Forget your gods: African evidence on the relation between state capacity and cognitive ability of leading politicians

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Comment welcome

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Abstract

This paper uses a unique dataset to investigate the effect of the cognitive ability of leading politicians on state capacity. Given the evidence that cognitive ability of leading politicians' affects state capacity positively, except Africa. For the continent, this relationship between state and cognitive ability of leading politicians is negative. This finding is robust to a wide range of specifications and controls variables. Justifications for the unexpected nexus are provided.

Keywords: State capacity, cognitive ability of leading politicians, Intelligence, Africa

JEL Codes: D02, I3, H11; O20; O43; O55

1 Introduction

This study examines the effect of cognitive ability on the capacity of political leaders in Africa. It is well known that leaders in Africa have one of the highest rates of longevity in their presidential roles. And so, the political cycle in Nordhaus (1975) is not a truly sustainable event. As a result, the effectiveness or non-effectiveness of these politicians should be obvious, because they have received the necessary time and the time of public support, to a certain extent. Indeed, African autocrats are often idolized and worshiped as gods. The cult of personality is present for these "providential men". And yet, Africa still accounts for a large number of countries defaulting (Kodila-Tedika and Bolito-Losembe, 2013; Kodila-Tedika and Asongo, 2013). Moreover, poor economic performance has been substantially recorded in this part of the world, especially in the last century (Sala-i-Martin and Artadi 2003). The correlation between these results and the quality of policies is induced, but also biased by the uncontrolled statistical noise.

This study seeks to precisely control these noises, emphasizing the relationship between state capacity and ability of political leaders. At first, our paper relates to the literature on leaders and the impact of the latter on economic performance. Jones and Olken (2005), using a unique instrument for change in leadership based on deaths of leaders while in office, provide empirical evidence that leaders do cause economic growth. Besley, Montalvo and Reynal-Querol (2011) further provide empirical evidence that the educational attainment of leaders matters for economic growth. Dreher et al. (2009) show that reforms are more likely during the tenure of former entrepreneurs. Entrepreneurs belonging to a left-wing party are more successful in inducing reforms than a member of a right-wing party with the same previous profession. Former professional scientists also promote reforms, the more so, the longer they stay in office. The impact of politicians' education is not robust and depends on the method of estimation.

Also, our study proves in particular useful in the debate on the measurement of human capital. Since Hanushek and Woessmann (2008), several attempts to improve the measurement of human capital have been made, especially to take into account quality. A wave is one that captures the human capital by IQ (Lynn and Vanhanen, 2012; Kodila-Tedika, 2012; Kodila-Tedika, 2013; Kalonda-Kanyama and Kodila-Tedika, 2012) and another is the one that captures human capital by cognitive ability (Rindermann, Sailer and Thompson, 2009; Jones and Kodila-Tedika, 2013). Our paper is a contribution in literature. Another dimension of this

literature is to consider the effects of human capital in a specific category in society or politicians, business leaders, or even the administration of a country. The papers of Jones and Olken (2005), Besley, Montalvo and Reynal-Querol (2011), Dreher et al. (2009), Reynal-Querol and Besley (2011), Chong et al. (2012), and Arezki et al. (2012) constitute a major illustration. We are interested in leading politicians.

Thirdly, this research interferes also in the discussion on the role of human capital, particularly in African leading politicians. We have witnessed the debate on the African dummy in the determinants of growth (Jerven, 2011), and Easterly (2006) has carried beyond the academic discussion on the effect of education on growth with emphasis on African countries. One cannot deny the effectiveness of this debate (e.g. Gyimah-Brempong, 2011; Gyimah-Brempong, Paddison and Mitiku, 2006; Al-Samarrai and Bennell, 2007; Gyimah-Brempong, 2005; Appiah and McMahon, 2002; Pritchett, 2001).

At last, Besley (2002) argues that "government might fail because of ignorance, influence (corruption and rent seeking), and the quality of leaders". Along the same line, Chong, La Porta, Lopez-de-Silanes, and Shleifer (2012) argue that "there are two reasons for poor governance in developing countries: political economy and productivity." And this present paper is an extension of political economics and the determinants of state fragility (Kodila-Tedika and Asongu, 2013; Bertocchi and Guerzoni, 2012; Vallings Moreno-Torres, 2005).

