A new look at the effect of the determinants of government institutions: A cross-sectional analysis

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A New Look at the Effect of the Determinants of Government Institutions: A Cross-Sectional Analysis

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Abstract

Many papers have found mixed results in studying the relationship between institutional quality and some of its determinants, namely openness to trade, GDP per capital and economic globalization. This paper reexamines the relationship between government institutions and these factors. The main findings in this paper is that the three factors have a threshold effect on institutional quality. Specifically, there exists a significant nonlinear relationship between three measures of government institutions (government efficiency, political stability and the rule of law) and trade. Moreover, GDP per capita has a significant nonlinear effect on government effectiveness, political stability, regulatory quality, rule of law and control of corruption. Finally, there is a significant nonlinear relationship between each of the six measures of institutional quality and globalization. Some of the findings are robust to controlling for average IQ levels and regional grouping of countries while others are not. Specifically, the results show that the nonlinear relationship was robust only two measures of institutional quality both for trade and GDP per capita. Accounting for the level of IQ revealed a significant nonlinear relationship between Voice and Accountability and both trade and GDP per capita.

Key Words: governance, institutions, trade, globalization.
JEL Codes: D73, I2

1 Introduction

It's common knowledge nowadays among economists and political scientists that government institutions play a crucial role when it comes to the question of whether or not citizens of modern states benefit or are making better use of the resources they already have in order to improve their economic and social situation. It's also largely documented that only institutions of good quality are able to promote development (Easterly, 2001; Acemoglu et al., 2001, 2002; Easterly and Levine, 2003; Rodrik et al., 2004). However, defining what is the quality of institutions or good governance has not been an easy task as conceptual divergences appear in many of the proposed definitions.

The widely spread idea is that institutions, as a means by which authority is exercised (Kaufmann et al., 2004), are of good quality if they have a positive impact on the quality of life that is enjoyed by citizens of a country (Huther and Shah, 2005). However, this conception may not exclude some or all of the aspects of a personal rule regime. On the other hand, the power-exercising characteristics of institutions pertains to the "output" side of the regulating relations of a state to its citizens so that high-quality institutions are those that are impartial in implementing laws and policies (Rothstein and Teorell, 2008).

Nevertheless, the question of what determines the quality of institution is well established in the literature. The determinants of institutional quality include climatic and geographical factors (Acemoglu et al., 2001), the legal origin deriving from the colonial heritage of countries (La Porta et al., 1999; Straub, 2000), the rent-seeking opportunities resulting from the presence of natural resources (Ades and di Tella, 1999; Chong and Zanforlin, 2000; Treisman, 2000) and openness to trade (Knack and Keefer, 1995; Laffont and N'Guessan, 1999; Wei, 2000; Islam and Montenegro, 2002). Kalonda-Kanyama and Kodila-Tedika (2012) recently showed that average national IQs positively affect government institutions.

In this paper, we reexamine the link between government institutions and their traditional determinants. We found a significant nonlinear relationship between three measures of government institutions and trade. The three measures are government efficiency, political stability and the rule of law. In addition, we found a significant nonlinear effect of GDP per capita on government effectiveness, political stability, regulatory quality, rule of law and control of corruption. However, the nonlinear effect of GDP per capita disappears when we account for the nonlinear effect of economic globalization. The findings in this paper suggest that trade has a positive but diminishing effect on government effectiveness, political stability and on the rule of law. In addition, there exists a threshold level of trade beyond which the positive effect of trade on the quality of government institution becomes decreasing. Moreover, there exists a critical level beyond which GDP per capita positively affects institutional quality. Finally, we find a significant nonlinear relationship between each of the six measures of institutional quality and globalization. More specifically, there is a critical level of economic globalization beyond which globalization has a positive effect on government institutions.

We check the robustness of the above findings by accounting for the level of intelligence as measured by the national average IQ (Kalonda-Kanyama and Kodila-Tedika, 2012) and regional grouping of countries. The results show that the nonlinear relationship in trade is robust only for political stability and the rule of law. On the other hand, the nonlinear relationship in GDP per capita was significant only for the rule of law and the control corruption. It is important to note that controlling for the level of IQ revealed a significant nonlinear relationship between Voice and Accountability and trade on the one hand, and between Voice an Accountability and GDP per capita on the other hand. Finally, the nonlinear relationship in globalization was significant only for the control of corruption and for the rule of law.

The paper is organized in six sections, including this introduction. The second section focuses on a preliminary exploration of the relationship between government institutions and three determinants of institutional quality, namely trade, GDP per capita and economic globalization. The empirical model is discussed in section 3 and regression results are presented in section 4. Section 5 discusses the robustness of the findings while section 6 concludes.

2 Preliminary Analysis

This section graphically analyses the relationship between the six measures of government institutions included in our analysis and three of traditional determinants of institutional quality. The three determinants are GDP per capita, trade and globalization. The main message conveyed in this section is that the relationship between each of the three determinants and diverse measures of government institutions may not be linear.

The effect of GDP per capita

An examination of Figure 1 suggests that a nonlinear relationship exists between each of the six measures of government institutions and GDP per capita. In each of the 6 graphs, the log of GDP per capita is represented on the horizontal axis while the measures of government institutions are represented on the vertical axis. We have plotted the fitted curve of the estimated quadratic regression model where the dependent variable is an index of institutional quality, and where we use both the linear and the quadratic terms of the log of the GDP per capital as explanatory variables. The estimated model is $GI_i = \alpha + \beta\ lgdpcap_i + \gamma\ lgdpcap_i \times lgdpcap_i + \epsilon_i$, where GI_i is an index of government institutional quality for the ith country in the sample, $lgdpcap$ is

log of GDP per capita and ϵ is the error term.

