

The Effects of Cultural Values on Economic Growth: An Empirical Investigation

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Abstract:

This study explores the relationship between cultural attitudes and national GDP growth, across several countries. Data from the World Values Survey from the 2010 through 2014 and 2005-2009 wave have been utilized to determine cultural attitudes, and data from the World Bank and USAID has been utilized for building the economic growth model. The purpose of this study is to inform policy makers regarding the effects of different cultural factors and their interactions on economic growth outcomes. The main contribution of this study is the positive impact that attitudes towards the environment have on economic growth outcomes.

JEL Classification: O47, Z10

Keywords: GDP Growth, Cultural Attitudes.

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1.0 INTRODUCTION

Cultural attitudes vary greatly from nation to nation, even when controlling for items such as levels of economic development. The goal of this study is to investigate how these cultural attitudes and their interactions impact economic growth, along with country wealth, when controlling for other economic factors. Certain cultural attitudes have been shown to have a positive effect on growth, while others have been related to negative effects on economic growth. The purpose of this investigation is to look at the interactions between these variables and their impacts on the economic growth factor.

The purpose of creating and analyzing cross variables is to analyze the impacts of several cultural factors working together, and what these outcomes are on economic growth. Previous literature has explored, in depth, the relationship between individual cultural factors and economic growth, but they have not explored how these cultural variables interact with one another when impacting economic growth. This study aims to fill this specific gap in the literature by proposing a method of accounting for multiple cultural factors through only one variable.

This study aims to enhance general understanding of how cultural factors and attitudes and their interactions impact growth and wealth outcomes. From a policy perspective, this analysis is important in understanding the economic implications of policies that encourage or discourage certain cultural attitudes. The economic implications of all policy decisions are crucial considerations that have to be accounted for and are likely underrepresented when considering the implications of socially and culturally impactful policies. The relevance of this study is that it brings together a pool of different cultural variables and their interactions and looks at how these items relate to economic growth, allowing policy makers to more accurately predict and understand how cultural attitudes may be impacting the economic outcomes of their respective nations.

This paper was guided by the research objective of investigating the relationships between a plethora of different cultural variables, along with their interactions, and macroeconomic

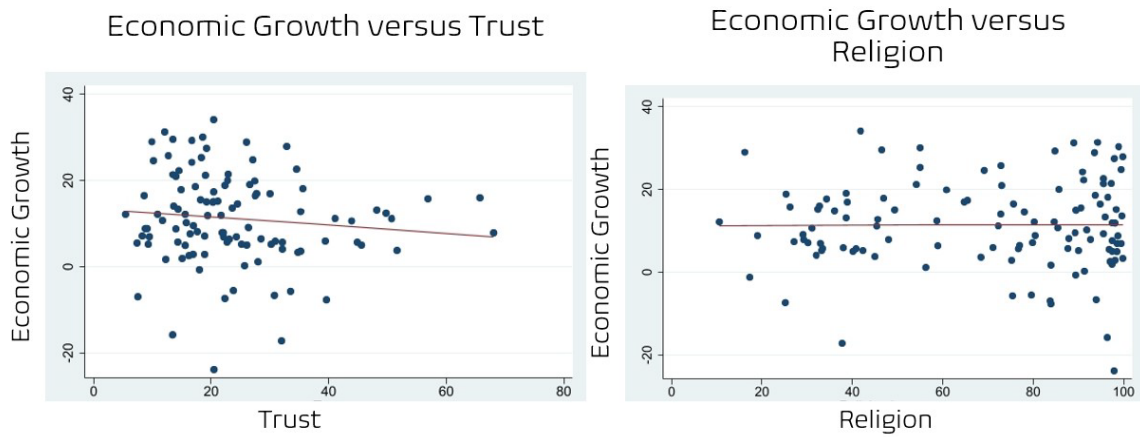
growth outcomes from nation to nation. There is literature looking at the relationships between several cultural variables and economic growth, but there is a lack of investigation into the interactions of these cultural variables, when impacting economic outcomes, a void which this study hopes to fill in the literature. In addition to this analysis utilizing synthesized cultural variables, this study tests several variables with previously established relationships to economic growth, against the same data set, so that results can be compared from cultural data point to cultural datapoint.