The main results of this study are as follows: there is a positive linear relationship between the state capacity and cognitive ability leading politicians at transversal, but in Africa, this conclusion is reversed. This result seems robust to a plethora of estimation techniques. Africa could be different from the rest of developing countries on the determinants of state capacity.

The rest of the paper is organized as follows: Section 2 presents the data and results of some exploratory analysis. The empirical analysis and presentation of results are covered in Section 3. In Section 4, the results are further discussed before the conclusion.

2 Data

2.1 State capacity

The definition and measurement of state capacity are not obvious (Baliamoune-Lutz and McGillivray, 2008; Guillaumont and Guillaumont Jeanneney, 2009; Bertocchi and Guerzoni, 2011 ; Bertocchi and Guerzoni, 2012, Kodila-Tedika and Bolito-Losembe, 2013). Hence, consistent with Rice and Patrick (2008), while most recently documented quantitative

indicators have enabled state capacity studies to be carried out, the novel data still suffers from some shortcomings: substantial focus on the present, non transparent indicators renders reproduction difficult, high concentration on certain aspects of state capacity and complete neglect for others and, the use of dummy variables make the transition somehow brutal.

Within the framework of this study, we are consistent with Rice and Patrick (2008) in incorporating the above shortcomings. The measurement for state capacity is a composite indicator based on four components: social wellbeing component, economic component, industrial component and security component. The different components are based on 20 sub-components which equilibrate each dimension. In every basket, the indicators are normalized and aggregated. Hence, the derived indicator of state capacity ranges from 0 (worst situation or complete state bankruptcy) to 10.

Table 1. Data of State Capacity

Country	State Capacity	Country	State Capacity
Brazil	7.22	Philippines	6.08
Albania	7.59	Syria	6.14
Macedonia	7.66	Oman	8.46
Botswana	7.27	Russian Federation	6.2
Bosnia and Herzegovina	7.63	Poland	9.01
Serbia	7.43	Latvia	9.08
Kazakhstan	6.92	**United Republic of Tanzania**	5.94
Mexico	7.83	Slovakia	9.41
Argentina	7.67	Lithuania	9.27
Romania	7.91	Chile	9.35
Ukraine	7.38	Hungary	9.41
Belize	7.71	Colombia	5.63
El Salvador	7.1	**Tunisia**	7.61
Lebanon	7.02	Uruguay	8.76
Armenia	7.34	Iran	6.25
Turkey	7.18	Yemen	5.18
Peru	7.01	Azerbaijan	6.54
Morocco	7.11	**Ghana**	6.72
Republic of Moldova	6.89	Kyrgyzstan	6.39
South Africa	7.5	Bulgaria	8.38
Georgia	6.99	Indonesia	6.49
Malaysia	8.2	Thailand	6.5
Jordan	7.74	Croatia	8.67
Algeria	6.07	**Egypt**	6.5

2.2 Cognitive ability of leading politicians and other variables

For the cognitive ability of leading politicians, we use the index of Rindermann, Sailer and Thompson (2009). For a better description of our variable of interest, we prefer to provide accurate description of the index owners:

« To estimate the cognitive ability of statesman (stateswomen) based on their formal education we selected the leading politicians of all the countries in the student assessment studies between 1960 and 2009. Leading politicians include presidents (33%), heads of government (64%) and the rest kings, emirs and sultans (3%). It was difficult for many countries to assess who has the real decisive power or who used or uses it (e.g. for Czech Republic, Iran, Poland, Russia and especially Switzerland). For these countries the two leading positions were used. A second problem was the modifications of countries (e.g. Yugoslavia, Soviet Union, Germany).

In these cases the largest successor country represents the older one and vice versa, smaller successor countries start existing with their formal legalization. We also include (like SAS) some smaller territories which are not formal states (like Palestine or Taiwan). We always use the most usual names. A third problem often lies in not exactly knowing the leader's level of education. A fourth problem is the assessment of several educational vitae like those of clerical leaders in Iran (is it a university degree? – we estimated it as a university degree in this case). We have not assessed the content or the quality of a university degree (e.g. in Science, Technology, Engineering and Mathematics/STEM or law, highly or lowly ranked institutions). The most serious problem lies in the low comparability of education and educational degrees across countries. There is considerable heterogeneity in educational standards across the world. According to the student assessment results, a secondary degree in OECD-countries is hardly comparable to a secondary degree in developing countries, because the former have much higher scores. Furthermore, corruption and forging at universities and especially in conferring and claiming to have degrees is not impossible. We tried to exclude all honorary doctorates.