The estimated coefficients in the above regression models are all significant. The estimate of β is negative and strongly significant in the regression models where the dependent variables are government efficiency (-1.938 with p-value = 0.001), regulatory quality (-1.709 with p-value = 0.001) and rule of law (-2.829 with p-value = 0.000). However, $\hat{\beta}$ is only marginally significant in the regressions where the dependent variables are political stability (-1.527 with p-value = 0.077) and voice and accountability(-1.213 with p-value = 0.090). On the other hand, $\hat{\gamma}$ is positive and significant at the 1% level when the dependent variables are government efficiency (0.152 with p-value = 0.000), regulatory quality (0.135 with p-value = 0.000) and rule of law (0.201 with p-value = 0.000). The estimated coefficients of γ in the models with political stability (0.118) and voice and accountability (0.098) are significant at the 5% level. The robust p-values for these estimates are respectively 0.014 and 0.018.

Accounting for the nonlinear relation in GDP per capital explains more than 74% of the variations in the measures of institutional quality for government efficiency ($R^2 = 74.4\%$), political stability ($R^2 = 79.8\%$) and regulatory quality ($R^2 = 74.4\%$). On the other hand, the estimated proportion of the variations in the rule of law and voice accountability are respectively 46.1% and 50.9%. These preliminary results are suggestive of the existence of an U-shaped relationship between all the measure of government institutions and GDP per capita. Our task is to check if such a relationship is robust when other determinants of government institutions are accounted for.

The effect of trade

Figure 2 plots each the measures of government institutional quality against openness to trade. We have excluded in this figure all the countries in the sample for which the GDP share of trade was higher than 150% as we considered these countries as out-

liers. The distribution of dots in each of the graphs of Figure 2 does not show any evidence of a significant nonlinear relationship between each of the measures of government institution and trade. In fact, even a linear relationship is not significant in a simple regression model in which each of the measures of institutional quality serves as the dependent variable.

The results from the estimation of the regression model that accounts only for the nonlinearity in trade as the independent variable show that $\hat{\beta}$ and $\hat{\gamma}$ are both not significant in all the six regression. At this point, we shall only point to the fact that the sign of $\hat{\beta}$ is consistently positive in all the regression while the sign of $\hat{\gamma}$ is consistently negative. Our aim in this paper is to check whether controlling for other determinants of government institutions will reveal a nonlinear relationship between government institutions and openness to trade.

The effect of globalization

In contrast to Figure 2 where the nonlinear relation between government institutions and trade was not discernible and not confirmed by the preliminary regression analysis, Figure 3 portrays a recognizable nonlinear fitted curve of the preliminary regression models for government effectiveness, regulatory quality, the rule of law and the control of corruption. However, it is important to mention that both estimated coefficients of interest, that is $\hat{\beta}$ and $\hat{\gamma}$, are not significant in the regression models where regulatory quality is the dependent variable. The preliminary estimations show that $\hat{\beta}$ is negative and significant at the 5% level when the dependent variable is government efficiency (-0.038 with p-value = 0.023) and at the 1% level in the regression where the rule of law(-0.055 with p-value = 0.002) and the control of corruption (-0.071 with p-value = 0.000) are the dependent variables. On the other hand, the value of $\hat{\beta}$ is negative, but not significant in the regression where the dependent variables are political stability

and regulatory quality.

Turning to the value of $\hat{\gamma}$, the preliminary results show that it is 0.001 and significant at the 1% level in the regressions where the dependent variable is either government efficiency, regulatory quality, the rule of law, or the control of corruption. While it is only marginally significant in the regression model with political stability as the dependent variable ($\hat{\gamma} = 0.0003$ with p-value $= 0.086$), it is not significant in the regression where voice and accountability is the dependent variable ($\hat{\gamma} = 0.0003$ with p-value $= 0.198$). In whole, the nonlinear relation in globalization explains more than 54% of the variations in the measure of the control of corruption ($R^2 = 54.4\%$), of the rule of law ($R^2 = 55.4\%$), of government efficiency ($R^2 = 60.6\%$), and of the regulatory quality ($R^2 = 64.7\%$). The nonlinear relation explains only 41% of the variations in the measure of political stability and 43.3% of the variations in the measure of voice and accountability.

As for the GDP per capita and trade, our purpose in this paper is to check if the nonlinear relationship in globalization will be robust after accounting for other determinants of government institutions in the models where it is significant. In addition, we shall also check whether or not this relationship becomes significant in the models where it was not. Finally, we shall watch whether the shapes of the relationships that are depicted in Figure 1, 2, and 3 are robust to the inclusion of the other determinants of government institutions. The next section consider a more elaborate model of the determinants of government institutions.

3 Empirical Model

We estimate the following empirical model:

$$GI_i = \alpha + \beta\ varint_i + \gamma\ varint_i \times varint_i + Z_i'\delta + \epsilon_i \tag{1}$$

where GI_i is the institutional quality index for country i, *varint* is one of our variables of interest (GDP per capita, trade, globalization), $Z = (z_1, z_1 \dots z_k)'$ is the vector of control variables, and ϵ_i is the error term that is assumed to be normally and independently distributed. Finally, α is the intercept, β and γ are the parameters associated with the linear and the quadratic terms of the variables of interest, respectively, while $\delta = (\delta_1, \delta_2, \dots, \delta_k)$ is the parameter vector for the control variables. Our parameter of interest are thus β and γ.

We shall respectively consider the following dependent variables, each in a separate regression model: government efficiency ($GOVEFF$), political stability ($POLSTAB$), regulatory quality ($REGQUAL$), rule of law ($RLAW$), voice and accountability ($V\&ACC$), and control of corruption ($CONTCORR$). Apart from our variables of interest, the set of our independent variables include the exports of natural resources ($NATEXP$) as a proportion of total merchandise exports, geographical dummy variables related to continents in which each country in the sample belong to (Africa, Americas, Asia, Europe or Oceania), and dummy variables for the legal origins of government institutions (British, French, German, Socialist or Scandinavian).

Model (1) is estimated by means of 2SLS, to account for possible endogeneity that results from the inclusion of openness to trade. In fact, while greater openness increases the demand for better institutions, it may be true that countries with better institutions may be more open (Islam and Montenegro, 2002). We instrument for trade using the estimated trade shares from Frankel and Romer (1999) and geographical variables.

