What Drives Government Competiveness: An Econometric Analysis

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Alex Polta and Jonathan Stein, Editors

This is a comprehensive study of the determinants of government competitiveness and effectiveness. To clarify which factors most influence a government's competitiveness, the annual rankings of government competitiveness reported by the World Economic Forum (WEF) and the International Institute for Management Development (IMD) are used as dependent variables. First, using a complete set of cross-country data, this paper presents an application of principal component analysis (PCA) to determine the key explanatory variables that affect the rankings. Next, specification and testing of a ranking determination model through ordered logistic regression (OLR) is carried out. This empirical analysis clearly shows that sociopolitical and government factors are much more important than economic factors in determining government competitiveness.

INTRODUCTION

Government competitiveness is an important topic for students who major in public administration, public policy, and other branches of the social sciences. As with any organization or institution, proper management and governance is critical to a nation's prosperity. History provides many examples of nations that have seen rapid economic growth as a result of strong government leadership. South Korea has experienced phenomenal economic growth due to the government policy aimed at improving industrial growth and export promotion. These policies helped increase the country's per capita gross domestic product (GDP) from $291 in 1970 to $6,193 by 1990, an increase of more than 2,000 percent. On the other hand, in 1970, Argentina's GDP per capita was $1,295—five times more than that of South Korea—but by 1990 it had only grown to $4,339.[1]

There is a strong correlation between the role of government and a nation's economic growth, but exogenous factors also affect an economy's course and outcome. Though these variables are important, the government's direct impact on a country's economic development is significant. In order to gain a greater understanding of the role of government, a great deal of research has been conducted by scholars, resulting in numerous theories on efficient governance. However, few studies have empirically analyzed the determinants of government ratings, especially global rankings. What can be measured can be managed, and this paper tracks efforts to quantitatively determine which policies promote open markets, free trade, accountability and efficiency, and good governance.

LITERATURE REVIEW

Since David Osborne and Ted Gaebler wrote *Reinventing Government*, much research has been undertaken to explicate the factors that determine government performance.[2] In 2000, T. W. Rice analyzed whether there was a link between social capital and government performance among Iowa communities.[3] Rice defined social capital as interpersonal trust, political equality, civic engagement, and networks. He hypothesized that social capital served as "public infrastructure" that allowed government to quickly and effectively respond to the demands of a people. Using a unique data set consisting of the opinions of 100 people from each of 114 Iowa communities, he found that local governments are viewed as more responsive and effective in towns described as high in social capital by their citizens. In addition to this finding, his analysis revealed that social capital is correlated with the upkeep of public streets and parks in the communities.

Similar to Rice's work, S. Knack studied the impact of various forms of social capital on government performance in the United States by comparing states' social capital to their Pew Center government performance rating. According to his research, demonstrations of social capital such as social trust, volunteering, and census responses are associated with better

governmental performance as measured by ratings constructed by the Government Performance Project.[4]

Recently, D. A. Carroll and J. Marlowe examined the determinants of state government performance. They used an --ordered probit model to examine state performance grades awarded by the Government Performance Project. Their analysis indicated that structural characteristics and institutional factors significantly affect state government grades.[5] Racial diversity, fiscal flexibility, business training, electoral competition, and administrative professionalism all affect government competitiveness.

DATA

Data for testing the determinants of government competitiveness came from five primary sources: 1) the World Bank Database; 2) United Nation Statistics Division and United Nations Annual Reports; 3) World Economic Forum Yearbook; 4) The Organisation for Economic Co-operation