By using databanks (Munzinger-Biography: www.munzinger.de, MSN-Carta, Who is Who and only rarely Wikipedia) we could find information for N=896 leading politicians. Home pages of politicians were not used; from experiences in a study on Austrian and German politicians we found that they try to overestimate their educational record (e.g. university dropout given as a degree).

We assessed education for school education (as highest level: no school; primary school; secondary school; high-school diploma; university degree; doctorate; doctorate plus further scientific degrees, "Habilitation, VeniaLegendi", or scientific achievement like publications), and education for professional training (as highest level: no vocational or professional training; vocational training; qualified training like technician; university degree; doctorate plus further scientific degrees, "Habilitation, VeniaLegendi", or scientific achievement like publications). For the last category ("doctorate plus further scientific degrees or achievement") Fernando Henrique Cardoso from Brazil is an example (published several scientific books, professor of political science, member of or taught at Institute of Advanced Study, Princeton, College de France, Stanford, Brown, etc.). Both overlapping indicators correlate with r=.90 (Cronbach-a=.95).

Finally we tried following Gottfredson (2004, 2005) to estimate IQ-levels: For no school IQ 80, for primary school IQ 90, for secondary school IQ 100, for high-school diploma IQ 113, for university degree 119, for doctorate 129 and for doctorate plus further scientific degree or achievement 138. For levels in between and different vocational or qualified trainings we gave values between 80 and 119. The mean of the two educational indicators and our IQ-estimate correlate with r=.96, IQ with school education r=.99, with professional training r=.88 (N=896). The mean IQ of politicians across countries is 118 (SD=7, N=90). The mean IQ is increasing from 1960 to 2000: in the 60s IQ 114, in the 90s IQ 118, in 00s IQ 119 and the variances are decreasing (from 12 to 7 and 7). Because we mainly include

only countries participating also in student assessment studies the worldwide average could be lower. The sample for analyses was N=90 countries (for the map, Figure 2, N=95). » (Rindermann, Sailer and Thompson, 2009:7-8).

Figure 1. World map of leading politicians' cognitive ability level (N=95 nations, darker means higher competence)

Other control variables used in the analysis include measures of GDP per capita, tax revenue, and a dummy variable for African countries. The choice of these variables is discussed in detail below. Variable definitions and data sources are explained in Table 2.

Table 2: Variables

Variable	Description	Sources
GDP per capita	Log GDP per capita	Pen World Tables.
Tax revenue	Tax revenue (% of GDP).	World Bank (WDI databank)
Africa	Dummy variable for Africa countries	Author's own

2.3 Descriptive statistics

The total sample consists of 48 developing countries (see Table 1). Summary statistics of the data are shown in Table 3. Table 3 presents the summary statistics of the variables used in this study. It follows from the analysis of individual country statistics for the two key variables of interest, namely: CA politicians and State capacity. For Africa, that United Republic of Tanzania received the lowest score for the state capacity variable, while South Africa received

the highest score. Regarding the CA politician variable, Morocco received the highest score, Egypt received the lowest score. The scatter plot shown in Figure 1 depicts the relationship between state capacity and the control variables. The data shows evidence that state capacity is positively related with cognitive ability of leading politicians (CA politicians), GDP per capita (log) and tax revenue. The relationship between export variety and predictors is precise.

Table 3. Summary statistics

	Mean	Std. Dev.	Min	Max
Africa with Rest of the developing world				
State Capacity	6.297	1.665	.52	9.41
CA politicians	118.092	8.712	75.72	129
Tax revenue	16.966	7.634	.175	46.186
GDP per capita	8.871	1.188	5.903	11.173
Rest of the developing world				
State Capacity	6.931	1.307	3.11	9.41
CA politicians	118.760	8.227	75.72	129
Tax revenue	17.478	7.082	1.030	45.439
GDP per capita	9.346	.9191	7.295	11.173
Africa				
State Capacity	5.303	1.581	.52	8.79
CA politicians	112.204	11.4232	90	123.86
Tax revenue	15.723	9.431	.175	46.185
GDP per capita	7.642	.890	5.903	9.817

Figure 2 presents the scatter plot between state capacity (y-axis) and controls variables (and variable of interest) (x-axis) for the countries included in our sample. The evidence clearly suggests a positive relationship between these different variables. The correlation coefficient between state capacity and tax revenue is 0.4366. This relation is statistically strong at the 1% significance level. The linear relationship is 0.37 (p-value = 0.0095) for state capacity and CA politicians. Finally, the Bravais Pearson coefficient between state capacity and GDP per capita is 0.8187, also statistically strong at the 1% significance level.