The rest of the paper is organized as follows: Section 2 gives a brief review of the existing literature surrounding cultural attitudes and economic growth outcomes. Section 3 outlines the empirical model that was used. Data and estimation methodology are discussed in section 4. Finally, section 5 presents and discusses the empirical results. This is followed by a conclusion in section 6.

2.0 Preliminary Trends, Cultural Attitudes and Growth

The figures below show the preliminary trends found between several different cultural indicators and economic growth over the available dataset and one figure shows the preliminary relationship between two of the cultural variables that will be crossed in this study. In three of the four figures, economic growth is listed on the y-axis and the independent variable of interest for each case is listed on the x-axis. Figures 1 and 2 below show the relationships between trust, religion and economic growth and Figures 3 and 4 show the relationship between pro environmental views and economic growth and pro environmental views and intensity of religious beliefs.

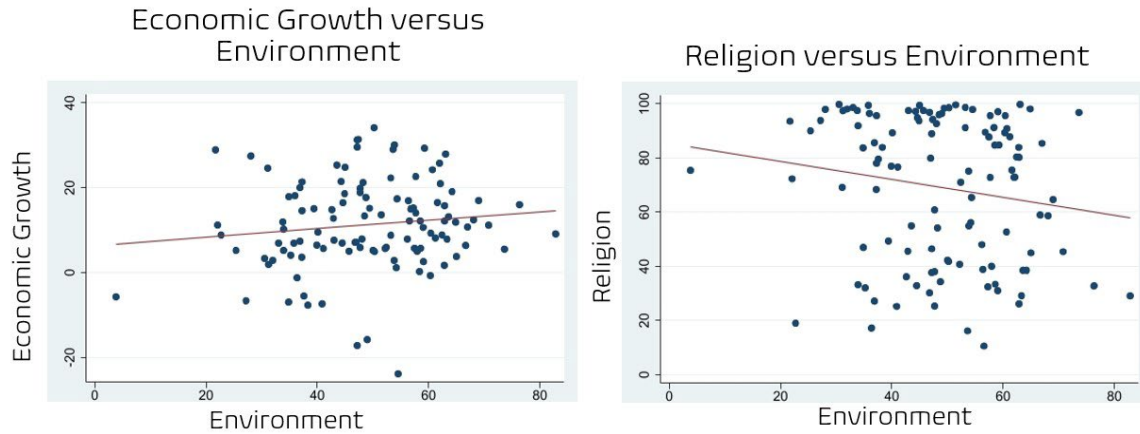
Figure 1: Economic growth versus Trust & Figure 2: Economic growth versus Religion



Source: World Values Survey and World Bank

When analyzing the trends shown in Figures 1 and 2, there is almost no relationship to be observed when graphing each of these variables one on one with economic growth. This result is to be expected as even if either of these factors influence economic growth outcomes they would be severely overshadowed by omitted variable bias, as economic variables are not controlled for. These relationships are observed almost across the board when graphing cultural attitudes against economic growth, from this particular dataset, although a slight relationship can be observed between economic growth and environmental views in Figure 3 below.

Figure 3: Economic growth versus Environment & Figure 4: Religion versus Environment



Source: World Values Survey and World Bank

In Figure 3 we see a slight positive correlation between environmental views and economic growth, running counter intuitive to basic common sense and a trade off which nearly all accept as true. When people become more willing to sacrifice economic growth for environmental protections, one would expect that economic growth levels would drop, but this is not the trend observed in this graph nor is this assumption consistent with the results from the model of this study. In Figure 3 we observe a weak but somewhat defined relationship between the two cultural variables of religion and environment. The more defined the relationship between the two cultural variables is, the more interpretable the results of the parameter estimate for their cross variable, as values are more likely to follow a continuous trend that represents a change in both variables.

3.0 LITERATURE REVIEW

3.1 The Effects of Cultural Values On Economic Outcomes

“ Throughout history, one of the defining features of different societies have been the values that they each hold. These values influence every aspect of the culture, including the outcomes that it is capable of producing.

Values which influence economic outcomes of a nation can be broken down into two categories, individual preferences, which exist at the level of the individual, and political preferences, which reflect attitudes towards the way that government should be run. According to Guiso et al. (2006), “We distinguish between values that influence economic preferences (such as fertility or labor participation preferences)—which can be thought of as parameters of a person’s utility function—and political preferences (such as preferences for fiscal redistribution). Culture, thus, can affect economic outcomes through both these channels.” Political preferences are likely to reflect the political outcomes of nations, so this variable must be controlled for when analyzing how individual preferences towards women, within a culture, influence economic growth.

