Estimating the Quality of Economic Governance:
A Cross-Country Analysis

Sudip Ranjan Basu[*]

International Economics Department
Graduate Institute of International Studies (IUHEI)
University of Geneva, Switzerland

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Abstract: This paper proposes a methodology to combine different dimensions of economic governance indicators into a combined index. The Quality of economic governance index (QEGI) is estimated as the weighted average of principal components of the standardized economic governance indicators, where weights are variances of successive principal components. The paper reports the QEGI for 71 developing and transition countries in 1998-2000. The evidence from a simple scatter diagram and a cross-country regression analysis shows that the better economic governance positively affects the economic performance (e.g., rise in per capita income, decline in poverty level, etc.) for sample countries in our analysis.

KEY WORDS: Economic Governance, Economic performance, Cross-country analysis
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Email: basu1@hei.unige.ch, sudip_basu@hotmail.com

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1.Introduction

The quest for growth and development has been occupying the central stage of the academic profession in economic science for quite sometime[1]. Since 1980s, under the aegis of the World Bank and IMF, the developing countries, and transition economies initiated stabilisation and structural adjustment programmes, in order to bring back market friendly nature of the economies and to foster sustained economic growth and development. In pursuing such type of programmes over the years, many of those countries have not yet been able to achieve their desired goals. Consequently, it raises many questions about the *appropriate policy mix* of the Bank-Fund programmes across the board[2].

Since the early 1990s, arising out of such discontent, there has been a renewed call, for having better and efficient government participation, in order to support and supplement market efficiency. Nowadays, international organisations and the academic community are advocating for better institutional arrangements, including both markets and the government, as a key to governance of sustained growth and development. Increasing number of studies is now indicating how the institutional quality is positively associated with growth and social development. These studies are mainly based on cross-country analysis as well as sub-national level data.

The institutional quality is supposed to be a combined measure of different interdependent factors, including socio-economic, political, geographic and other societal factors that provides a strong base for efficient management of government activities. During the last decade, the call for *providing better institutional quality* for better *quality of life* has been given tremendous momentum across the continents, to organise governments to work in such direction!

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[1] For more discussion see, Guha (1982), Sen (1988), Easterly (2001)
[2] See Stiglitz (2002), Muqtada (2002) for elaborate discussion on this specific issue.

Thus, in this context, we provide a methodology of measuring the quality of economic governance, and then explore the relationship of quality of institutions to economic performance and social development. This paper considers only the developing and transition countries for the purpose of the present analysis[3].

This paper is organised in the following sections. In section 2, the relation between governance and economic performance has been briefly reviewed from the existing literature. Section 3 provides the computational methodology of estimating the *Quality of Economic Governance Index* (henceforth, QEGI), and also describes the data sources of all the variables included in the analysis. The empirical results are described in the Section 4. This section basically attempts to show how the better economic governance improves the per capita and other socio-economic outcomes. Section 5 contains some concluding remarks on the overall results and direction for further research.

2. Governance and economic performance: evidence from literature

Many recent cross-country studies have come up with arguable evidence that the economic growth is positively related to the institutional quality in a given country. The better institutional quality implies effective judiciary or legislative mechanisms, rule of law, political transparency/stability, civil liberties and rights, freedom of media, etc[4].

In the context of this paper, we only focus on the economic part of the governance. Most of the studies in the present literature concentrate on the political and legal components of the governance, and then show their associational

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[3] The World Bank classification is used here to select sample countries.
[4] A detailed analysis of different dimensions of governance is described in the World Bank (1992, 1994), IMF (1997), Knack (1999), Kaufmann et al (1999a and 1999b, 2002).

relationship with income. The present paper modules the governance on the basis of selected indicators which are supposed to reflect the economic prosperity of the countries. The indicators, we have selected are mostly *intermediate* outcome variables, focussing mainly on the macroeconomic and economic openness dimension of governance. The **economic governance** in this analysis is perceived as 'good' or 'bad' depending on the levels of a few selected economic indicators, reflecting the different dimensions of an economy. Our economic governance measure would imply that if the countries strengthen their institutional arrangements, then their economic efficiency improves. The dimensions like, voice and accountability, political stability, control of corruption, rule of law, regulatory quality, government effectiveness, are key indicators of the political measure of governance[5]. On the other hand, the indicators that we have chosen here for our analysis are an attempt to *proxy* a measure of economic governance. We believe that with the improvement of a country's relative position in terms of these selected indicators, would tend to imply that it has embarked upon a better track of economic governance.