4 Regression Results

Table 1 reports the results from six cross-sectional regressions, one for each of the measures of institutional quality for the year 2006. Columns (2) − (7) respectively report the estimated equations for government effectiveness, political stability, regulatory quality, rule of law, voice and accountability, and control of corruption. Two key points are noticeable from Table 1. First, the results show that there exists a significant nonlinear relationship between trade and three of the measures of institutional quality, namely government effectiveness, political stability , and the rule of law. The estimated value of β is positive and significant at the 1% level in the regressions where $POLSTAB$ and $RLAW$ are the dependent variables, and at the 5% level in the regression with $GOVEFF$ as dependent variable. On the other hand, the estimated value of γ is negative and significant at the 1% level in all the three regressions. The significant nonlinear relationship suggests that the effect of trade on the three measures of government institutions is positive but diminishing.

The second key point from Table 1 is that the relationship between GDP per capital and all the measures of the quality of government institutions but $V\&ACC$ is significantly nonlinear. The estimated value of β is negative and significant at the 1% in the regressions for $GOVEFF$, $POLSTAB$, and $RLAW$, and at the 5% level in the regressions for $REGQUAL$ and $CONTCORR$. On the other hand, the estimated value of γ is positive and significant at the 1% level in the regressions where the dependent variable is respectively $GOVEFF$, $POLSTAB$, $RLAW$ and $CONTCORR$, and at the 5% in the regression where the dependent variable is $REGQUAL$. The significant nonlinear relationship suggests that there exists a threshold level beyond which GDP per capita has a positive and increasing affect on government institutions.

On the other hand, Table 2 reports the estimation from a model that incorporates a measure of economic globalization, the KOF index. The estimated value of β is negative and significant in five out of six regressions. It is significant at the 1% level in the regressions for $RLAW$ and $CONTCORR$, at 5% in the regressions where the dependent variables are $POLSTAB$ and $REGQUAL$, and at 10% in the regression with $GOVEFF$ and $V\&ACC$ as dependent variables. The estimated value of γ is positive and significant at the 1% in the regressions for $POLSTAB$, $RLAW$, and $CONTCORR$, at 5% in the regressions for $REGQUAL$ and $V\&ACC$ and at 10% in the regression where $GOVEFF$ is the dependent variable. The nonlinear relationship suggests that there exists a threshold level beyond which globalization positively affects institutional quality. It is important to note that the nonlinear relationship in GDP per capita disappears when the nonlinear effect of globalization is accounted for. In Table 2, the coefficient of the log of GDP per capita is significant at the 1% in all the regressions, except the one in which $CONTCORR$ is the dependent variable. This results suggests that GDP per capita has a strong positive effect on institutional quality, after accounting for globalization.

It is important to note that the finding in this paper about trade and GDP per capita contrasts with the existing literature. For example, (Islam and Montenegro, 2002) find that the relationship between institutional quality and trade is linear. However, this suggests that the effect of trade on institutional quality is the same for all countries in the sample, regardless of their volume of trade. **More ...**

The effect of natural resources

Tables 1 and 2 reveals the negative effect of natural resources on institutional quality. The coefficient of the variable $Natexp$ is negative and significant at the 1% in all the regressions in Table 1. In table 2, the coefficient for natural resources is also

negative for all the regression and significant at the 1% level, except in the regression where $CONTCORR$ is the dependent variable in which case it is significant at 5%. **It is noteworthy that the proportion of the variations in the measures of institutional quality that is explained by the independent variables ranges betwwen 60% and 87%. The finding of the negative effect of natural resources on institutional quality confirm previous studies. Specifically, ... found that ...**

The effect of legal origin and continental dummies

The regression results in Table 1 show that all the legal origin dummies have a negative and significant effect on $GOVEFF$ and $RLAW$, and no effect at all on $REGQUAL$ and $CONTCORR$ when the nonlinear effect of trade and GDP per capita are accounted for. In addition, all but the socialist legal origin have a negative and significant effect on $POLSTAB$ while only the French and socialist legal origin dummies significantly affect $V\&ACC$. When globalization is accounted for (Table 2), the results show that the French legal origin dummy negatively affect all the six measures of institutional quality while the German dummy negatively and significantly affects only $GOVEFF$ and $CONTCORR$. Moreover, the British and socialist dummies do not affect $REGQUAL$ and $V\&ACC$.

Table 1 shows that none of the continental dummies affects $GOVEFF$ nor $CONTCORR$ when the nonlinear relationships in trade and GDP per capita are accounted for. The same remark applies when globalization is accounted for (Table 2), except for the Asian dummy that is negatively significant at the 10% level for $CONTCORR$. The African dummy affects none of the six measures of institutional quality in either case. In contrast, the remaing continental dummies negatively and significantly affect $POLSTAB$. Finally, while the Asian dummy negatively and significantly affects $REGQUAL$ at the

5% level and $V\&ACC$ at the 10%, the dummy for the Americas and the dummy for Europe do not affect $CONTCORR$, $REGQUAL$, $RLAW$ and $V\&ACC$.

Critical values and the diminishing/increasing effects

Given the significant nonlinear relationships between institutional quality measures and each of the factors of interest (trade, GDP per capita and globalization), as identified above, one can calculate the critical value of each of the factors of interest such that its partial effect on the corresponding measure of institutional quality is zero. From equation (1), the partial effect of each variable of interest is

$$\frac{\partial GI}{varint} = \beta + 2\gamma\ varint. \tag{2}$$

Define $varint^*$, the value of trade, log(GDP per capita) or globalization index such that the partial effect in equation 2 is zero. Then solving equation 2 yields:

$$varint^* = -\frac{\beta}{2 \times \gamma}. \tag{3}$$

Table 5 gives the critical values of trade, log(GDP per capita) and globalization for all the regressions in Table 1 where the nonlinear effects are significant. These values can be interpreted as the threshold values beyond which the effect of the variables of interest on institutional quality changes the sign. For example, trade has a positive effect on government effectiveness for all volume of trade that represents less than 98.33% of GDP. On the other hand, it takes a trade-to-GDP ratio less than 96.5% and 61.0% for trade to have a positive effect on political stability and on the rule of law, respectively. Beyond these values, the effect of trade on institutional quality eventually becomes negative. Likewise, it takes a GDP per capita higher than 459.43 USD, that is more than 93.23 USD higher than the GDP per capita of the Democratic Republic

of the Congo, for GDP per capita to have a positive effect on government effectiveness, and 1525.37 USD, a little lower than Ghana's GDP per capita in the sample, for GDP per capita to have a positive effec on the rule of law. Below these levels of GDP per capita, the effect on institutional quality is eventually negative.

