the investment in physical capital (Lewis, 1955) and the population growth rate (Malthus, 1798) respectively; or the desire for self-improvement which influences the decision to invest in education allowing people to acquire skills and build human capital (Azariadis and Drazen, 1990). However, there are other factors that have a less clear link with the core variables of growth, but can arguably and convincely be regarded as important. Among these we find the moral commitment of one's own, that induces work ethics and is one of the main determinants

of work effort and thus of labor productivity. Trust and the willingness to cooperate, that impacts the subjective cost of cooperating with strangers, which can have profound effect on trading networks which helps shaping the size and the expansion of markets. Mutual respect and honesty that are the foundations of business ethics and property rights which influence the costs of contracts, minimizing distortions such as corruption, theft, coercive acts and deceptive information. The degree of social openness to question, inquiry and criticism, i.e. freedom of thought, that fuels creativity and discovery and is conducive to the adoption of new technologies.

Some of the above forces - self-control, honesty, cooperation, trust, mutual respect, self-improvement, freedom of thought - depend on individual attitudes and/or social institutions and are based on a set of beliefs, values and norms that change very slowly. As a consequence, underlying the typical neoclassical growth model, one can devise a series of factors that are defined or influenced by the customary beliefs, values and norms of the society that have important real economic roles. Culture is defined here as a set of beliefs, values and norms that are transmitted to individuals over their lifetimes and which change at a relatively slow pace [see Becker, 1998]. Our discussion suggests that some elements of culture play an important role on economic growth.

Of course this is not, at any rate, a novelty. The relationship between culture and economics was one of the cornerstones of the Marxist theory of historical materialism in which culture was assumed to mirror the economic conditions of the society[1]. However, it was Weber (1904-05) that put forward the compelling idea that culture may have a

[1] In Marx's own words "The mode of production of material life conditions the general process of social, political and intellectual life. It is not the consciousness of men that determines their existence, but their social existence that determines their consciousness."[In Preface to A Contribution to the Critique of Political Economy, 1859]

major impact on economic growth and development, by arguing that the success of Protestant Europe in contrast with the Catholic Europe was due to a tendency of Protestants to work harder and to save more.

There is a huge body of literature that deals with culture and economic performance [e.g., Hofstede, 1980; Franke et al., 1991; Casson, 1993; Sowell, 1994; Gray, 1996]. In particular, the effects of culture on economic growth are thought to be related to the elements of culture that affect production and investment decisions, efficient allocation of resources, technological innovation and openness to trade.

Altman (2001) for example, models the impact of culture on economic growth by arguing that work effort is maximized when the cultural environment stimulates cooperative work, which is positively correlated with labor productivity. Faria and Leon-Ledesma (2003) assume that cultural values that emphasize hard work affects labor supply. This idea is modeled assuming that work is habit forming. They show that labor supply in the habit formation case is higher than in the neoclassical case and can lead to higher levels of consumption, capital stock and output.

For Cozzi (1998), culture affects technological innovations. He assumes that culture bears no utility by itself and its survival is linked to its positive effects on productivity. In his model, technological innovations are generated as an externality by the aggregate investment in the bubble culture.

Blum and Dudley (2001) present a non-cooperative game in which a small change in the subjective cost of cooperating with strangers can generate a major transformation in trading networks. Consequently they show that religious beliefs, such as the Protestant rejection of Catholic's sacrament of penance [whereby a person could obtain pardon for

sins committed, provided that he perform certain acts of reparation] by decreasing the probability of default in a one-time game of exchange, widens the market relationships for the individual trader.

Chatterji et al. (1993) argue that liberal political systems allow for the freer exchange and dissemination of ideas which stimulate innovation. They test this hypothesis by creating a variable which captures the varying degrees of political freedom and find that liberal regimes appear to have potentially high growth rates than non-liberal political regimes. Johnson and Lenartowicz (1998) present a framework for examining the relationship among cultural values - such as uncertainty avoidance, conservatism and hierarchy - economic freedom [which is defined as the ability of a society to conduct business in an unfettered manner without government intrusion], and economic growth. They found a strong positive association both between economic freedom and economic growth and between economic freedom and weak uncertainty avoidance, and high level of individual autonomy.

