Quality of Institutions : Does Intelligence Matter?

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Abstract

We analyze the effect of the average level of intelligence on different measures of the quality of institutions, using a 2006 cross-sectional sample of 113 countries. The results show that average IQ positively affects all the measures of institutional quality considered in our study, namely government efficiency, regulatory quality, rule of law, political stability and voice and accountability. The positive effect of intelligence is robust to controlling for other determinants of institutional quality.

Key Words: governance, institutions, intelligence.
JEL Codes: D73, I2

1 Introduction

Numerous studies have documented the effect of national IQs not only on economic growth, but also on an important range of phenomena (Lynn and Vanhanen, 2012). Beside its direct effect on economic growth (Whetzel and McDaniel, 2006; Jones and Schneider, 2006, 2010; Weede and Kämpf, 2002), intelligence has significant effect on other factors that directly affect economic growth, such as corruption (Potrafke, 2012) and governance (Kodila-Tedika, 2012), and therefore indirectly affect economic growth.

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This paper analyzes the effect of national IQs on government institutions. We argue that institutional quality serves as a channel through which intelligence affect economic growth. Specifically, high population IQ improves institutional quality and positively affects economic growth through high-quality government institutions. We consider the relationship between five measures of institutional quality and national IQ. These measures are the following: government effectiveness/efficiency, political stability, and regulatory quality, rule of law and voice and accountability. We find that, after controlling for other determinants of institutional quality, national IQ positively affect each of the five measures of institutional quality.

The paper is organized in six sections, including this introduction. The second section focuses on a graphical analysis and on the results from simple regressions of the relationship between each of the five measures of institutional quality and national IQ. 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 A graphical Analysis

Figures 1 and 2 portray the relationship between each of the five measures of institutional quality (y-axis) and IQ (x-axis) for the countries included in our sample. In Figure 1, government effectiveness/efficiency is plotted against IQ. It clearly appears from this figure that countries with higher IQ enjoy higher government effectiveness. We also represent the fitted line for the simple regression model $Ge_i = \alpha + \beta IQ_i + \epsilon_i$ where Ge is government effectiveness/efficiency. The estimated coefficient for β is positive (+0.060) and strongly significant (p-value = 0.000), showing that high IQ improve government efficiency.

The same conclusion obtains when analyzing the relationship between each of the four remaining measures of institutional quality and IQ. All the four graphs in Figure 2 exhibit a positive relationship between the relevant measure of institutional quality and intelligence. The estimated coefficient of β from the simple linear regression model is positive and strongly significant. In panel (a), $\hat{\beta} = 0.042$ (p-value = 0.000) for voice and accountability; in panel (b), $\hat{\beta} = 0.42$ (p-value = 0.000) for political stability; in panel (c) $\hat{\beta} = 0.054$ (p-value = 0.000) for regulatory quality; and in panel (d) $\hat{\beta} = 0.055$ (p-value = 0.000) for the rule of law.

In each of the simple regression models, IQ explains more than one-third of the variations in the the institutional quality variable: 51.8% of the variations in government effectiveness, 30.5% of the variations in voice and accountability, 30.2% of the variations in politival stability; 48.5% of the variations in regulatory quality and 44.1% of the variations in rule of law. In addition, the correlation coefficients between IQ and each of the five measure of institutional quality are respectively 0.752 (p-value = 0.000) for government efficiency, 0.552 (p-value = 0.000) for voice and accountability, 0.550 (p-value = 0.000) for political stability, 0.699 (p-value = 0.000) for regulatory quality, and 0.664 (p-value = 0.000) for rule of law.

However, institutional quality cannot solely be explained by average IQ, and the relationship between the two variables cannot be claimed only based on the above simple regression models. Our aim is to show that the significant relationship between each of the considered measures of institutional quality and average IQ does remains significant and robust when we control for other factors. To do so, we shall next specify and estimate a model that accounts for other determinants of institutional quality.