There are many studies, which present the governance and development interlinkage. We would briefly illustrate only few frequently cited works in the literature. The World Bank (1992) in its report on 'Governance and Development' provided a detailed analysis to indicate how important it is now to look comprehensively at the institutional environment in order to pursue a constant effort for all round development. Then, in the Interim Committee meeting (1996) of IMF, the Fund identified 'promoting good governance in all its aspects, including ensuring the rule of law, improving the efficiency and accountability of public sector, and tackling corruption as the key for economic efficiency and growth' in countries.

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[5] See the World Bank studies on governance, www.worldbank.org/wbi/governance.

In one of the early work on measuring governance, Huther and Shah (1998) proposed to measure governance by aggregating different dimensions of the socio-economic indicators. They described a method to construct an index of governance quality for a sample of eighty countries. The paper used several component indices to capture four different indicators, e.g., citizen participation, government orientation, social development, and economic management to compute the index for ranking and subsequently grouping the countries into good governance, fair governance and poor governance categories.

In a major work, Kaufmann et al (1999a) proposed a method of simple variant of an unobserved component to combine the different dimensions of governance into aggregate governance indicators. This composite index was then used to group the countries according to levels of their governance. Then, Kaufmann et al (1999b, 2002) aggregated the different dimensions of governance on the basis of six aggregate indicator corresponding to six basic governance concepts: voice and accountability, political stability and violence, government effectiveness, regulatory burden, rule of law, and graft. They then examined the association between each of the six aggregate governance indicators and three development outcomes: per capita income, infant mortality, and adult literacy. The paper concluded that improvements in governance have very large pay off in terms of development outcome. In their recent paper (2002), author's estimated governance index for 175 countries on the basis of all the above six dimensions of governance.

Chong and Calderon (1997, 1998, 2000) showed that improving institutional quality positively affects the economic growth, reduce incidence of poverty, and income inequality. In other studies, Knack and Keefer (1995, 1997) showed that those institutions protect property rights, ensure trust and civic co-operation, they have

grown faster and achieved high rates of investment-GDP ratio. Ross (1997) showed that the countries, which are having more developed institutions, in terms of legal and regulatory framework, are the countries with better-developed financial intermediaries, and hence grow faster[6]. The above studies point out that with cross-country analysis, the quality of governance matters for effectively promoting economic growth and development.

However, in most of the cases the methodology of computing the governance index is quite crucial. There are few attempts to compute the governance index (Kaufmann et al, Huther and Shah etc.) on the basis of different dimensions of governance. Many studies are now using the different country ratings, for e.g., International Country Risk Guide (ICRG), Business International (BI), Business Environmental Risk Intelligence (BERI), Gastil's Civil Liberties Index, Heritage Foundation-Wall Street Journal's Index of Economic Freedom, Transparency International's Corruption Perception Index, World Economic Forum's Competitiveness Index, etc., as the explanatory factors for countries economic growth and development[7]. These international rankings are now also considered to be an indication of quality of institutions that reflect the economic standings of individual countries. The better rankings/ratings of such index would imply that those countries are doing better in terms of providing better and efficient institutions, which are a cornerstone for enhancing economic development. In the next section, we propose a methodology to compute the composite index of economic governance on the basis of the latent/unobservable factor method.

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[6] Rodrik (1997) illustrated that one of the key factors for East Asian economies grew faster was their better institutional arrangement.
[7] See Kaufmann et al (2002), and the World Bank website on governance research for comprehensive guide.

3. Estimating economic governance

In this section, we describe the methodology of computing the economic governance index, and then illustrate the different indicators chosen for estimating the index.

Estimation methodology

The computation of 'quality of economic governance index'[8] model is given below:

We postulate a latent variable model where the QEGI is supposed to be linearly dependent on a set of observable indicators plus a disturbance term capturing error.

Let $QEGI = \alpha + \beta_1 X_1 + \ldots\ldots + \beta_k X_k + e$

Where $X_1, X_2, \ldots\ldots X_K$ is set of indicators that are used to capture the 'quality of economic governance index', so that the total variation in the QEGI is composed of two orthogonal parts: a) variation due to set of indicators, and b) variation due to error. If the model is well specified, including adequate number of indicators, so that the mean of the probability distribution of e is zero, $(Ee = 0)$, then error variance is small relative to the total variance of the latent variable QEGI. We can assume that the total variation in QEGI is largely explained by the variation in the indicators (i.e., the indicators that are used to compute the QEGI).