Several studies have found connections between cultural backgrounds and types of economic outcomes, including willingness to complete workplace duties. According to Ichino and Maggi (2000), “The prevalence of shirking within a large Italian bank appears to be characterized by significant regional differentials” . A relationship between shirking and region of origin displays a relationship between an individual's culture and their willingness to work and to what degree that they are willing to do so. Two other studies that also found relationships between cultural attitudes and economic outcomes are from Fernández and Fogli (2005), and Fernández et al. (2004). Fernández et al. (2004) found that men growing up in homes where mothers worked, were significantly more likely to have wives who participated in the labor force. Fernández and Fogli (2005) explored the effects of cultural proxies on first generation immigrants and labor force outcomes for women, using prior women's labor force participation rate and fertility rates as cultural proxies, and economic indicators of women’s labor force participation rate as control variables. These studies found a relationship between past female labor force participation and fertility outcomes with those of modern outcomes, within the same cultural proxies, and the impacts of men growing up with working mothers on female labor participation, respectively.

An additional study from Ferraro and Cummings (2007), found differences in the economic behavior of Navajo and Hispanic groups, including spending, even when controlling for

demographic differences, including economic indicators of economic behavior. This study used the ultimatum game, a commonly used tool in behavioral economics, to determine the differences in bargaining behavior between the two ethnic groups. In the ultimatum game, each player is assigned to the role of either proposer or responder, and the proposer is given 10 dollars to split between themselves and the responder, who will decide whether to accept or reject the proposer's offer, where rejection leads to an outcome of zero dollars for both players. This study was conducted in Albuquerque, New Mexico with 60 Hispanic participants and 60 Navajo participants. These studies lay the foundation for the claim that economic outcomes are influenced by culture. “ (Barlow 2022).

3.3 Determinants of Economic Growth:

“Measuring economic growth, and determining the factors that contribute to economic growth is a challenge faced by many economists over the past several decades. One of the largest challenges faced is the issue that different countries have different determinants of economic growth. One way economists deal with this issue is by dividing countries into several groups, Developing nations, developed nations, and the nations of SouthEast Asia and Central Europe, which take on a middle ground role between the developed and developing nations.

In a study from Anyanwu (2014), using data from 53 African nations over 3 year periods between 1996 and 2010, and data from China from 1980 to 2010, creates a model of economic growth for developing nations, and compares these factors with the factors that have influenced China's massive economic growth over a three decade period. The model utilized was a log-log model, with gdp per capita growth as the dependent variable and initial real gdp per capita, government consumption expenditure as a percentage of GDP, the investment rate, official development aid as percentage of GDP, foreign direct investment as a percentage of GDP, total trade a percentage of GDP, external debt as percentage of GDP, secondary school enrolment, inflation rate, institutionalized political regime, government effectiveness, urban population, domestic credit to the private sector as a percentage of GDP, agricultural materials price index, metals price index, oil price

index, and the industrial materials price index as independent variables. The study found domestic investment, ODA to GDP, secondary school enrollment, government effectiveness, urban population, and metal price index to be statistically significantly related to GDP per capita growth for the African sample (Anyanwu 2014). When using pooled OLS regression, Domestic investment to GDP, ODA to GDP, secondary education enrollment, gov effectiveness, urban population, and the metal price index to be statistically significantly positively related controls.

In a study from Checherita-Westphal and Rother (2012), using data from 12 countries that use the Euro over the time period from 1970-2008, found that governmental issues, like debt levels, trade openness, and government savings are positively and significantly related to GDP per capita growth for developed nations. The empirical model used for developed nations included GDP per capita growth as the dependent variable, and government debt, government balance, private savings, and trade openness as the independent variables of interest for the study, along with a plethora of economic control variables(Checherita-Westphal & Rother 2012).

In a study from Fetahi-Vehapi et al. (2015), a model is created to attempt to relate trade openness to economic growth in south eastern European nations, when controlling for other economic variables. The control variables used in this study, when compared to models of economic growth for developing and developed nations, are slightly different as follows; human capital, gross fixed capital formation (GFCF), Active Population, and the FDI (Fetahi-Vehapi et al. 2015). One interesting conclusion of this study to keep in mind is that, population was found to be negatively and significantly correlated with economic growth for these southeastern European countries. The study also found GDP per capita in the prior year, gross fixed capital formation, and human capital to be statically significant and positively related to economic growth.