Table 1: Initial Set of Independent Variables

Independent Variable	Scale	Survey Year(s)	Source(s)
Macroeconomics & financials			
Government expenditure	% of GDP	1999-2003	World Bank, IMF, OECD
Government revenue	% of GDP	1999-2003	World Bank, IMF, OECD
Government debts	% of GDP	2003	World Bank
ln GDP per capita	US $	2003	UN
ln GNI per capita	US $	2003	World Bank
Health expenditures	% of GDP	2002	World Bank
Inflation rate	percentage	2000-2003 (average)	UN
Sovereign credit ratings	points	2001, 2003	Fitch, Moody's, S&P
Labor market health			
Relative wage	points	1990-2000	World Bank, IMF
Unemployment rate	percentage	2000-2002 (average)	World Bank
Working adults	% of adult pop	2003	World Bank
Female labor force participation rate	percentage	2003	World Bank
Employment rigidity	points	2003	World Bank
Equity & civic engagement			
Gini coefficient	points	2003	World Bank
Women in Parliament	percentage	2003	UN
Press freedom index	points	2003	Reports Without Borders
Political rights index	points	2003	Freedom House
Citizen liberties index	points	2003	Freedom House
Political stability index	points	2002	World Bank
Regulatory quality index	points	2002	World Bank
Rule of law index	points	2002	World Bank
Government effectiveness			
Public servants	% of population	2000	World Bank
Electronic government readiness index	points	2003	UN
Business start-up procedures	cases	2003	World Bank
Procedures to register properties	cases	2003	World Bank
Time required to start businesses	days	2003	World Bank
Time required to register properties	days	2003	World Bank
Time required to close business	days	2003	World Bank
Corruption perception index	points	2003	Transparency International
Demography			
ln population	persons	2003	World Bank

and Development (OECD) Database; and 5) related data from non-governmental organizations.

Dependent Variables

The definition of government competitiveness varies among researchers, and there are few variables that explicitly account for the competitiveness of government. This study relies on the 2004 and 2005 rankings of government competitiveness given by the World Economic Forum (WEF) and the International Institute for Management Development (IMD). These reports use an explicitly normative definition of government competitiveness that rewards countries that respect private ownership, increase transparency, and act equitably and efficiently. The number of countries that have been rated were 102 and 104 for WEF data.[6]

The second IMD dataset ranked 60 samples.[7] Of these, 80 countries from the WEF sample and 50 countries from the IMD sample will be used for the analysis—lower-ranked countries lack necessary data to be included as independent variation.

Explanatory Variables

There are initially 30 independent variables in my multivariate analysis, but this is condensed to seven using a factoring method. Most data come from the World Bank Database and United Nation Statistics Division. Data insufficiencies were supplemented with data from the OECD databank and other publications from non-governmental organizations and related databases.

Table 1 briefly shows the variables that will be used in this study. Two problems must be addressed before moving on to the empirical analysis. The first problem is that the data sets contain missing values. Most of the statistical analyses models used in the social sciences and elsewhere assume complete data sets. Missing data, however, almost always exist in real-world data sets. The second problem arises from the drawbacks of having too many independent variables. This methodology attempts to correct for these by imputing missing values and using principle component analysis to reduce the number of independent variables.

EMPIRICAL METHODS

The purpose of this study is to examine what determines government competitiveness. This study uses cross-country data from many organizations and thus, the problem of incomplete data arises. An imputation method called an expectation-maximization (EM) algorithm has been applied for those missing values.[8] This approach iterates through a process of estimating missing data and then estimating parameters. Typically, the first iteration estimates maximum likelihoods based on the actual data as well as missing data estimates. The second iteration would require re-estimating the missing data based on the new parameter estimates and then recalculating the new parameter estimates based on actual and re-estimated missing data. In this analysis, data were imputed for 21 variables, a sum of 115 observations that account for 4.6 percent of total observations.

To combat "noise" from too many independent variables, many of the previous studies used principal component analysis (PCA) for data reduction and identification of variables with the highest explanatory power. PCA is a statistical technique that linearly transforms an original set of variables into a substantially smaller set of uncorrelated variables that represents most of the information in the original set of variables. Since this study uses 30 variables, it is worthwhile to reduce this number as much as possible. Moreover, since the data seem to be highly correlated, PCA will help negate collinearity among independent variables. Regression analysis assumes independent variables and PCA delivers them. With the factors derived from PCA, an ordered logit analysis can be carried out to examine the determinants of government competitiveness.