To better understand the above effects, consider Table 6 which depicts the positive but diminishing effect of trade, and the negative but increasing effects of GDP per capita and globalization on institutional quality. The numbers in this table are the calculated effect on the measures of institutional quality, at different percentiles of the value of trade, log(GDP per capita) and globalization. Panel A shows the positive but diminishing effect of trade on government efficiency, political stability and the rule of law. In combination with Table 5, it follows that trade has positive but diminishing effect on government efficiency for trade-to-GDP ratios less than 98.33%, on political stability for trade-to-GDP ratios less than 96.5%, and on the rule of law for ratios less than 61.5%. Once trade volumes hit these thresholds and goes beyond them, the effect of trade on institutional quality becomes nonpositive.

Panel B and Panel C depict the negative but increasing effect of GDP per capita and of globalization on institutional quality. It follows that GDP per capita and globalization have a negative effect on institutional quality for countries with values less than the critical values in Table 5. However, this negative effect is increasing with higher values of GDP per capita and higher levels of globalization until it hits the critical values (Table 5) at which the effect on institutional variables becomes zero. Beyond the critical values, GDP per capita and globalization have positive and increasing effect on institutional variables.

5 Robustness Checks

To verify the robustness of the above findings, we account for the level of national average IQ and for World Bank regional grouping of countries instead of continents. The data on intelligence (IQ) comes from Lynn and Vanhanen (2002, 2006). The regional grouping of countries is the World Bank's classification of countries in the following geographical regions: East Asia and the Pacific (EAP), Europe and Central Asia ($EUCASIA$), Latin America and the Caribbean (LAC), Middle East and North Africa ($MENA$) and Sub-Saharan Africa (SSA). A dummy variables was introduced in the regressions for each of the regional grouping of countries in Table 3. These dummies were used to check the robustness of the nonlinear relationship in trade and GDP per capita. For the nonlinear relationship in globalization, the dummies for continents where used instead, along with IQ levels.

Table 3 reports the regressions in which the level of IQ was significant, along with the nonlinear relationship in both trade and GDP per capita. The results show that the nonlinear relationship in trade is significant only for $POLSTAB$ and $RLAW$, compared to the regressions in Table 1. The estimated value of β is positive and significant at the 5% level while the estimated value of γ is negative and significant at the 5% level. The nonlinear relationship in GDP per capita is significant at the 1% level for $RLAW$ and $CONTCORR$. Moreover, accounting for IQ level and geographical grouping revealed the nonlinear relatioship between $V\&ACC$ and both trade and GDP per capita. For both independent variables, the nonlinear relatioship is significant at the 1% level. Finally, Table 4 shows that the nonlinear relationship in globalization is robust for the control of corruption and the rule of law.

6 Conclusion

The objective of this paper was to investigate the nonlinear effect of trade, GDP per capita and globalization on government institutions. We estimated a cross-section regression model for each of six measures of institutional quality first with trade and GDP per capita as the independent variables of interest, and then with globalization as the independent variable of interest. Because of possible endogeneity due to the inclusion of openness to trade in the regression model of institutional quality, 2SLS was used as the method of estimation.

The main finding is that the three variables on interest has a threshold effect on at least three measures of institutional quality. Openness to trade has a threshold effect on government effectiveness, political stability and the rule of law; Globalization has a threshold effect on all the six measures of institutional quality included in our study while GDP per capita has a threshold effect on five of them, not including voice and accountability. The results show that trade has a positive but diminishing effect on institutional quality, while GDP per capita and globalization has a negative but increasing effect. The significant nonlinear relationship in the variables on interest allowed us to determine critical values beyond which the their effect changes the sign.

References

Acemoglu, D., Simon, J., and Robinson, J. A. (2001). The colonial origins of comparative development: An empirical investigation. *The American Economic Review*, 91(5):1369–1401.

Acemoglu, D., Simon, J., and Robinson, J. A. (2002). Reversal of fortune: Geography and institutions in the making of the modern income distribution. *The Quarterly Journal of Econometrics*, 118:1231–129.

Ades, A. and di Tella, R. (1999). Competition and corruption. *American Economic Review*, 89(4):982–993.

Chong, A. and Zanforlin, L. (2000). Law tradition and institutional quality: Some empirical evidence. *Journal of International Development*, 12(8):1057–1068.

Easterly, W. (2001). *The Elusive Quest for Growth: Economists' Adventures and Misadventures in the Tropics*. The MIT Press, Cambridge, MA.

Easterly, W. and Levine, R. (2003). Tropics, germs, and crops: How endowments influence economic development. *Journal of Monetary Economic*, 50:3–39.

Frankel, J. A. and Romer, D. (1999). Does trade cause growth? *The American Economic Review*, 89(3):379–399.

Huther, J. and Shah, A. (2005). A simple measure of good governance. In Shah, A., editor, *Public Services Delivery*. Washington, DC: The World Bank.

Islam, R. and Montenegro, C. E. (2002). What determines the quality of institutions? Background Paper for the World Development Report: Building Institutions for Markets.

Kalonda-Kanyama, I. and Kodila-Tedika, O. (2012). Institutional quality: Does intelligence matter? University of Kansas Working Papers Series in Theoretical and Applied Economics.

Kaufmann, D., Kraay, A., and Mastruzzi, M. (2004). Governance matters III: Governance indicators for 1996-2002. World bank policy research working paper no. 3106.

Knack, S. and Keefer, P. (1995). Institutions and economic performance: Cross-country tests using alternative institutional measures. *Economics and Politics*, 7(3):207–227.