A study from Barlow (1994) finds no correlation between levels of population growth and economic growth and suggests that there is likely no relationship between the two variables. This study does not explore the relationship when looking at the population

growth metrics lagged by the length of a generation, which may have some relationship, given the relationship between increased population and increased human capital.

The theory of convergence, which is suggested by the findings of Barro (2003), suggests that countries with lower GDP per capita will grow faster than countries with high GDP per capita. Under this theory, smaller economies will grow at higher rates, relative to their larger economic counterparts, leading to all economies theoretically converging to one size.” Barlow (2023).

3.3 A Note on Environmental Regulation and Economic Growth

Two important studies from Grossman and Krueger (1995) and Jaffe et al. (1995) analyzed the relationship between environmental regulation and a certain contributing factor of economic growth. Grossman and Krueger (1995) analyze the positive relationship between environmental regulation and productivity growth by forcing innovation in capital. Jaffe et al. (1995) analyzed the impacts of the Clean Air Act on innovation in US manufacturing and found that the increased regulation led to increased innovation among firms. It is important to note that each of these studies was only focused inside of the United States.

Despite the conclusions of the previous two studies, a more recent study regarding the economic impacts of environmental regulation comes from Antweiler et al. (2001). This study found that increased environmental regulations culminate in reducing competitiveness and cause businesses to relocate to countries with less environmental regulations in place.

4.0 DATA AND EMPIRICAL METHODOLOGY

4.1 Data

The study uses panel data, based on WVS availability, from 2004 to 2016. Data was obtained from the USAID website IDEA data query system. The summary statistics for both the cultural and economic variables are included below, in Table 1. Note that these summary statistics represent a handful of additional observations that were not utilized in certain models in this study due to a lack of data completeness.

Table 1 Summary Statistics

Var	N	Mean	Std. Dev.	Min	Max
Family Importance	116	98.54741	1.49669	87	100
Friends Importance	116	87.69052	8.680443	52.6	98.8
Work Importance	116	88.71638	6.318598	70.8	99.3
Religion Importance	116	69.54569	26.76564	10.6	99.8
Hard-Work-Luck-Scale	113	4.293274	0.9194811	2.12	8.63
Trust	109	23.78073	12.31223	5.4	68.1
Would Serve	116	61.80086	16.94084	15.1	97.8
GDP	114	8.99E+11	2.26E+12	3.16E+09	1.56E+13
GDP (y-1)	114	8.32E+11	2.13E+12	2.89E+09	1.50E+13
Econ Grow	114	11.39599	10.64111	-23.8594	34.16632
Pop Grow	114	1.321661	1.692289	-0.88425	12.72727
Patents Per 100k	96	20.69512	52.41377	0.014635	287.9795
Environment	114	49.07456	13.18656	3.8	82.8
Corruption	114	47.61404	22.84016	16	96
Education	101	80.60396	23.47087	9	100
Infant Mortality	113	19.00885	18.70709	2	92

4.2 Empirical Model

This study adapts the standard economic growth model by including potential cultural indicators of economic growth into the model and testing each cross combination for significance. The model utilized in this study has been written below.

$$\text{Economic Growth}_{it} = \beta_0 + \beta_1 \text{CulturalVariable}_{it} + \beta_2 X_{it} + u_{it} + \beta_3 \ln \text{GDP}(y-1)_{it} + \beta_4 \text{PopulationGrowth}_{it} + \beta_5 \text{Innovation}_{it} + \beta_6 \text{Corruption}_{it} + \beta_7 \text{Education}_{it} + \beta_8 \text{InfantMort}_{it} + \beta_9 \text{CapitalFormationRate}_{it} + e_{it}$$

Economic Growth_{it} is the dependent variable and is measured by the growth rate of GDP from the previous year to this year, with both values measured in 2023 US dollars. The independent variables of interest are all products of two of the cultural variables, all listed below in Table 2.