Application of Principal Component Analysis (PCA)

In this study, 25 explanatory variables will be used for the PCA (five other variables are excluded). Since there are many variables, it is likely that there are problems of multicollinearity. For example, a correlation of the rule of law index and the regulatory quality index is 0.95. This suggests that they are highly correlated and that both can be expressed by one variable. This problem can be eliminated by applying PCA.

The next step is to find out the eigenvalues and eigenvectors.[9] In order to calculate them, the correlation matrix will be used since the units of each variable are different from one another. Table 2 shows the eigenvalues of the correlation matrix. In Table 2, seven principal components have been abstracted since they have eigenvalues of more than one. In practice, practitioners use principal components that have eigenvalues of more than one. The total variance explained by these principal components is 78.06 percent.

The next step is to name each principal component so that it can be used in the empirical analysis. Table 3 shows the eigenvectors. In the first principal component, the variables that have high eigenvectors are *natural logarithm of gross national income per capita* (0.920), *political stability indices (0.850), regulatory qualities* (0.950), *rule of law indices* (0.949), *sovereign credit ratings* (0.872), *citizen liberty indices* (–0.828), and *corruption indices* (0.913). These variables can be expressed as the degree of reliance upon one's government by people within and outside of the country. If citizens think that their country is politically stable, has fair regulatory qualities, conforms to the rule of law, promotes citizen liberties, and suppresses corruption, they will trust their government. On the other hand, if sovereign credit ratings are low, people outside of country do not trust that country. If government is viewed as trustworthy, it is likely that the government will be ranked higher in the survey, a hypothesis consistent with previous literature.

Table 2: Eigenvalues of the Correlation of Matrix

Principal Component	Total Variance Explained					
	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
PRIM 1	9.93	39.73	39.73	9.93	39.73	39.73
PRIM 2	2.62	10.50	50.22	2.62	10.50	50.22
PRIM 3	1.87	7.49	57.72	1.87	7.49	57.72
PRIM 4	1.47	5.86	63.58	1.47	5.86	63.58
PRIM 5	1.38	5.52	69.10	1.38	5.52	69.10
PRIM 6	1.23	4.93	74.03	1.23	4.93	74.03
PRIM 7	1.01	4.03	78.06	1.01	4.03	78.06

Table 3: Eigenvectors

Variable	Principal Components						
	PRIN 1	PRIN 2	PRIN 3	PRIN 4	PRIN 5	PRIN 6	PRIN 7
grev	0.612	-0.334	0.096	0.371	-0.270	0.303	0.067
gdebt	-0.098	-0.089	0.095	0.803	0.138	-0.083	0.288
bproc	-0.724	-0.257	0.243	-0.107	0.028	-0.030	0.056
bdays	-0.557	-0.276	0.105	-0.384	0.053	0.178	0.353
rproc	-0.483	-0.323	0.390	0.248	-0.040	-0.116	-0.120
rdays	-0.087	-0.268	0.064	0.050	-0.705	0.135	0.005
rigid	-0.312	-0.317	0.493	-0.035	-0.253	0.025	-0.191
bclose	-0.472	0.021	0.348	-0.432	-0.075	0.085	0.392
hexpend	0.501	-0.048	0.201	0.096	0.365	0.443	0.147
unemploy	-0.209	-0.540	-0.049	0.149	0.183	0.285	-0.553
lngnic	0.920	0.051	0.110	0.095	0.095	0.000	0.086
pstab	0.850	-0.023	-0.046	-0.176	-0.116	-0.150	-0.036
rquality	0.949	0.018	0.084	-0.041	0.074	-0.157	0.033
rule	0.949	0.123	0.047	0.017	0.038	-0.105	0.039
winparlia	0.610	0.012	-0.065	-0.258	0.115	0.319	-0.285
fepart	0.419	0.382	-0.212	-0.143	-0.316	0.446	-0.128
gini	-0.575	-0.249	-0.124	-0.175	0.565	-0.034	-0.134
lnpop	-0.404	0.651	0.574	0.081	0.108	0.151	-0.118
lnwpop	-0.379	0.662	0.580	0.079	0.095	0.149	-0.122
aveinf	-0.343	-0.017	-0.329	0.152	0.109	0.611	0.290
freedom	-0.657	0.578	-0.188	0.077	-0.140	0.000	-0.124
sovereign	0.872	0.325	0.185	0.003	-0.036	-0.005	-0.013
political	-0.687	0.397	-0.418	0.114	-0.041	-0.073	-0.007
citizen	-0.828	0.287	-0.335	0.159	-0.076	-0.019	0.001
corrupt	0.913	0.153	-0.059	0.030	0.160	-0.038	0.075