Figure 2. Relationship between State capacity and control variables

(a)

(b)

(c)

3 Results

Table 4 presents the main results of the research. The first specification establishes a strong positive relationship between state capacity and CA Politicians, which implies that this variable is a predictor of legitimate state capacity. This is consistent with results that more or less recently highlighted the positive effect of political leaders on a number of variables, as we have indicated in the introduction. The coefficient of the African dummy is statistically significant. The relationship appears to be linear and the two variables react the same way. This does not seem to be the case for the variable of interest in this study, namely the interaction between CA Politicians and the African dummy. The relationship is highly reliable statistical point of view, but the sign is negative. In the second specification, we take the same estimation, but this time with another estimation technique (iteratively weighted least squares - IWLS). Its use is justified to correct the bias of extreme variable weakening the OLS technique. It turns out, with the exception of an insignificant intercept; the results of the first specification remain unchanged.

It is widely recognized that fragile states are key symptoms of under-development in many regions of the world (Besley and Persson, 2011). In other words, the level of development is a predictor of the ability of a State. But alongside this 'natural' predictor, there are others such as income tax. Its importance in the construction of the State or in strengthening state capacity brings together a large number of researchers (Besley and Perrson, 2006, 2009, Besley, Ilzetzki, Persson, 2013). Its importance is affirmed. Thus, we consider in the remains of the estimates. These two variables appear to be strongly significant in Model 3. This estimate also provides the same conclusions as the first. Model 4 uses the correct variable with extreme IWLS. This correction does not change any conclusions as above. Since the sample may appear slightly low and therefore may affect the result, we consider this problem in specification 5, using a Jackknife replication[1]. The conclusion persists. The conclusion at this level seems robust. We continue to test for the robustness of the results in Table 5.

Table 4. Main results

	(1)	(2)	(3)	(4)	(5)
CA politicians	.116	.116	.126	.1408	.126
	(0.000)	(0.002)	(0.002)	(0.003)	(0.004)
Tax revenue			.115	.117	.115
			(0.000)	(0.003)	(0.002)
GDP per capita (log)			.933	.989	.933
			(0.000)	(0.001)	(0.002)
CA politicians *	-.119	-.119	-.124	-.139	-.124
Africa dummy	(0.001)	(0.015)	(0.002)	(0.014)	(0.006)
Africa dummy	13.656	13.728	14.405	16.223	14.405
	(0.001)	(0.017)	(0.003)	(0.013)	(0.007)
Constant	-6.407	-6.540	-17.876	-20.155	-17.876
	(0.059)	(0.130)	(0.001)	(0.000)	(0.002)
Obs	48	48	33	33	33
R-squared	0.27		0.61		0.61
Method	OLS with White heteroskedasticity correction	IWLS	OLS with White heteroskedasticity correction	IWLS	OLS with Jackknife

Table 5 is a continuation of research robustness, where we estimate equation (1) with ordered probit, therefore taking into explicit account the ordinal nature of the data on state capacity. The pseudo-R^2 is lower in columns 1 and 2. In column 1, the conclusion found in Table 4

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[1] This is a method used to estimate the sampling variability of a statistics that takes the properties of the sample design into account. It provides unbiased estimates of the sampling error arising from complex sample selection procedures; reflects the components of the sampling error introduced by the use of weighting factors that are dependent on the sample data obtained and; can be readily adapted to the estimation of sampling errors for parameters estimated using statistical modeling procedures. In fact, the general idea behind the Jackknife is to split a single sample into multiple subsamples and use the fluctuation among the subsamples to obtain an estimate of the overall sampling variability.

remains the same. The variable of interest has the same sign, but decreases in significance level, since it now has a confidence level of 95%. Column 2 of Table 5 is identical to column 5 of Table 4 in the sense that we use the ordered probit model combined with the Jackknife replication to accommodate the relatively small size of the sample. In spite of all these specifications, the variable of interest is statistically significant. The increases in cognitive ability of leading Politicians do not increase state capacity in Africa. This may seem like a surprise.