3 Empirical Model

We estimate the following empirical model:

$$IQI_i = \alpha + \beta IQ_i + Z_i'\delta + \epsilon_i \tag{1}$$

where IQI_i is the institutional quality index for country i, IQ_i is its average IQ, $Z = (z_1, z_1 \dots z_k)'$ 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 captures the effect of average IQ on institutional quality while $\delta = (\delta_1, , \delta_2, \dots, \delta_k)$ is the parameter vector for the control variables. Our parameter of interest is thus β.

As control variables, we include openness to trade, natural resources exports, the log of GDP per capita, legal origin and geographical location. Following the trend in the literature, legal origin is captured by distinguishing between the English, French, German, Scandinavian and socialist legal heritages (see for example Islam and Montenegro (2002), Potrafke (2012), and Kodila-Tedika (2012)). For geographical factors, we use dummy variables for East Asia and the Pacific, Latin America and Caribbean, Middle East and North Africa, Sub-Saharan Africa and South Asia. We capture the effect of natural resources by using the share of primary commodities in total exports of goods. This variable accounts for the effect of the rent-seeking opportunities due to the presence of natural resources. Finally, openness to trade is measured by the GDP share of the value of total exports and imports.

The model in equation (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 measure countries intelligence by average IQ index (Lynn and Vanhanen, 2002, 2006). Dummies

for legal origins come from La Porta et al. (1999). The data on GPD per capita, trade come from Pen World Tables 6.3.

4 Regression Results

The regression results are presented in Table 1. Each of the columns (2)−(6) displays the estimated model for one of the five institutional quality variables. Our coefficient of interest, $\hat{\beta}$, is positive and significant at the 1% level in the regressions where the dependent variable is the rule of law, and at the 5% level in the other regressions. We thus find that the positive effect of average IQ remains significant after accounting for other determinants of institutional quality. Therefore, countries with higher IQ enjoy better government institutions.

We now turn to the performance of the other determinants of institutional quality when IQ is accounted for. First, Table 1 shows that GDP per capita and natural resources have the expected effect on institutional quality. Their coefficients are strongly significant and have the expected signs in all the five regressions, meaning that countries with high GDP per capita enjoy better institutions while the presence of natural resources negatively affects the quality of government institutions. Second, the effect of each regional and legal-origin dummy on different measures of institutional quality is not the same.

Finally, openness to trade has an unexpected sign in Table 1. In addition, the coefficient of this variable is significant only for the rule of law and for voice and accountability. This results seems puzzling. However Kalonda-Kanyama and Kodila-Tedika (2012) show that, when national IQ is accounted for, the relationship between institutional quality and trade may not be linear. For example, they find an increasing but diminishing relationship between the rule of law and trade on the one hand, and between

voice and accountability on the other hand.

5 Robustness Checks

To test for the robustness of our findings, we run the same regressions in Table 1 with data for 2002. The results are reported in Table 2. Our coefficient of interest, $\hat{\beta}$ is positive and significant in all the regressions that we report in Table 2. All the control variables performed in the same way as in the regressions in Table 1. For further robustness checks, we run the regressions in Table 1 with different control variables. First, we used the KOF index of economic globalization (Dreher, 2006; Dreher et al., 2008) instead of trade openness. We use a dummy variable for high income countries instead of GDP per capita. We motivate the use of this dummy variable by the fact that citizen in countries with high income would demand better institutions. Finally, we use dummies for continents instead of the regional classification of countries. Table 3 shows that our variable of interest is significant for all institutional quality variables, except for voice and accountability.

6 Conclusion

This paper was mainly concerned with the effect of national level of IQ on different aspects of institutional quality. The main finding is that intelligence positively affect each of the five measures of the quality of government institutions that we considered. Therefore, countries with higher average IQ enjoy better government institutions. An important implication of the finding is that institutional quality is a crucial channel through which intelligence indirectly positively affects economic growth, in addition to its direct positive effect that is already documented in the literature. More specifically, high population IQ positively affects institutional quality which, in turn, positively

affects economic growth. The results in this paper line up with recent findings of the effect of intelligence on political institutions (Jones, 2011), corruption (Potrafke, 2012) and governance (Kodila-Tedika, 2012).