Note: PRIN 1 corresponds to the first principal component. Black shading indicates variables that comprise significant, unique factors, identified here as principal components.

In the second principal component, *natural logarithm of populations* (0.651) and *natural logarithm of populations of ages between 15 and 64* (0.662) have high eigenvectors. This principal component reflects the size of the population and the components of the working population in a country and represents a structure of the population. The third principal component, degree of labor rigidity, is comprised of *rigidity of labor* (0.493), *natural logarithm of populations* (0.574), and *natural logarithm of population of ages between 15 and 64* (0.580), which possess higher estimates in the third principal component rigidity.

For the fourth principal component, only *government debt* has high eigenvectors. Its estimate is 0.803, which is high compared to other variables; therefore government debt would be the appropriate name for this principal component.

The *amount of time that one needs to register* has the highest eigenvector for the fifth principal component. Its estimate is -0.705, so this principal component will be known as a degree of red tape.

The *ratio of health expenditures to GDP* (0.443), *female labor participation rate* (0.446), and the *inflation rate* (0.611) are important variables in the sixth principal component. These variables can express the ability of a country to act in the interest of people's welfare.

Finally, the *unemployment rate* is the only variable that has high eigenvectors (-0.553) for the seventh principal component, so it can be given the name unemployment rate.

Ordered Logit Model

The statistical techniques employed are those of ordered logit analysis. This approach explicitly allows for the discreteness of possible ranking data but also for the fact that rankings possess a natural ordering from high to low positions. In this study, a value of y_i, an ordinal dependent variable for the WEF samples will be as follows:

y_1=1; ranking from 1 to 8
y_2=2; ranking from 9 to 16 …
y_{10}=10; ranking from 73 to 80

A value of y_i for the IMD samples will be given similarly. The determining variables used to explain a ranking of the country were: (1) internal and external reliance on government (PRIN 1); (2) structure of populations (PRIN 2); (3) labor rigidities: 0 for the lowest rigidity, 1 for the highest rigidity (PRIN 3); (4) government debt (PRIN 4); (5) degree of red tape (PRIN 5); (6) ability of a country to act in the interest of people's welfare. (PRIN 6); and (7) unemployment rates (PRIN 7).

In addition to these variables, it is possible that the level of ranking might depend on the number of public servants, the relative size of wages received by public sector, electronic government readiness, government expenditure, and GDP per capita. To account for this, five other variables were considered: (8) number of public servants, measured as the ratio of total populations; (9) relative wage; (10) electronic government (e-government) readiness: 0 for the least developed and 1 for the mostly developed;[10] (11) ratio of government expenditures to total GDP; and (12) logarithm of GDP per capita.

RESULTS

WEF Samples

Table 4 shows the parameter estimates for WEF samples from 2004. According to the results in Table 5, the probability of having higher-ranking public sector competitiveness is significantly influenced by seven variables. In column two, it is observed that higher-ranking nations have a significantly positive coefficient with respect to the ratio of the number of public servants per capita. When the number of public servants account for a relatively large part of the total population, the government will be more likely to be highly ranked. The variable NPS (Number of Public Servants) is significant at the one percent level. However, relative wages allotted to the public sector do not have a significant effect on public sector competitiveness.