In this present analysis, we propose to replace the set of indicators by an equal number of their principal components (PC), so that 100% of variation in indicators is accounted for by their PCs[9].

To compute PCs, we proceed as follows:

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[8] The methodology and computation of QEGI-type index is also described in Nagar and Basu (2000, 2002), Basu (2001, 2002).
[9] See Anderson (1984) for theoretical analysis.

o Transform the indicators into their standardised form i.e.,

$$X_k = \frac{X_k - \overline{X}_k}{S_{x_k}}$$

where $\overline{X}_k$ is the arithmetic mean , and S_{x_k}, is the standard deviation of the observations across the countries in the sample, for k=1,2,……n.

o Then solve the detrimental equation

$|R - \lambda I| = 0$ for λ

where R is a $K \times K$ matrix; this provides a Kth degree polynomial equation in λ and hence K roots. These roots are called eigenvalues of R. Let us arrange λ in descending order of magnitude, as

$\lambda_1 \rangle \lambda_2 \rangle ....\rangle \lambda_k$

o corresponding to each value of λ, we solve the matrix equation

$(R - \lambda I)\alpha = 0$ for the $K \times 1$ eigenvectors α, subject to the condition that

$\alpha' \alpha = 1$.

Let us write the characteristic vectors as

$$\alpha_1 = \begin{pmatrix} \alpha_{11} \\ \vdots \\ \alpha_{1k} \end{pmatrix}, ..., \alpha_k = \begin{pmatrix} \alpha_{k1} \\ \vdots \\ \alpha_{kk} \end{pmatrix},$$

which correspond to $\lambda = \lambda_1 = ..., \lambda = \lambda_k$ respectively.

o The principal components are obtained as

$$\left.\begin{aligned} P_1 &= \alpha_{11} X_1 + ... + \alpha_{1k} X_k \\ P_2 &= \alpha_{11} X_1 + ... + \alpha_{2k} X_k \\ &\vdots \\ P_k &= \alpha_{11} X_1 + ... + \alpha_{kk} X_k \end{aligned}\right\}$$

Thus, we compute all these PCs using elements of successive eigenvectors corresponding to eigenvalues, $\lambda_1, \lambda_2, \ldots \ldots \lambda_k$, respectively.

- o We now estimate the QEGI as weighted average of the PCs, thus:

$$QEGI = \frac{P_1\lambda_1 + P_2\lambda_2 + \ldots \ldots \ldots + P_k\lambda_k}{\lambda_1 + \lambda_2 + \ldots \ldots \ldots + \lambda_k}$$

where the weights are the eigenvalues of the correlation matrix R and

$$\lambda_1 = \text{var } P_1, \ldots \ldots \lambda_k = \text{var } P_k$$

Then, we attach highest weights to the first PCs, because it accounts for the largest proportion of total variation in all indicator variables. Similarly, the second PC accounts for the second largest and therefore, the second largest weight (λ_2) is attached to this, and so on.

- o Finally, we normalise the QEGI value by the following procedure,

$$QGOI^k = \frac{QGOI^k - Minimum(QGOI^k)}{Maximum(QGOI^k) - Minimum(QGOI^k)}$$

where k= 1, 2,...n , where 1 indicates best performing country and 0 worst performing country in the sample.

We have categorised the countries into three groups on the basis of their QEGI value: the good economic governance if the QEGI value is greater than 0.600; fair economic governance, if the index value is greater than 0.400, but equal or less than 0.600, and poor economic governance, if the value equal or less than 0.400 (0 to 1 scale). Thus, on the basis of the QEGI value, we classify the country's status on the quality of economic governance level.

Data Sources

In computing the QEGI, we have selected eleven variables, these are; Government expenditure, total (% of GDP)[govexp]; Total debt service (% of GDP)

[debtgdp]; Total debt service (% of exports of goods and services) [debtser]; Overall budget balance, including grants (% of GDP) [budgdp]; Current account balance (% of GDP) [curgdp]; Inflation, consumer prices (annual %)[infla]; Gross international reserves in months of imports [groimp]; Gross international reserves, including gold (% of GDP) [intres]; Trade (% of GDP) [tragdp]; Gross foreign direct investment (% of GDP) [fdigdp]; Real Interest Rate (%)[rintrat].