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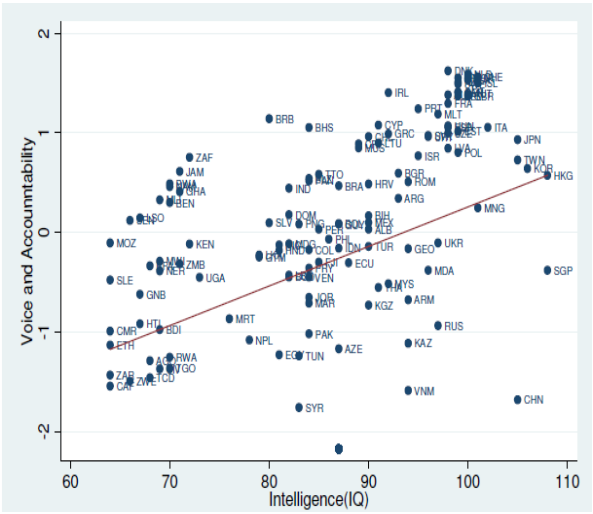
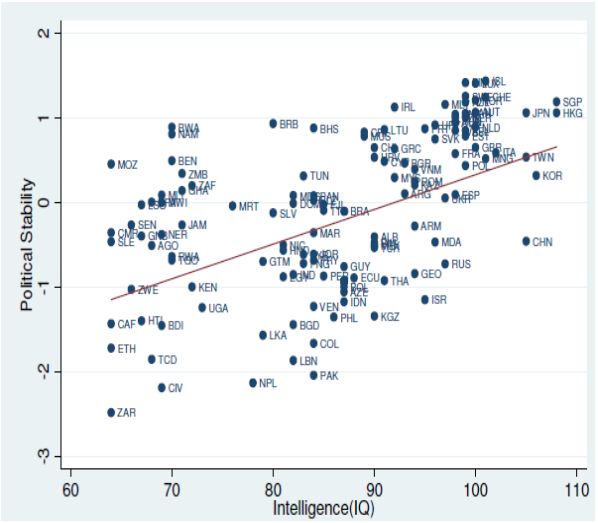
Figure 1: Government efficiency and IQ

Figure 2: Institutional indicators and IQ

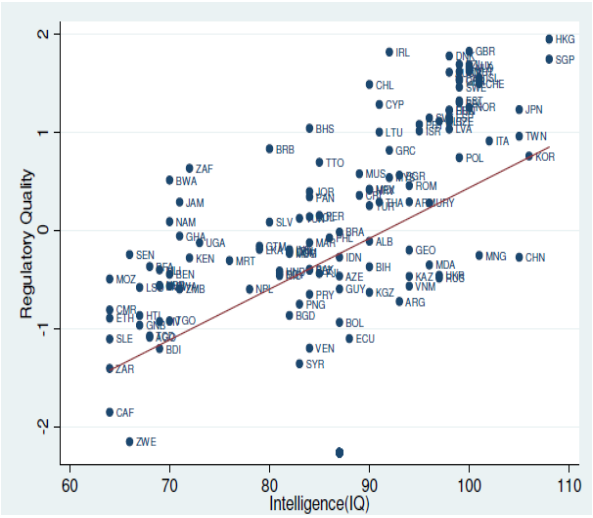
(a)



(b)



(c)



(d)