As the theories of the e-government predict, the coefficient of e-government readiness has significance in regard to competitiveness. This variable is significant at the five percent level. Internal and external reliance upon government (IERG), the name given to the first principal component, has a significant effect on public sector competitiveness. The coefficient is positive, which indicates that a government considered more trustworthy from inside and outside of the nations will be more likely to be given a high ranking.

A country's public sector competitiveness is negatively impacted by very inflexible labor mobility. A reason for labor rigidity's significant effects on government competitiveness might be its relation to the state of unemployment rates. Many scholars argue that labor rigidity is related to elevated unemployment rates; therefore, governments that take extreme stances toward labor rigidity are likely to be placed in a higher ranking since their nations will be less likely to suffer from mass unemployment.

The results of the estimates show that contrary to the usual thinking, public sector competitiveness is not high for small governments, even controlling for smaller population. Indeed, there is a weak relationship between government size and government competitiveness because the coefficient of government size, the third principal component, is not significant. Moreover, government debt and the unemployment rate do not have any particular relationship with respect to the data of WEF 2004 samples. They are not significant at the ten percent level. Remarkably, there is no significant relationship between the natural logarithm of GDP per capita and the government rankings. The coefficient of the natural logarithm of GDP per capita is not significant at the ten percent level.

Table 4: Analysis of Maximum Likelihood Estimates (WEF Samples)

	Year 2004		Year 2005	
Variable	Estimate	Wald χ^2	Estimate	Wald χ^2
Number of public servants per population	0.44 ***	8.81	0.22 *	2.67
(standard error)	*-(0.15)*		*-(0.13)*	
Electronic government readiness index	9.24 **	6.51	4.15	1.24
	-(3.62)		*-(3.74)*	
Relative wages	0.00	0.18	0.00	0.65
	(0.00)		*(0.00)*	
Government expenditures as a proportion of GDP	0.04	1.04	0.14 ***	9.90
	-(0.04)		*-(0.04)*	
ln GDP per capita	-1.05	2.61	-0.92	1.76
	-(0.65)		*-(0.70)*	
Internal & external reliance on government (PRIN 1)	1.09 ***	17.66	1.04 ***	14.08
	-(0.26)		*-(0.28)*	
Structure of populations (PRIN 2)	0.51 ***	9.24	0.77 ***	15.45
	-(0.17)		*-(0.20)*	
Labor rigidities (PRIN 3)	-0.51 ***	7.25	-0.11	0.33
	-(0.19)		*-(0.19)*	
Government debt (PRIN 4)	-0.09	0.16	-0.51 **	4.54
	-(0.23)		*-(0.24)*	
Degree of red tape (PRIN 5)	0.66 ***	9.12	1.30 ***	18.10
	-(0.22)		*-(0.31)*	
Welfare state (PRIN 6)	-0.45 *	3.58	-0.65 **	5.67
	-(0.24)		*-(0.27)*	
Unemployment rate (PRIN 7)	0.15	0.38	0.21	0.69
	-(0.24)		*-(0.25)*	
Sample size	80		80	

Note: Standard errors are shown in parentheses below the estimates. "***" denotes significance at the 1% level, "**" denotes significance at the 5% level, and "*" denotes significance at the 10% level.

The degree of red tape has a very significant effect on the ranking of public sector competitiveness. A positive relationship between the degree of red tape and public sector competitiveness has been observed to be significant at the one percent level.

IMD Samples

The ordered logistic regression results of IMD samples are displayed in Table 5. It shows that the probability of being evaluated at a higher ranking of public sector competitiveness is significantly influenced by seven variables: the number of public servants, the natural logarithm of GDP per capita, internal and external reliance upon governments, structure of populations, labor rigidities, the degree of red tape, and the welfare state.