As seen above, culture is a vast and complex concept that involves many elements and is too general to be captured by a single trait, idea or object. Whenever one intends to examine the role of culture in economic growth, one has to look for a proxy for culture. In this paper we make a contribution along these lines by proposing a measure of cultural stock and testing its impact on economic growth. By recalling our definition of culture as a set of beliefs, values and norms that are transmitted to individuals over their lifetimes and which change at a relatively slow pace, we can think of culture as a stock. Given this treatment, our study focuses on the impact of the stock of tangible culture on growth

regardless of which kind of culture it represents. This insight leads us to search for a proxy of culture that is a stock.

A natural candidate for a proxy of culture as a stock is the UNESCO's definition of world cultural heritage. UNESCO lists monuments [architectural works, works of monumental sculpture and painting, elements or structures of an archaeological nature, inscriptions, cave dwellings and combinations of features], groups of buildings [groups of separate or connected buildings which, because of their architecture, their homogeneity or their place in the landscape, are of outstanding universal value from the point of view of history, art or science] and sites [works of man or the combined works of nature and of man, and areas including archaeological sites which are of outstanding universal value from the historical, aesthetic, ethnological or anthropological points of view] as world cultural heritage based on the following cultural criteria:

i. represent a masterpiece of human creative genius; or
ii. 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; or
iii. bear a unique or at least exceptional testimony to a cultural tradition or to a civilization which is living or which has disappeared; or
iv. be an outstanding example of a type of building or architectural or technological ensemble or landscape which illustrates (a) significant stage(s) in human history; or
v. be an outstanding example of a traditional human settlement or land-use which is representative of a culture (or cultures), especially when it has become vulnerable under the impact of irreversible change; or
vi. 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 justify inclusion in the List only in exceptional circumstances and in conjunction with other criteria cultural or natural);

In this paper we use the cultural heritage list provided by UNESCO to assess the cultural stock of each country. This variable indicates the cultural contribution of each

nation to mankind. Our idea is that this proxy captures the intensity of the role played by culture in a country. In addition, this proxy indicates that a country with a larger cultural heritage is a country where culture had more influence. A country with a large stock of cultural heritage has a comparative advantage in relation to others with a smaller cultural heritage. This cultural comparative advantage is reflected in individual attitudes and social institutions that become or influence universal values, beliefs and norms. Given our discussion above, we hypothesize that this universal cultural traits are conducive of growth, and, therefore, there is a positive impact of cultural heritage on growth.

The paper tests this idea in a simple growth equation and finds evidence that the impact of cultural heritage on growth is positive and it also depends on institutional and political factors.

**2. Empirical evidence on the relation cultural heritage and growth.**

The question of whether culture has a significant impact on growth, as seen above, has been addressed in previous studies. However, these studies lack a systematic analysis of the statistical relation between these two variables within the tradition of empirical growth studies. One of the main problems is the fact that there is no single direct measure of culture. The contribution of our paper is to match the definition of culture as a stock, since it is a variable that changes with a very low pace, with the cultural heritage list provided by UNESCO. We test the hypothesis on whether the existence of a strong cultural heritage, that is, where culture has had a large impact on people's life, leads to higher growth.

As the stock of cultural heritage acts as a mechanism of preservation of culture, one may think that the impact would be ambiguous, as societies preserving cultural traits that are bad for growth would be less successful. Notwithstanding this point, the existence of a stronger influence of culture on people's life does reflect a larger commitment towards whatever form of socio-economic organization is chosen, and hence stronger belief on institutions. This may have a direct positive impact on growth. This is our first hypothesis: countries with a higher stock of cultural heritage enjoy faster growth in the long run. The second hypothesis derived from the previous discussion, is that the impact of cultural heritage on growth is moderated and influenced by social forms of organization of economic activities such as political institutions. This hypothesis is equivalent to those of Gray (1996) and Johnson and Lenartowicz (1998). Evidence on this link is also provided in Chatterji et al. (1993) who find a strong link between political stability and culture.