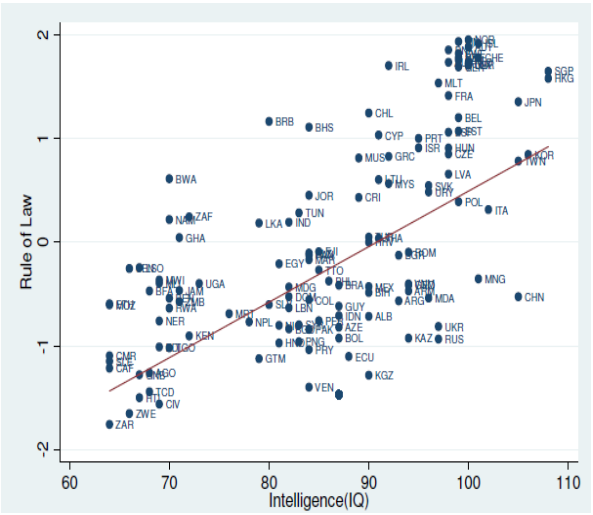


Table 1: Main Regression (Year = 2006)

Variables	Government effectiveness	Political stability	Regulatory quality	Rule of law	Voice and Accoutability
Intelligence (IQ), $\hat{\beta}$	0.017**	0.035**	0.021**	0.032***	0.032**
	(0.032)	(0.032)	(0.026)	(0.001)	(0.034)
Openness	-0.002	-0.008*	-0.001	-0.005**	-0.009***
	(0.324)	(0.094)	(0.497)	(0.020)	(0.001)
Natural resources	-0.005***	-0.005	-0.006***	-0.007***	-0.010***
	(0.000)	(0.111)	(0.007)	(0.001)	(0.001)
Log GDP per capita	0.593***	0.542***	0.559***	0.501***	0.602***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
East Asia and Pacific	-0.190	-0.243	-0.395**	-0.436**	-0.461
	(0.172)	(0.500)	(0.017)	(0.028)	(0.216)
Europe and Central Asia	-0.581***	-0.662**	-0.390**	-0.627***	-0.365
	(0.000)	(0.013)	(0.023)	(0.002)	(0.248)
Latin America & Carrib.	-0.431***	-0.094	-0.292*	-0.702***	0.311
	(0.000)	(0.634)	(0.091)	(0.000)	(0.148)
South Asia	-0.495**	-1.385***	-0.429*	-0.688**	-0.572
	(0.020)	(0.001)	(0.050)	(0.033)	(0.195)
Sub-Saharan Africa	0.194	0.958***	0.320	0.237	0.771**
	(0.258)	(0.002)	(0.199)	(0.279)	(0.026)
English legal origin	-0.344**	0.176	0.015	-0.067	0.215
	(0.020)	(0.537)	(0.921)	(0.589)	(0.359)
French legal origin	-0.641***	-0.197	-0.183	-0.446***	-0.244
	(0.000)	(0.391)	(0.217)	(0.005)	(0.241)
German legal origin	-0.495***	-0.484**	-0.297*	-0.554**	-0.599**
	(0.000)	(0.012)	(0.065)	(0.010)	(0.020)
Socialist legal origin	-0.586***	0.410	-0.091	-0.608***	0.029
	(0.000)	(0.173)	(0.565)	(0.002)	(0.924)
Constant	-5.577***	-7.058***	-6.138***	-5.981***	-6.950***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	113	113	113	113	114
R-squared	88.8	36.1	79.8	77.1	51.0

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

Table 2: Robustness regression 1 (Year = 2002)