Echoing WEF 2004 samples, the ratio of the number of public servants to the total population showed a positive relationship to government effectiveness ranking. In terms of human resources, big governments are assessed as more competitive when compared to small governments, controlling for population. In addition to the number of public servants per

Table 5: Analysis of Maximum Likelihood Estimates (IMD Samples)

	Year 2004		Year 2005	
Variable	Estimate	Wald χ^2	Estimate	Wald χ^2
Number of public servants per population	0.35 ***	6.32	0.28 **	4.25
(standard error)	*(0.14)*		*-(0.13)*	
Electronic Government readiness index	4.19	0.69	-0.76	0.02
	(5.04)		*-(5.04)*	
Relative wages	0.00	0.28	0.00	0.02
	(0.00)		*(0.00)*	
Government expenditures as a proportion of GDP	-0.02	0.09	-0.01	0.02
	(0.05)		*-(0.06)*	
ln GDP per capita	-2.11 **	5.14	-1.90 **	4.25
	(0.93)		*-(0.92)*	
Internal & external reliance on government (PRIN 1)	1.11 ***	9.44	1.44 ***	13.86
	(0.36)		*-(0.39)*	
Structure of populations (PRIN 2)	0.59 **	5.77	0.78 ***	9.11
	(0.25)		*-(0.26)*	
Labor rigidities (PRIN 3)	-0.79 ***	8.82	-1.05 ***	13.54
	(0.27)		*-(0.28)*	
Government debt (PRIN 4)	-0.32	0.81	-0.39	1.15
	(0.35)		*-(0.36)*	
Degree of red tape (PRIN 5)	0.71 *	3.33	1.11 ***	7.18
	(0.39)		*-(0.41)*	
Welfare state (PRIN 6)	-1.07 ***	7.10	-1.23 ***	8.95
	(0.40)		*-(0.41)*	
Unemployment rate (PRIN 7)	-0.24	0.42	0.06	0.03
	(0.37)		*-(0.37)*	
Sample size	50		50	

Note: Standard errors are shown in parentheses below the estimates. "***" denotes significance at the 1% level, "**" denotes significance at the 5% level, and "*" denotes significance at the 10% level.

capita, the estimate of internal and IERG was also the same as that of the WEF 2004 samples. The estimate was significant at the one percent level. Furthermore, the labor rigidities variable had the same effect upon government competitiveness as the 2004 WEF samples. As previously estimated, the country with higher labor rigidities tended to place lower in the rankings. The degree of red tape was also significant in the 2004 IMD samples. In a similar manner as before, the coefficient was positive, which means that as the degree of red tape increases, it is likely that the government will be considered less competitive. The difference between the WEF and IMD samples is the significance level of the degree of red tape. In IMD samples, the degree of red tape was significant at the ten percent level, whereas in WEF samples, it was the one percent level.

There are significant differences between samples, however. The e-government readiness index is significant in WEF samples, but not IMD 2004 samples; however, the natural logarithm of GDP per capita is significant in IMD 2004 samples. Strangely, the relationship was negative with respect to the ranking, indicating that higher ranked groups are not the wealthiest.

The ordered logistic regressions of the 2005 data are also shown in Table 5. Compared to the 2004 data, all variables retained their significance in 2005 data, but differed in the level of significance. The significance level for the variable number of public servants had decreased.

As policy analysts, we are concerned with opportunities for impact, and so marginal differences are key. The marginal effect tells us the change in the probability of a certain variable with respect to the additional increase in its unit, holding all other variables constant. For example, a marginal effect of number of public servants on the probability of being at y=4 is 0.054. This means that when the number of public servants increases one percentage point, the probability of being at the ranking level 4 increases 5.4 percent. Since the estimates of the table have been calculated from the mean of the determining variables, all estimates of the number of public servants show the change of probability when that number increases one percent. The biggest effect with respect to these changes can be found in the first principal component. The marginal effect of the IERG for y=4 is 0.136, a 13:1 yield.