As commented earlier, our proxy for the stock of cultural heritage in a country is the number of World Cultural Heritage Sites (WCHS) as defined by UNESCO. We will report our results using the share of a country's WCHS in the total number of declared WCHS by UNESCO as of 2003.[2] One could argue that this counting index does not take into account that some of these sites may be more valuable than others and are being given the same weight. However, what is relevant for our purposes is the subjective cultural value given by a society and, hence, we can count equally, say, the Chinese Great Wall and the Egyptian Pyramids. **Table 1** provides some descriptive statistics of the index for the set of countries where data on growth and other relevant variables was

[2] Results using the total number rather than the share are the same, but we prefer to use shares as their econometric interpretation is more straightforward.

available. The variable shows a high standard deviation and a high degree of concentration on the seven countries reported, with Spain and Italy together making up for more than 12% of the WCHS. The relation of the variable with the growth of GDP per capita (GDPpc) between 1960 and 1989 is positive as can easily be seen by the positive correlation and rank-correlation coefficients reported in the table. This relation can also be observed in **Figures 1 and 2** where we have plotted GDPpc growth against cultural heritage share (CHSH). The regression line shows the positive correlation, although the results may be driven by Spain and Italy's good growth performance. Figure 2 shows the same graph without these two countries and the relation, if anything, is reinforced. The figures also graph the results of a Kernel-smooth regression used to analyze whether the relation changes with the level of CHSH. The Kernel line does not deviate much from the linear regression line, but we may say that the positive correlation is stronger at low and high values of growth and CHSH.

Although this casual inspection seems to support our first hypothesis, we need to undertake a more careful analysis. There is a vast literature on cross-country growth regressions derived from standard growth models that has highlighted a set of variables that appear to be robust determinants of growth. We thus need to account for the effect of these variables in our regressions. We matched our data to that used in Sala-i-Martín (1997) that contains a set of 62 explanatory variables. These variables measure economic, political and social determinants of growth. We then tested for the impact of CHSH in a regression including the initial (1960) level of GDPpc as a control for conditional convergence, life expectancy in 1960, and the degree of primary education enrolment in 1960. These variables were treated as fixed in Sala-i-Martín's (1997) study. We then

added two further variables that Levine and Renelt (1992) found to be robust determinants of growth such as equipment investment over GDP and a measure of openness such as the number of years of openness to trade [from Sachs and Warner (1996)].

**Table 2** reports the results for the whole sample of countries and **Table 3** does the same excluding again Spain and Italy. As we can see, the exclusion of these two countries does not affect the results and even increases the coefficient on CHSH. Different estimations have different numbers of observations due to the fact that not all variables were available for our 87 countries. We report the coefficients, their White-heteroskedasticity adjusted t-ratios and tests for heteroskedasticity, normality of the residuals, and functional form. In most of the estimations the residuals are well behaved and are not homoskedastic, hence justifying the adjustment. The impact of CHSH is always positive and highly significant and they indicate that a country with one percentage point more of CHSH grows on average 0.2% faster. The rest of coefficients are significant and show the expected sign. Although the inclusion of equipment investment and years of openness reduces the coefficient on CHSH, it remains pretty stable and highly significant, which shows that this relation is robust. These results fully support the hypothesis that cultural heritage has a direct positive impact on growth.

We then proceeded to introduce other socio-political variables in the regression analysis. We analyzed these aspects by first introducing a set of variables, finding the best specification and, later on, their interaction with the cultural heritage stock. Several socio-political variables were used in the analysis. These include: political instability, political rights, political assassinations, civil liberties, level of democracy in 1965, rule of

law, and the 'degree of capitalism.'[3] The selection of the best model was based on the maximization of the Akaike Information Criteria (AIC) and the Schwartz Bayesian Criteria (SBC) using a stepwise procedure. Both the AIC and SBC chose the same model when interaction variables were omitted. This is reported in column (1) of **Table 4**. The only two variables that appeared to be significant were political rights and the degree of capitalism. The former has a negative though only marginally significant impact on growth. The latter has a positive and significant impact. The rest of the variables of the model remained significant and with the expected signs, with the exception of the life expectancy in 1960. CHSH remains highly significant, although its coefficient drops moderately.