Table 2 - Cultural Variable Descriptions

Variable	Definition
Family Importance	% Responded important or rather important to question: "Important in Life: Family"
Friends Importance	% Responded important or rather important to question: "Important in Life: Friends"
Work Importance	% Responded important or rather important to question: "Important in Life: Work"
Religion Importance	% Responded important or rather important to question: "Important in Life: Religion"
Hard-Work-Luck Scale	Average of Responses measured on 1-10 scale that "Hard Work Brings Success"; where higher values indicate a view that success is more based on luck
Trust	Sum of % responded trust completely and trust somewhat to question: "Trust: People you meet for the first time"
Would Serve	% Would serve for their country's military

Environment	% Believe environment should be given priority over economic growth interests
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Source: World Values Survey

Independent control variables consist of seven variables obtained from the World Bank and USAID Query system. First, $\ln\text{GDP}(y-1)_{it}$ (the natural log of the GDP in the previous year of country i at year t) represents the size of the economy already present within the nation. $\text{PopulationGrowth}_{it}$ (the growth rate of population of country i at year t) represents the increase in the workforce. Innovation_{it} (the natural log of the total number of patent applications by residents of country i at year t) represents the growth of technology within the country. Corruption_{it} (perceptions of corruption from transparency international of country i at year t) represents the level of political corruption in a country, higher levels indicate less corruption. Education_{it} (the percentage of individuals who have completed secondary school of country i at year t) represents the average level of education in the nation. InfantMort_{it} (the number of deaths per 1,000 live births of country i at year t) represents the quality and accessibility of healthcare within the country. Finally, $\text{CapitalFormationRate}_{it}$ (the gross fixed capital formation rate as a percentage of GDP of country i at year t) represents the investment into new non-human capital.

5.0 EMPIRICAL RESULTS

The empirical estimation results are presented in Table 3. The primary results displayed relationships between religiosity and environment and the dependent economic growth variable. The results of each of these regressions along with the cross variable, enviro-religion, which is a product of the two variables, are displayed below. In order to determine the success of the cross variable, we must see if the adjusted r squared raises to a significant degree from the two solo variable models. As we see in Table 3, the adjusted R-squared is the highest in model III, at .6606, but this is not enough of a difference from the adjusted R-squared's found in model I and II respectively, at .6274 and .6595, to conclude that this difference would continue to be accurate using a larger data set

Table 3: Regression results

	Economic Growth		
Variables	I Religion	II Environment	III Cross
Religion Importance	.6343** (.2424)		
Environment		.4719*** (.102)	
Enviro- Religion Cross			.0061** (.0025)
ln(GDP (y-1))	-3.0144 (5.1239)	-6.5393 (6.1745)	-2.5852 (6.0256)
Pop Grow	3.097 (3.3877)	.8029 (3.9241)	1.3526 (3.9868)
Innovation	-.2194*** (.0706)	-.2972** (.1133)	-.2335*** (.0869)
Corruption	-.5364 (.3686)	-.3796 (.4323)	-.4244 (.4085)
Education	.1153 (.2227)	.1040 (.1581)	.0572 (.1839)
Infant Mort	1.4777*** (.4929)	1.3246** (.6432)	1.6877*** (.6265)
Capital Formation	.6896 (.4406)	.1840 (.5706)	.2489 (.5277)
R ²	0.6274	0.6595	0.6606
F-statistics	17.38***	9.59***	12.33***
Number of obs.	87	87	87

Note: ***, **, and * denotes significance at the 1%, 5%, and 10% respectively. Standard errors in parentheses

Both the religion and environment variables were found to have significance in their respective models at the 1% level. In the case of Religion, this parameter estimate displays a relationship in the same direction as Barro & McCleary (2003), showing that increased intensity of religious beliefs leads to higher levels of economic growth, *ceteris paribus*. The parameter estimate for the environmental belief factor is positive, displaying a positive relationship to economic growth, running contrary to the idea of the environmental-economic trade off suggested in Antweiler et al. (2001). This positive parameter estimate also is not accounted for by the results found in Grossman and Krueger (1995) and Jaffe et al. (1995), as these models all control for the innovation variable. The cross variable, Enviro-religion, analyzed in model three, is significant at the 5% level.

The natural log of GDP in the prior year was not found to be significant in any of the three models, which goes against the theory of convergence proposed in Barro (2003). Population growth was not found to have significance in any of the three models, although a larger population lag, longer than a year, was not utilized. This finding aligns with the findings of a study from Barlow (1994).