CONCLUSION

Empirical findings of this analysis have several implications for policy. First, the results of this analysis suggest that increasing social capital, defined as IERG in this study, is the most important determinant of public sector competitiveness. Since IERG covers a wide range of the social capital defined in terms of peoples' values, the results of the analysis strongly indicate that governments should endeavor to increase their social capital. Second, governments should persevere in their efforts to reduce red-tape. The empirical results show a strong negative relationship between degree of red tape and government competitiveness.

Government size in terms of the number of public servants and government expenditures is positively related to the rankings; big governments are assessed as more competitive when compared to small governments. This analysis also indicates that reducing personnel is not an appropriate course of action for improving competitiveness, since the variable for public servants is more significant than the variable for government expenditures. Big government and civil servants are not the problem, onerous regulations are.

Some analysts have noted the role of e-government in improving the efficiency and effectiveness of public administration. Indeed, e-government readiness has been found to be positively associated with competitiveness; however, the significance is only apparent in the WEF samples. Even so, the potential of e-government readiness to make governments more competitive and to enable them to face the challenges of the information and communication age should not be overlooked.

LIMITATIONS

This study clearly has some limitations and needs further testing. The first problem is incomplete data. Although this paper managed missing values in the samples by conducting imputation with the EM algorithm, the results would be much more unbiased with complete data. Second, principal components might be mislabeled. Since naming principal components is subjective, even comparisons between authors utilizing the same data can be complicated. Third, since it uses cross-country data, it is clear that some data are not comparable on an international level. This analysis attempted to minimize this problem using real exchange rates, world price indices, and derived relative wages. Unfortunately, the data remains imprecise, and little can be done until substantial resources are devoted to developing internationally comparable data. Fourth, this study uses rankings ordered in scale, rather than a specific estimate of competitiveness. This provides a broader perspective on public sector competitiveness, but leaves scope for concretization. Analyzing the ranking data is still worthwhile as there are no other options to make use of the data that characterize government competitiveness. Lastly, the study excludes countries from analysis on a nonrandom basis, reducing the external validity of the findings.

Acknowledging these limitations, this analysis suggests that several constraining maxims concerning the size and scope of government are myths. Governments in this sample that desire to become more competitive should pursue strategies that eliminate red tape, increase social capital, build trust with their populace, and increase the footprint of governance. Further research should be conducted with an emphasis in standardizing measures of competitiveness so that academics and managers can refine the roots of effective governance.

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ENDNOTES

[1] Data from World Bank's World Development Indicators.

[2] Osborne, D., Gaebler, T. "Reinventing Government." (New York: Plume Books, 1992).

[3] Rice, T. W. "Social Capital and Government Performance in Iowa Communities." *Journal of Urban Affairs* 23(3-4)(2001): 375-389.

[4] Knack, S. "Social Capital and the Quality of Government: Evidence From the States." *American Journal of Political Science* 46(4) (2002): 772-785.

[5] Carroll, D. A., Marlowe, J. "Politics, Economics, or the Public? Examining the Determinants of State Government Performance." *Korean Public Policy Studies* 19 (2005): 1-20.

[6] *The Global Competitiveness Report 2003-2004, 2004-2005*. New York: Oxford.

[7] *IMD World Competitiveness Yearbook 2004, 2005*. Lausanne: Switzerland.

[8] Dempster, A. P., Laird, N. M., Rubin, D. B. "Maximum Likelihood Estimation from Incomplete Data Via the EM Algorithm." *Journal of the Royal Statistical Association* B39 (1977): 1-38.; Dempster, Laird, and Rubin proposed the use of an iterative solution, termed the Expectation-Maximization (EM) algorithm.

[9] In the following linear system, the eigenvalues are the values of lamda for which the system has a nontrivial solution. Eigenvectors are the nontrivial solutions of the system corresponding to lamda.

$$(\lambda I - AX) = 0$$

Eigenvectors and eigenvalues are essential for extracting principal components (PCs). Eigenvalues identify unique factors within groups of variables, allowing an analyst to reduce the number of variables without losing important sources of variation.

[10] E-government refers to the use of information and communication technology to provide and improve government services.