Given that our second hypothesis states that the impact of cultural heritage on growth depends on socio-political factors, we interacted CHSH with these variables and included these interactions in the regression. Column (2) of **Table 4** reports the specification chosen by the AIC and column (3) the one chosen by the SBC. The only difference is that (3) drops the insignificant 'political rights' variable, which appears not to be a robust explanatory factor. We now have three socio-political variables of relevance: degree of capitalism, political instability and the rule of law. The latter two are governed by their interaction with CHSH. The main conclusions that we can extract from these results are:

- From the negative and highly significant coefficient of the interaction between CHSH and political instability we can interpret that for countries where there is a high degree of political instability cultural heritage matters less. Given the size of

[3] These variables were also obtained from Sala-i-Martín (1997) and compiled from several different sources. For further discussion on the construction of these variables see also Knack and Keefer (1995), Barro (1997) and Hall and Jones (1999).

the coefficient, the overall (direct and indirect) impact of political instability is, as expected, negative. However, it is important to stress that political instability alone does not have an impact on growth unless we interact it with CHSH. We can thus say that this variable acts only as a 'moderator' of the impact of CHSF.

- Something similar can be said for the impact of the variable rule of law. In this case, it appears that for countries that enjoy a high degree of rule of law cultural heritage has a smaller impact on growth.[4]

These results confirm our second hypothesis that the impact of cultural heritage on growth is not only positive but it also depends on institutional and political factors. Specifically, our results imply that for countries that enjoy either high levels of political instability or high levels of rule of law,[5] cultural heritage is less important for growth. This may be pointing out that in periods of political instability the effect of cultural heritage may be diluted by uncertainty, political risk and social unrest. On the other hand, countries where the rule of law prevails strongly, do not need to appeal to cultural values to the same extent.

**3. Conclusions.**

The impact of culture has remained a largely unexplored topic in the empirical literature on economic growth. The impact of cultural values can appear to be ambiguous and depend on the different aspects of culture that authors consider more relevant. This ambiguity and lack of good measures of cultural variables led to a lack of systematic

[4] Evaluated at the average values of political instability and the rule of law, the total impact of CHSH on growth is 0.276, very similar to our previous estimates. The impact of political instability and the rule of law evaluated at the average of CHSH is very close to zero, which also confirms our previous results.
[5] Given the strong negative correlation between these variables (-0.80), it is unlikely that both political instability and high rule of law can be found jointly in practice.

statistical analysis of the relation. In this paper we take a step forward by assessing the impact on growth of a specific "measure" of culture namely UNESCO's "cultural heritage." Cultural heritage measures the degree towards which culture is important in a society and is capable of influencing peoples' lives. We hypothesize that cultural heritage has a positive impact on growth and that this impact is moderated by social, political and institutional factors.

We tested these hypotheses within a growth regression framework by using an index of the stock of cultural heritage for a set of 87 countries. Our results find, first, a strong and robustly positive impact of cultural heritage on growth. Secondly, the impact of cultural heritage on growth is smaller for countries that either suffer a high degree of political instability or enjoy a high degree of rule of law.

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# TABLES

## Table 1. Descriptive Statistics

| | |
|---|---|
| No. of Countries in sample | 87 |
| No. of CH sites in sample | 540 |
| Mean CH sites | 6.21 |
| St. Dev. of CH sites | 7.03 |

**Top Countries in Cultural Heritage (CH)**

| | No. of CH sites | Share % | Growth of GDPpc |
|---|---|---|---|
| Spain | 35 | 6.481 | 3.571 |
| Italy | 33 | 6.111 | 3.158 |
| France | 26 | 4.815 | 2.674 |
| Germany | 24 | 4.444 | 2.572 |
| India | 22 | 4.074 | 1.531 |
| Mexico | 21 | 3.889 | 2.110 |
| United Kingdom | 20 | 3.704 | 2.068 |
| TOTAL | 181 | 33.519 | |

**Relation CH-Growth all sample**

| | |
|---|---|
| Correlation | 0.3363 |
| Rank-Correlation | 0.4919 |

## Table 2. Baseline estimations. Dependent variable: growth of GDPpc. Whole sample

| | (1) | (2) | (3) |
|---|---|---|---|
| CHSH | 0.230<br>(3.429)* | 0.196<br>(3.620)* | 0.161<br>(2.941)* |
| Initial GDPpc | -0.015<br>(-4.436)* | -0.016<br>(-5.024)* | -0.017<br>(-5.837)* |
| Life expectancy 1960 | 0.001<br>(4.603)* | 0.001<br>(3.010)* | 0.001<br>(2.865)* |
| Primary Education Enrolment 1960 | 0.016<br>(1.741)** | 0.020<br>(1.8217)** | 0.017<br>(1.718)** |
| Equipment Investment | - | 0.245<br>(4.283)* | 0.200<br>(3.965)* |
| Years of Openness | - | - | 0.018<br>(4.348)* |
| | | | |
| Nobs. | 82 | 71 | 71 |
| $R^2$ | 0.52 | 0.61 | 0.68 |
| Norm | 3.239 | 4.191 | 4.971** |
| Het | 1.956** | 1.981** | 1.611 |
| RESET | 0.620 | 0.035 | 1.026 |