La Porta, R., de Silanes, F. L., Shleifer, A., and Vishny, R. (1999). The quality of government. *The Journal of Law, Economics and Organization*, 15(1):222–279.

Laffont, J.-J. and N'Guessan, T. (1999). Competition and corruption in an agency relationship. *Journal of Development Economics*, 60:271–295.

Lynn, R. and Vanhanen, T. (2002). *IQ and the Wealth of Nations*. Praeger Publishers, Westport, CT.

Lynn, R. and Vanhanen, T. (2006). *IQ and Global Inequality*. Washington Summit Publishers, Augusta, GA.

Rodrik, D., Subramanian, A., and Trebbi, F. (2004). Institutions rule: The primacy of institutions over geography and integration in economic development. *Journal of Economic Growth*, 9:131–165.

Rothstein, B. and Teorell, J. (2008). What is quality of government? A theory of impartial government institutions. *Governance*, 21(2):165–190.

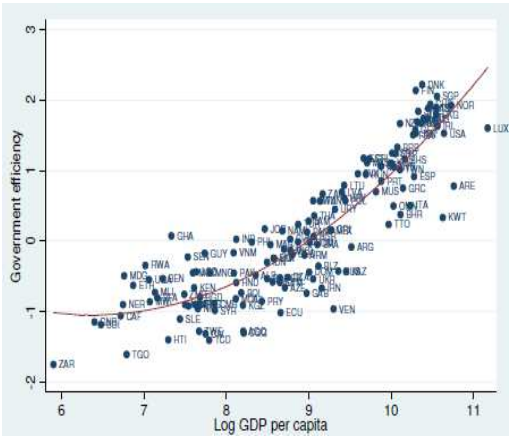
Straub, S. (2000). Empirical determinants of good institutions: Do we know anything? Working paper no. 423, Inter-American Development Bank.

Treisman, D. (2000). The causes of corruption: a cross-national study. *Journal of Public Economics*, 76:399–457.

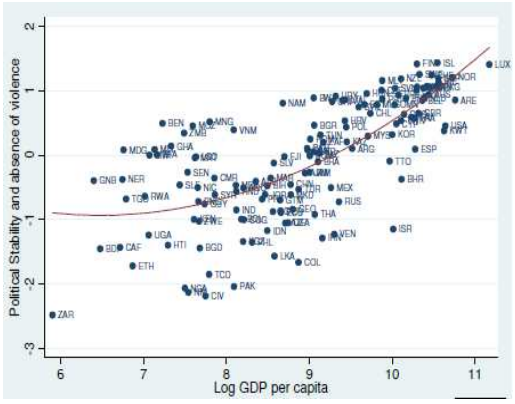
Wei, S.-J. (2000). Natural openness and good government. National bureau of economic research working paper no. 7765.

Figure 1: Government Institutions and GDP per capita

(a)



(b)



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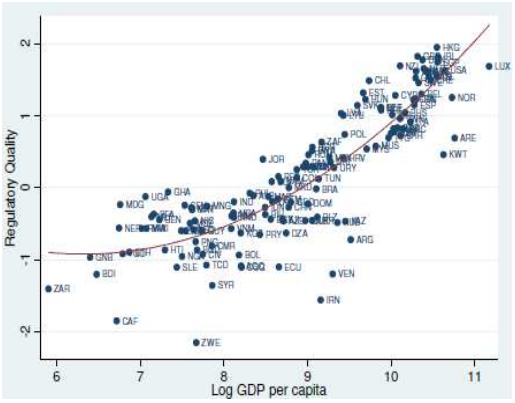

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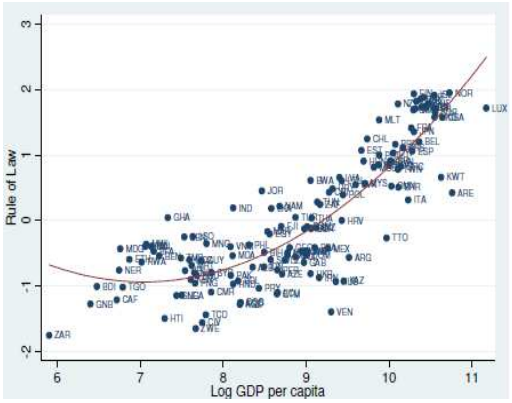
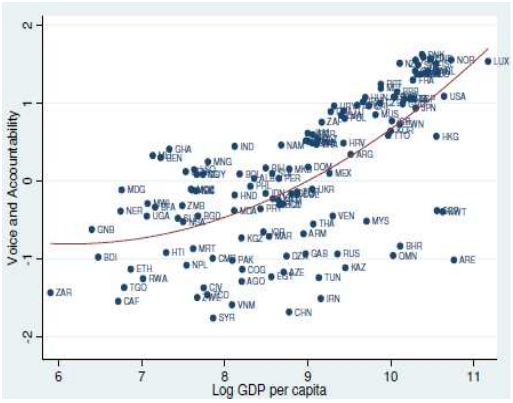


(e)



(f)

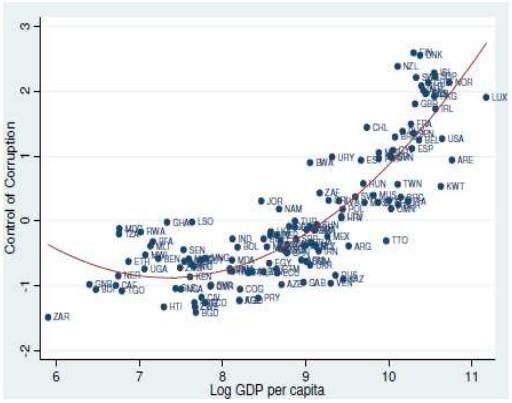
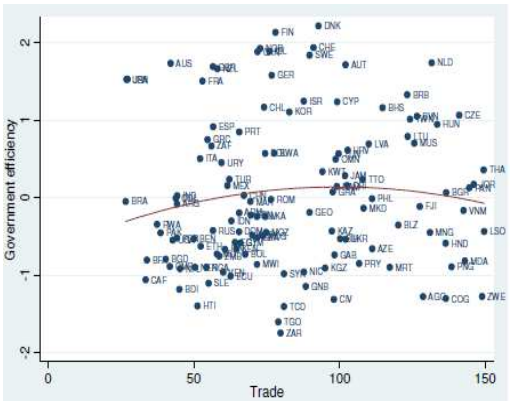