Variables	Government effectiveness	Political stability	Regulatory quality	Rule of law	Voice and Accoutability
Intelligence (IQ), $\hat{\beta}$	0.0222***	0.038**	0.029***	0.035***	0.026**
	(0.006)	(0.019)	(0.006)	(0.001)	(0.037)
Openness	-0.003	-0.011*	-0.001	-0.006**	-0.008***
	(0.242)	(0.087)	(0.658)	(0.035)	(0.003)
Natural resources	-0.006***	-0.008**	-0.008***	-0.008***	-0.012***
	(0.001)	(0.022)	(0.004)	(0.000)	(0.000)
Log GDP per capita	0.583***	0.588***	0.482***	0.516***	0.648***
	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)
East Asia and Pacific	-0.194	-0.178	-0.468***	-0.421**	-0.440
	(0.185)	(0.670)	(0.003)	(0.045)	(0.212)
Europe and Central Asia	-0.523***	-0.604*	-0.317*	-0.583***	-0.285
	(0.000)	(0.050)	(0.058)	(0.006)	(0.331)
Latin America & Carrib.	-0.450***	-0.171	-0.315*	-0.747***	0.267
	(0.000)	(0.435)	(0.0681)	(0.000)	(0.176)
South Asia	-0.521***	-1.542***	-0.494**	-0.711**	-0.424
	(0.009)	(0.000)	(0.014)	(0.024)	(0.264)
Sub-Saharan Africa	0.200	0.905**	0.256	0.205	0.710**
	(0.260)	(0.011)	(0.222)	(0.398)	(0.023)
English legal origin	-0.276*	0.301	0.015	-0.035	0.040
	(0.054)	(0.367)	(0.927)	(0.819)	(0.828)
French legal origin	-0.635***	-0.172	-0.257	-0.469**	-0.347*
	(0.000)	(0.547)	(0.101)	(0.011)	(0.086)
German legal origin	-0.600***	-0.727***	-0.431**	-0.705***	-0.711***
	(0.000)	(0.002)	(0.010)	(0.001)	(0.002)
Socialist legal origin	-0.477***	0.577	-0.101	-0.519**	0.043
	(0.005)	(0.172)	(0.557)	(0.033)	(0.888)
Constant	-5.593***	-7.329***	-5.961***	-6.166***	-6.692***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	110	110	110	110	110
R-squared	86.0	17.8	78.7	74.8	56.5

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

Table 3: Robustness Regressions 2 (Year = 2006)

Variables	Government effectiveness	Political stability	regulatory quality	Rule of law	Voice and acc.
Intelligence (IQ), $\hat{\beta}$	0.037***	0.030***	0.030***	0.42***	0.14
	(0.000)	(0.007)	(0.001)	(0.000)	(0.323)
Economic globalization	0.015**	0.020*	0.067**	0.007	0.007
	(0.043)	(0.050)	(0.016)	(0.498)	(0.497)
Natural resources	-0.005***	-0.007**	-0.007***	-0.008***	-0.009***
	(0.002)	(0.010)	(0.000)	(0.000)	(0.000)
High income	0.562***	0.477**	0.534***	0.605***	0.494***
	(0.001)	(0.015)	(0.000)	(0.001)	(0.000)
Africa	-0.074	0.206	-0.121	-0.117	-0.516
	(0.826)	(0.432)	(0.7550	(0.755)	(0.295)
America	-0.378	-0.419	-0.337	-0.610	-0.021
	(0.257)	(0.103)	(0.3780	(0.106)	(0.960)
Asia	-0.482	-1.124***	-0.534	-0.639*	-0.868**
	(0.114)	(0.000)	(0.129)	(0.061)	(0.035)
Europe	-0.243	-0.695**	-0.170	-0.186	0.143
	(0.690)	(0.016)	(0.636)	(0.631)	(0.738)
English legal origin	-0.317**	-0.442**	0.048	-0.237	-0.079
	(0.039)	(0.017)	(0.705)	(0.178)	(0.665)
French legal origin	-0.726***	-0.580***	-0.225**	-0.617***	-0.414***
	(0.000)	(0.000)	(0.037)	(0.000)	(0.003)
German legal origin	-0.219	-0.008	0.062	-0.226	0.056
	(0.186)	(0.968)	(0.706)	(0.320)	(0.776)
Socialist legal origin	-1.002***	-0.209	-0.368***	-1.088***	-0.602***
	(0.000)	(0.283)	(0.003)	(0.000)	(0.000)
Constant	-3.149***	-3.021***	-3.047***	-3.105***	-0.821
	(0.000)	(0.000)	(0.000)	(0.000)	(0.503)
Observations	113	113	113	113	113
R-squared	83.0	64.9	80.0	80.7	72.8

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