White-heteroskedasticity adjusted t-ratios in parenthesis. * and ** denote significant at the 5 and 10% level respectively. Norm, Het and RESET are tests for normality, heteroskedasticity and functional form of errors respectively. All equations were estimated with a constant term.

**Table 3. Baseline estimations. Dependent variable: growth of GDPpc. Whole sample except Spain and Italy**

| | (1) | (2) | (3) |
|---|---|---|---|
| CHSH | 0.307<br>(3.237)* | 0.220<br>(2.535)* | 0.199<br>(2.252)* |
| Initial GDPpc | -0.015<br>(-4.735)* | -0.016<br>(-4.920)* | -0.018<br>(-5.670)* |
| Life expectancy 1960 | 0.001<br>(4.568)* | 0.001<br>(3.057)* | 0.001<br>(2.826)* |
| Primary Education Enrolment 1960 | 0.016<br>(1.792)** | 0.019<br>(1.815)** | 0.017<br>(1.708)** |
| Equipment Investment | - | 0.242<br>(4.188)* | 0.195<br>(3.839)* |
| Years of Openness | - | - | 0.019<br>(4.406)* |
| | | | |
| Nobs. | 80 | 69 | 69 |
| $R^2$ | 0.51 | 0.60 | 0.67 |
| Norm | 2.701 | 3.536 | 4.182 |
| Het | 2.017** | 1.575 | 2.103** |
| RESET | 0.075 | 0.050 | 1.049 |

White-heteroskedasticity adjusted t-ratios in parenthesis. * and ** denote significant at the 5 and 10% level respectively. Norm, Het and RESET are tests for normality, heteroskedasticity and functional form of errors respectively. All equations were estimated with a constant term.

**Table 4. Estimation including politico-economic variables. Dependent variable growth of GDPpc. Whole sample**

| | (1) | (2) | (3) |
|---|---|---|---|
| CHSH | 0.134<br>(2.348)* | 1.829<br>(4.125)* | 1.849<br>(4.202)* |
| Initial GDPpc | -0.023<br>(-8.067)* | -0.018<br>(-5.437)* | -0.017<br>(-5.398)* |
| Life expectancy 1960 | 0.0004<br>(1.303) | 0.001<br>(2.176)* | 0.001<br>(2.226)* |
| Primary Education Enrolment 1960 | 0.025<br>(2.194)* | 0.019<br>(1.891)** | 0.019<br>(1.995)* |
| Equipment Investment | 0.206<br>(2.946)* | 0.230<br>(4.005)* | 0.234<br>(4.451)* |
| Years of Openness | 0.012<br>(1.946)** | 0.017<br>(3.842)* | 0.017<br>(3.983)* |
| Political Rights | -0.002<br>(-1.712)** | -0.001<br>(-0.640) | - |
| Degree of capitalism | 0.003<br>(2.388)* | 0.002<br>(1.753)** | 0.002<br>(1.712)** |
| Rule of Law | - | 0.013<br>(2.785)* | 0.014<br>(3.116)* |
| Political Instability | - | 0.032<br>(3.942)* | 0.031<br>(3.925)* |
| CHSH × Rule of Law | - | -1.969<br>(-3.909)* | -1.990<br>(-3.971) |
| CHSH × Political Instability | - | -4.211<br>(-4.001)* | -4.093<br>(-3.869)* |
| | | | |
| Nobs. | 65 | 65 | 65 |
| $R^2$ | 0.73 | 0.77 | 0.77 |
| Norm | 4.023 | 4.549 | 3.588 |
| Het | 2.113** | 1.180 | 1.448 |
| RESET | 0.397 | 0.752 | 0.718 |

White-heteroskedasticity adjusted t-ratios in parenthesis. * and ** denote significant at the 5 and 10% level respectively. Norm, Het and RESET are tests for normality, heteroskedasticity and functional form of errors respectively. All equations were estimated with a constant term.