Figure 2: Government Institutions and Trade

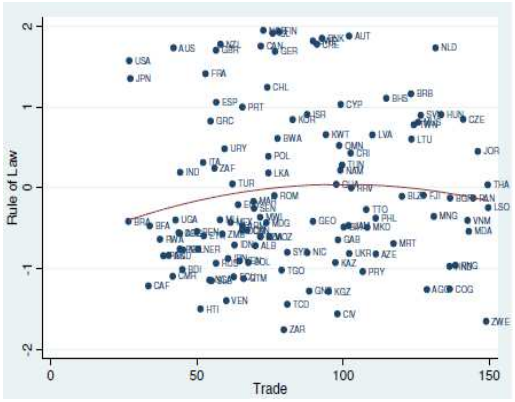
(a)



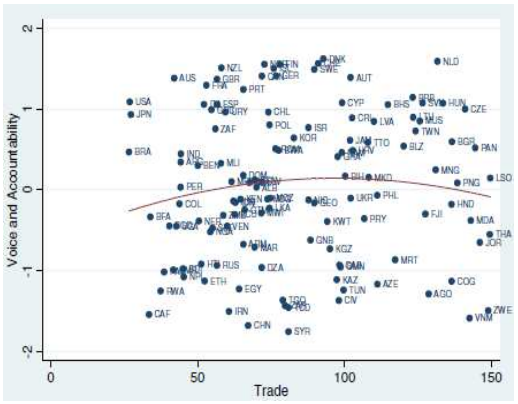
(b)

(c)

(d)



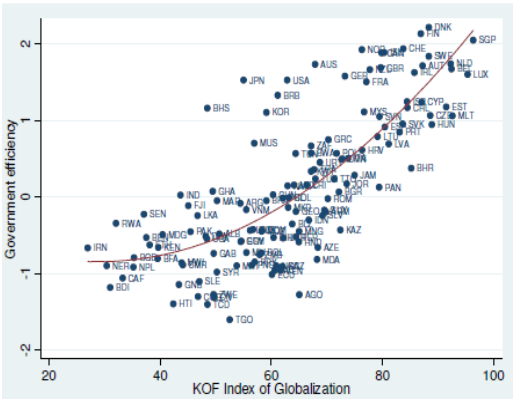
(e)



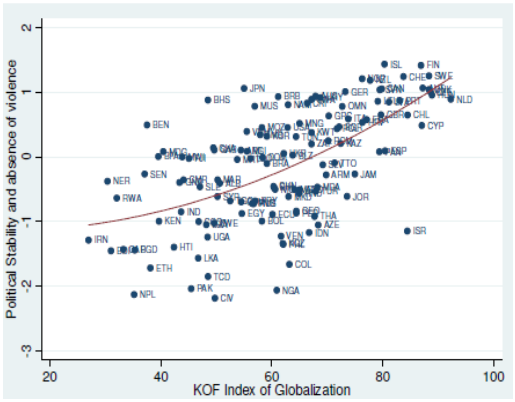
(f)

Figure 3: Government Institutions and globalization

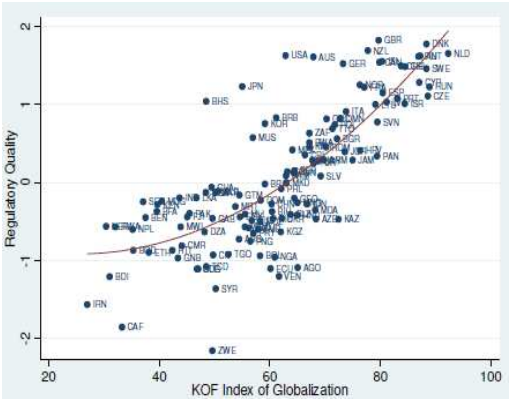
(a)



(b)



(c)



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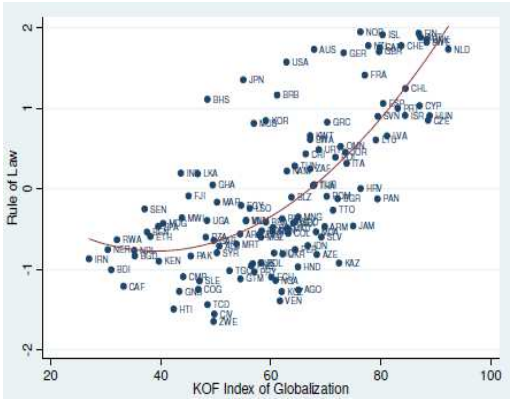

(e)

(f)

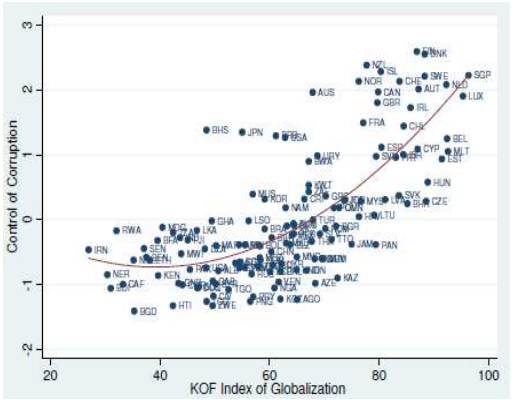

Table 1: Main Regression (Year = 2006)