The innovation variable was found to be significant in all three models with a negative parameter estimate, at the 1%, 5%, and 1% level respectively. This parameter estimate directly contradicts the findings of Fetahi-Vehapi et al. (2015), who found a positive relationship between patent applications and economic growth. Both corruption and education were found to be insignificant in all of the regressions.

Infant Mortality was found to be significant in all three models at the 1%, 5% and 1% level, respectively, with positive parameter estimates. The sign of this parameter estimate is counter intuitive to economic growth, but may have some relationship to the idea of convergence with more developed nations growing slower. Capital formation was not found to be significant in any of the models which contradicts the findings of Fetahi-Vehapi et al. (2015), who found that capital formation rate was an important indicator of economic growth.

5.0 CONCLUSION

This study aims to expand upon the existing literature regarding the impacts of cultural values on economic growth by analyzing the effects of several cultural factors working together in one quantifiable variable. The major contribution of this study is the positive relationship discovered between positive attitudes towards the environment and economic growth. This relationship suggests that environmental protection may not have to come at the cost of positive economic outcomes, which could prove extremely beneficial to human society.

Policy makers should look to apply this study in informing policy decisions regarding environmental regulation of businesses. Protecting the environment is not found to have a negative relationship with economic growth in this study and therefore, environmental regulation may not be as harmful to the economy of a nation as previously estimated.

The major limitation of this study was the lack of availability of cultural variables due to the structure of the World Values Survey. Future research should look to analyze an increased number of cultural-cross variables, which quantify more than one cultural attitude. In addition, future studies should further explore the depth of certain cultural factors and their own individual aspects, to avoid oversimplification of factors like intensity of religious beliefs, or the importance of work and family in your life, etc.

Appendix A: Variable Description and Data Source

Acronym	Description	Data source
Family Importance	% Responded important or rather important to question: “Important in Life: Family”	World Values Survey
Friends Importance	% Responded important or rather important to question: “Important in Life: Friends”	World Values Survey
Work Importance	% Responded important or rather important to question: “Important in Life: Work”	World Values Survey
Religion Importance	% Responded important or rather important to question: “Important in Life: Religion”	World Values Survey
Hard-Work-Luck Scale	Average of Responses measured on 1-10 scale that “Hard Work Brings Success”; where higher values indicate a view that success is more based on luck	World Values Survey
Trust	Sum of % responded trust completely and trust somewhat to question: “ Trust: People you meet for the first time”	World Values Survey
Would Serve	% Would serve for their country's military	World Values Survey
Environment	% Believe environment should be given priority over economic growth interests	World Values Survey
GDP	GDP	World Bank

GDP (y-1)	GDP in the previous year	World Bank
Econ Grow	Change in GDP from previous to current year	calculated
Pop Grow	Change in population from previous to current year	calculated
Patents Per 100k	The number of patent applications by residents per 100k residents	World Bank
Corruption	The levels of corruption present in the nation (higher is less corrupt)	Transparency international
Education	% of people who completed secondary school	World Bank
Infant Mortality	number of infant deaths per 1,000 live births	World Bank
Cap Form	gross fixed capital formation rate	World Bank

Appendix B- Variables and Expected Signs

Acronym	Variable Description	What it captures	Expected sign
Religion	% Responded important or rather important to question: “Important in Life: Religion”	Average intensity of religious beliefs	+
Environment	% Believe environment should be given priority over economic growth interests	Percentage believe in environment over economic interests	-
Religion-enviro cross	The product of the Religion and Environment variables.	Represents a relationship between the two variables	+/-
GDP	GDP	The size of the country’s economy	N/A
GDP (y-1)	GDP in the previous year	The size of the country’s economy in the previous year	-
Econ Grow	Growth rate of GDP from previous year to year of survey	The growth of the nations economy	N/A
Pop Grow	Growth rate of population from previous year to year of survey	Increases in human capital	+
Patents Per 100k	The number of patent applications by residents per 100k residents	Innovation levels	+

Corruption	Average perceptions of levels of corruption	The levels of corruption present in the nation (higher is less corrupt)	+
Education	% of people who completed secondary school	Average levels of education	+
Infant Mortality	number of infant deaths per 1,000 live births	Proxy for average quality of healthcare	-
Cap Form	gross fixed capital formation rate	the increase in non human capital	+

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