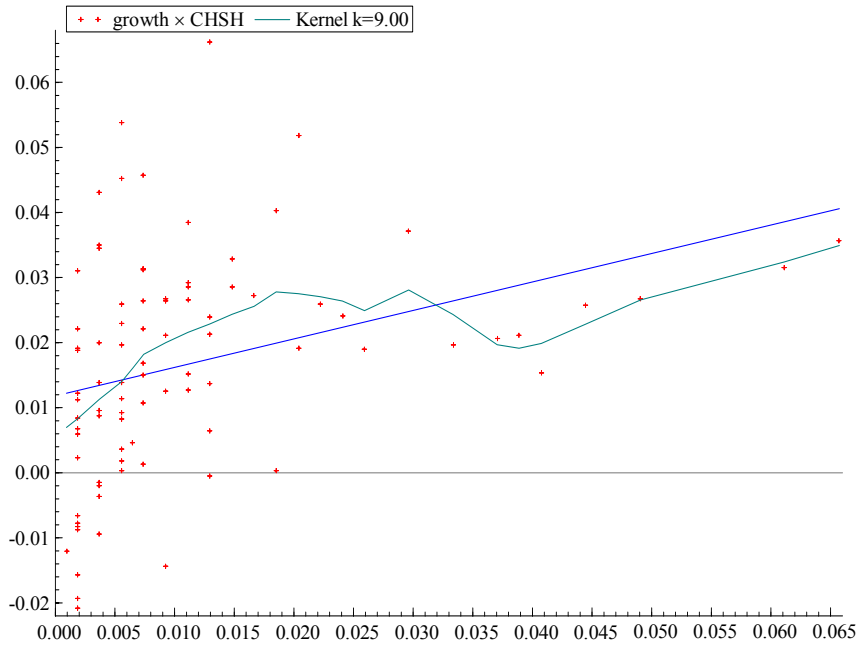


**Figure 1.** Growth of GDPpc (growth) against the share of Cultural Heritage (CHSH). Linear regression and Kernel smooth regression with k = 9.00. Sample 89 countries.

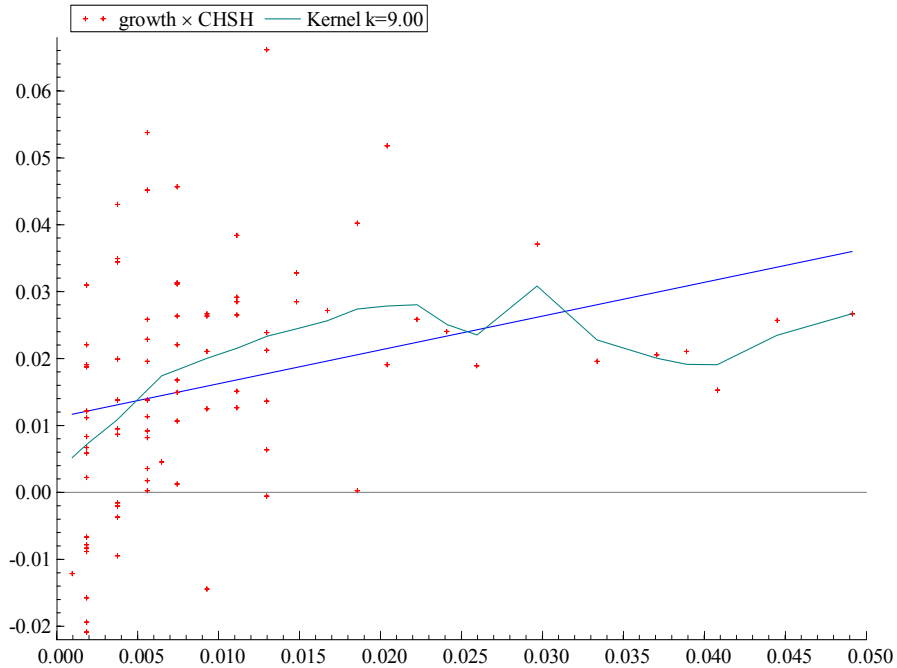


**Figure 1.** Growth of GDPpc (growth) against the share of Cultural Heritage (CHSH). Linear regression and Kernel smooth regression with k = 9.00. Sample 87 countries excluding Spain and Italy.