Variables	Government effectiveness	Political stability	Regulatory quality	Rule of law	Voice and Accountability	Control of corruption
Trade	0.0059**	0.0193***	0.0662	0.0123***	0.0061	0.0064
	(0.044)	(0.000)	(0.175)	(0.007)	(0.308)	(0.160)
$Trade \times Trade$	-0.00003***	-0.0001***	-0.00002	-0.0001***	-0.00002	-0.000*
	(0.009)	(0.0000)	(0.113)	(0.001)	(0.222)	(0.094)
Natural resources	-0.0115***	-0.0056**	-0.0073***	-0.0089***	-0.0081***	-0.0074***
	(0.000)	(0.029)	(0.001)	(0.000)	(0.000)	(0.000)
lgdpcap	-1.741***	-3.2261***	-1.9164**	-3.4877***	-1.316	-1.949**
	(0.004)	(0.007)	(0.036)	(0.000)	(0.273	(0.031)
$lgdpcap \times lgdpcap$	0.142***	0.2191***	0.1464**	0.2380***	0.0941	0.1483***
	(0.000)	(0.001)	(0.005)	(0.000)	(0.165)	(0.004)
Africa	0.0618	0.0633	0.0239	0.1223	-0.3901	0.272
	(0.772)	(0.814)	(0.945)	(0.662)	(0.0502)	(0.937)
Americas	-0.2242	-0.4075**	-0.1705	-0.5247**	0.901	-0.1675
	(0.224)	(0.026)	(0.597)	(0.032)	(0.148)	(0.603)
Asia	0.0071	-0.7424***	-0.1345	-0.2113	-0.7199*	-0.1288
	(0.974)	(0.004)	(0.689)	(0.479)	(0.092)	(0.701)
Europe	-0.2003	-0.7519***	-0.0639	-0.3690	0.2349	-0.0633
	(0.306)	(0.002)	(0.845)	(0.158)	(0.592)	(0.846)
British legal origin	-0.4381***	-0.4906**	0.0144	-0.2811*	-0.0891	-0.0199
	(0.008)	(0.011)	(0.912)	(0.076)	(0.609)	(0.880)
French legal origin	-0.5976***	-0.3302*	-0.1288	-0.0467***	-0.3725***	-0.1236
	(0.000)	(0.051)	(0.290)	(0.005)	(0.003)	(0.309)
German legal origin	-0.4445***	-0.3159**	-0.1382	-0.3455**	-0.1195	-0.1390
	(0.002)	(0.032)	(0.242)	(0.013)	(0.360)	(0.241)
Socialist legal origin	-0.55506***	0.1919	0.0465	-0.4809**	-0.4823*	0.0528
	(0.001)	(0.401)	(0.803)	(0.013)	(0.095)	(0.779)
Constant	4.7838**	10.780**	5.471	12.258***	4.3493	5.5902
	(0.045)	(0.036)	(0.151)	(0.000)	(0.364)	(0.139)
Observations	104	104	104	113	104	104
R-squared	86.6	60.9	75.7	74.6	68.6	75.4

Robust p-values in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 2: Regression with economic globalization(Year = 2006)

Variables	Government effectiveness	Political stability	Regulatory quality	Rule of law	Voice and accountability	Control of corruption
Globalization (KOF)	-0.0652*	-0.1178**	-0.0722**	-0.0508***	-0.1060*	-0.154***
	(0.057)	(0.022)	(0.045)	(0.001)	(0.053)	(0.000)
$KOF \times KOF$	0.0005*	0.0011***	0.0006**	0.0012***	0.0009**	0.001***
	(0.050)	(0.009)	(0.036)	(0.002)	(0.048)	(0.0.001)
Natural resources	-0.0067***	-0.0080***	-0.0056***	-0.0062***	-0.006***	-0.005**
	(0.000)	(0.002)	(0.002)	(0.003)	(0.011)	(0.022)
lgdp	0.6922***	0.5752***	0.6264***	0.7468***	0.3397***	0.716***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Africa	-0.0391	0.1448	0.0009	-0.1291	-0.3397	-0.433
	(0.900)	(0.449)	(0.998)	(0.792)	(0.451)	(0.434)
Americas	-0.3027	-0.3847**	-0.2004	-0.4522	0.1490	-0.533
	(0.339)	(0.014)	(0.593)	(0.218)	(0.724)	(0.333)
Asia	-0.2917	-9377***	-0.494**	-0.4596	-0.7901*	-0.889*
	(0.331)	(0.000)	(0.014)	(0.196)	(0.062)	(0.096)
Europe	-0.3176	-1.1181***	-0.1960	-0.4928	0.0065	-0.680
	(0.331)	(0.000)	(0.611)	(0.227)	(0.990)	(0.233)
British legal origin	-0.6252***	-0.6932***	-0.1072	-0.5017***	-0.1342	-0.969***
	(0.000)	(0.004)	(0.402)	(0.009)	(0.533)	(0.000)
French legal origin	-0.8660***	-0.5817**	-3090 ***	-0.7494***	-0.5022***	-1.205***
	(0.000)	(0.011)	(0.004)	(0.000)	(0.006)	(0.000)
German legal origin	-0.3434***	-0.0887	-0.0123	-0.1671	-0.0352	-0.634***
	(0.000)	(0.707)	(0.915)	(0.347)	(0.870)	(0.004)
Socialist legal origin	-0.7355***	0.1745	-0.0811	-0.6386**	-0.3774	-1.211***
	(0.000)	(0.556)	(0.634)	(0.010)	(0.238)	(0.000)
Constant	-2.953***	-1.1891	-2.9185***	-0.8801	0.5826	0.183**
	(0.002)	(0.443)	(0.009)	(0.517)	(0.748)	(0.902)
Measure of natural resources	*natexp*	*fuels*	*natexp*	*natexp*	*natexp*	*natexp*
Observations	102	102	102	102	102	102
R-squared	87.3	59.8	77.6	76.1	67.4	76.8

Robust p-values in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 3: Main Regression (Year = 2006)