Table 5. Robustness checks

	(1)	(2)
CA politicians	.204	.204
	(0.003)	(0.000)
Tax revenue	.196	.196
	(0.001)	(0.001)
GDP per capita (log)	1.355	1.355
	(0.003)	(0.001)
CA politicians * Africa dummy	-.206	-.2064
	(0.011)	(0.000)
Africa dummy	24.074	24.075
	(0.011)	(0.000)
Obs	33	33
Pseudo R²	0.1371	0.1371
Method	Ordered Probit	Ordered Probit With Jackknife

4 Discussion and conclusion

This study has established a negative linear relationship between state capacity and the cognitive ability of leading politicians in Africa. Already, it seems that this result could be strengthened if the sample is increased to include more African countries. Indeed, African countries classified in this study are among the highest ranked in terms of state capacity. It seems difficult to argue that this could change in terms of relationship if we add other countries. But if so, then how can we explain this counter-intuitive result?

In light of Jones and Olken (2005), Besley, Montalvo and Reynal-Querol (2011), Dreher et al., (2009), Rindermann, Sailer and Thompson (2009), we can interpret these results as evidence that it is possible that the relationship is non-linear. But this assumption is difficult to justify, although you can of course admit that policy requires some degree of cognitive ability. It is even more difficult than Besley and Reynal-Querol (2011) have provided robust evidence that democracies tend to benefit more educated political leaders and, therefore,

having the cognitive ability is not negligible. This is not the case for autocratic regimes. This empirical finding can be understood in the context of a particular model by Caselli and Morelli (2004) which suggests that the quality of elected persons depends on the company. And democratic societies are generally companies with a significant human capital (Barro, 1999; Siourounis and Papaioannou, 2005; Glaeser et al., 2004, Glaeser et al. 2007). This could be the first explanation for this negative relationship between state capacity and the cognitive ability of political leaders. Access to power in Africa and the African political environment is not always healthy. In this context, we can understand the relatively different empirical result of this study.

The second explanation comes from political economy. Accordingly, as substantially documented in recent literature, state actions and political regimes are largely determined by political economy (North et al., 2010; Baland et al., 2010 ; Acemoglu, 2006, 2008 ; Acemoglu and Robinson, 2008a, 2008b, 2000, 2005 ; Acemoglu et al., 2008, 2012 ; Acemoglu et al., 2012, 2011; Asongu, 2011, 2012a,b, 2013a). The political game depends on those who hold *de facto* power and on those who determine *de jure* power. The dominant expression emanates from those who have the power to change circumstances. State capacity is a function of lobbying by those holding *de facto* power, principally because they hold the voice of those who possess *de jure* power. And it is because of the desire to maintain their rents (maximize their utility function) that the powers in place sustain the fragility situations. The premise for this hypothesis is that, it is easier to enliven renting activity in fragile situations. Recently, studies have demonstrated this argument for Africa (Kodila-Tedika and Asongu, 2013). This could explain the non-existence of a positive relationship between the two variables considered in this study. We must recognize that this argument does not explain the negative relationship necessarily; it focuses more on how the political equilibrium can destroy the effects of individual abilities of the leaders in an environment where the political equilibrium is rent.

Another argument in the same direction as the previous one might be not taking into account other essential: the state capacity indicator is more complex than other variables. In fact, abundant recent literature has established that state capacity (especially in terms of government) improves when human resources of the society are involved (e.g. Botero, Ponce and Shleifer, 2012; Kodila-Tedika, 2012 ; Kodila-Tedika, 2013 ; Kalonda-Kanyama and Kodila-Tedika, 2012; Asongu, 2013b). Put in other terms, a society with high human capital would push those in power to be more accountable in the construction of state capacity. Those

in power not subject to these feedback pressures on the part of the populations are doom to fail. Here again, this explanation appears insufficient.

Are we then empirically confirming the Kodila-Tedika (2012, 2013) hypothesis which postulates that those in power within an institutionally deficient environment can use power for personal gains to the detriment of state progress?

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