Variables	Control of corruption	Political stability	Rule of law	Voice and Accountability
Trade	0.005	0.017**	0.009**	0.019***
	(0.287)	(0.014)	(0.025)	(0.006)
$Trade \times Trade$	-0.000	-0.0001**	-0.0002**	-0.0001***
	(0.201)	(0.038)	(0.39)	(0.001)
Natural resources	-0.003	-0.010***	-0.004**	-0.011***
	(0.128)	(0.001)	(0.022)	(0.000)
lgdpcap	-2.674***	-1.502	-1.953***	-3.544***
	(0.006)	(0.255)	(0.005)	(0.002)
$lgdpcap \times lgdpcap$	0.183***	0.113	0.138***	0.233***
	(0.001)	(0.113)	(0.001)	(0.000)
IQ	0.026**	0.025*	0.024**	0.036**
	(0.026)	(0.097)	(0.014)	(0.014)
East Asia & Pacific	0.463***	-0.469*	-0.457***	-0.389
	(0.002)	(0.091)	(0.001)	(0.264)
Europe and Central Asia	-0.234	-0.155	-0.489**	0.259
	(0.389)	(0.548)	(0.034)	(0.532)
Latin America & the Caribbeans	-0.2354	0.087	-0.525***	0.648***
	(0.175)	(0.643)	(0.000)	(0.000)
South Asia	-0.371	-0.528	-0.071	0.531
	(0.271)	(0.213)	(0.808)	(0.184)
Sub-Saharan Africa	0.300	0.884**	0.164	0.850**
	(0.257)	(0.015)	(0.392)	(0.015)
British legal origin	-0.477**	-0.178	-0.195	0.250
	(0.036)	(0.349)	(0.1201)	(0.116)
French legal origin	-0.737***	-0.221	-0.380**	0.053
	(0.001)	(0.286)	(0.017)	(0.763)
German legal origin	-0.841**	-0.460***	-0.352**	-0.349**
	(0.038)	(0.004)	(0.034)	(0.026)
Socialist legal origin	-1.114***	0.028	-0.637***	-0.119
	(0.000)	(0.907)	(0.000)	(0.702)
Constant	7.504*	1.278	4.377	8.680*
	(0.072)	(0.135)	(0.135)	(0.087)
Observations	94	94	94	94
R-squared	83.2	86.5	85.7	90.9
Measure of Natural resources	*Natexp*	*Fuels*	*Fuels*	*Natexp*

Robust p-values in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 4: Main Regression (Year = 2006)

Variables	Control of corruption	Rule of law
KOF Index	-0.112***	-0.112***
	(0.008)	(0.007)
$KOF \times KOF$	0.001***	0.001***
	(0.006)	(0.006)
Natural resources	-0.004*	-0.002
	(0.089)	(0.356)
lgdpcap	0.580***	0.585***
	(0.000)	(0.000)
IQ	0.020*	0.020*
	(0.089)	(0.070)
Africa	-0.104	0.116
	(0.844)	(0.739)
Americas	-0.508	-0.467
	(0.155)	(0.298)
Asia	-0.778*	-0.378
	(0.097)	(0.213)
Europe	-0.582	-0.387
	(0.244)	(0.282)
British legal origin	-0.820***	-0.365**
	(0.000)	(0.043)
French legal origin	-1.081***	-0.632***
	(0.000)	(0.000)
German legal origin	-0.692**	-0.913
	(0.010)	(0.264)
Socialist legal origin	-1.395***	-0.820***
	(0.000)	(0.000)
Constant	-2.006	-2.633**
	(0.187)	(0.035)
Observations	93	93
R-squared	82.2	83.3

Robust p-values in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 5: Critical Values of trade, Log(GDP per capita) and Globalization

	Critical Value of		
Dependent Variable	Trade	Log(GDP per capita)	Globalization
Government Efficiency($GOVEFF$)	98.33	6.13	65.20
Political Stability ($POLSTAB$)	96.50	7.36	53.55
Regulatory Quality ($REGQUAL$)	–	6.55	60.17
Rule of Law ($RLAW$)	61.50	7.33	21.17
Voice and Accountability ($V\&ACC$)	–	–	58.89
Control of Corruption ($CONTCORR$)	–	6.57	77.00

Table 6: The threshold effect of trade, GDP per capita and Globalization on Institutional Quality

Percentile	Value	Corresponding country	GOVEFF	POLSTAB	REGQUAL	RULAW	*V&ACC*	CONTCORR
			Panel A: The increasing but diminishing effect of Trade					
5	39.51	Pakistan	0.0035	0.0114		0.0044		
10	44.29	India	0.0032	0.0104		0.0034		
25	59.83	Venezuela	0.0023	0.0073		0.0003		
50	80.48	Chad	0.0011	0.0032		-0.0038		
75	118.74	Mauritania	-0.0012	-0.0044		-0.0115		
90	149.24	Zimbabwe	-0.0031	-0.0105		-0.0176		
Mean	95.42	Kazakhstan	0.0002	0.0002		-0.0068		
			Panel B: The negative but increasing effect of Log(GDP per capita)					
5	6.4	Guinea-Bissau	0.0766	-0.4228	-0.0472	-0.4416		-0.0546
10	7.2	Benin	0.3038	-0.0724	0.1864	-0.0608		0.1822
25	7.86	Cameroon	0.4912	0.2167	0.3791	0.2534		0.3776
50	8.96	Gabon	0.8036	0.6985	0.7003	0.7770		0.7032
75	9.99	South Korea	1.0962	1.1496	1.0011	1.2672		1.008
90	10.39	Netherlands	1.2098	1.3248	1.1179	1.4576		1.1264
Mean	8.87	Turkey	0.7781	0.6591	0.674	0.7341		0.6765
			Panel C: The negative but increasing effect of Globalization					
5	35.31	Bangladesh		-0.0403	-0.0298	0.0339	-0.0424	-0.0834
10	42.38	Tanzania		-0.0248	-0.0213	0.0509	-0.0297	-0.0692
25	50.24	Syria & Morocco		-0.0075	-0.0119	0.0698	-0.0156	-0.0535
50	63.11	Macedonia		0.0208	0.0035	0.1007	0.0076	-0.0278
75	74.99	Jamaica		0.047	0.0178	0.1292	0.0290	-0.004
90	85.77	Ireland		0.0707	0.0307	0.155	0.0484	0.0175
Mean	63.29	Colombia		0.0212	0.0037	0.1011	0.0079	-0.0274