On the basis of the above eleven variables, we select the 71 developing and transition countries [see Appendix Table A.1 for list of countries] for which the consistent data available for the period 1998-2000[10]. The choice of selecting these indicators for computing the QEGI is driven by few key considerations. Here, one set of variables is related to the government's activities relating to spending resources for public works. This is captured through the government total expenditure as a proportion to GDP. The capacity of governments spending for public works depend primarily on countries revenue generating capacity, and related policies and incentives. Many of these developing countries, domestic economies are severely hit by different supply side constraints, thereby contract the capacity for resource mobilisation. Hence, those countries, which could provide more funds for public spending, are doing comparatively better than the rest, and would presumably achieve better economic governance ranking in our analysis.

A second set of indicators is used to capture the overall availability of resources to the governments. The debt-gdp ratio, total debt servicing as proportion of exports of goods and services, gross international reserves as proportion of GDP, gross international reserves in months of imports are used as proxy for such dimension. The more foreign reserves with monetary authorities, indicates countries

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[10] We take average value for these three years in the sample for all the indicators of QEGI.

economic strength. Moreover, adequate foreign currency reserves provides countries the required currency stability, and also helps in augmenting the capital stock (both physical and human) for utilisation in domestic economic investment. On the contrary, the more debt servicing will seize the countries economic prosperity. Hence, our economic governance index would get worse for countries if they have higher levels of debt-gdp and debt-servicing ratio.

Then, we also have a set of variables to illustrate the fiscal stability (budget deficit) and external sector's (current account deficit) condition. As the countries macroeconomic stability is largely dependent on the fiscal discipline and the external sector policy mix of the governments, our measure of economic governance would award more points to the countries which have shown more discipline and could restrict the level of deficit at the lower levels.

We also have a set of indicators that would show as to what extent the economy is open to international trade (both bilateral and multi-lateral). The trade-gdp ratio, and foreign direct investment-gdp ratio, are the two key indicators for economic openness. With the increasing nature of economic globalisation, the countries are more open to trade and consequently the foreign investors would invest in the domestic economies in greater proportion. This would then show a growing trade-gdp and fdi-gdp ratio. Subsequently, we have better economic governance results.

Finally, we have two indicators that are supposed to present the financial and investment-friendly environment of the economy. The inflation rate and real interest rate are put forth to capture this essential nature of domestic economic health. The higher values of these indicators would definitely be a negative pointer for the international and domestic investors. They would not risk investing in those

economies, and thereby the economies would face a resource crunch, providing negative impetus to economic performance[11].

Our QEGI is measured in terms of positive dimension, as the higher value of QEGI signifies better quality of economic governance. It may be noted that in the set of indicators for aggregating in computation of QEGI, for some indicators (e.g., inflation, current account and budget deficit), the increasing values would have negative effect on QEGI, and consequently lead to a lower value and rank of countries. Contrary to this, for some indicators (trade-gdp ration, fdi-gdp ratio), the increase in value would imply positive feedback to the QEGI, and would mean better ranking in the economic governance index for countries under study. However, our index would appropriately adjust the values as it solves the equation for each and every indicators, and then get values for the each and every PCs. Then, we multiply these values with the standardised indicators for each country to obtain the QEGI. For all these eleven variables, the data are obtained from the World Bank's World Development Indicators 2002 CD-Rom.

Moreover, in exploring the relationship between the QEGI, and income and other development outcomes, we use some indicators of economic performance. The real GDP per capita (log of)[gdppc] is used to measure the country's economic performance level. The per capita income is averaged for three years 1998-2000. We also use the data on poverty level, as measured by national poverty headcount (% of population) [pove]. To explore the relationship between the countries health status, we use Infant mortality rate (per 1000 live births) [imr] figures. All these three different indicators are obtained from World Bank database[12]. We have the adult literacy rate

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[11] ICRG ranks the countries on the basis of financial risk component.
[12] For some countries, the poverty figures are obtained from UNDP HDR, ILO.

(%) [litrat] to measure the countries human capital stock. This figure is obtained from UNDP's HDR 2002.

4. Empirical results

In this section, we present results of the paper in two parts. Initially, we document the results on the quality of economic governance for a sample of 71-country, and then group the countries in terms of status of economic governance: good, fair and poor. Then, we also look the QEGI regionwise to analyse regional variation in the levels of economic governance. In the next part of this section, we see the causal relationship between the economic governance measure and the per capita income and development variables; both in terms of scatter diagrams and cross-country regression estimation.

Analysis of quality of economic governance

Before, we estimate the QEGI, let us look at the descriptive statistics of all the

Table 4.1: Descriptive statistics, 1998-2000 (average)

	#	Mean	SD	CV (%)	Maxi	Mini
Government expenditure (% GDP)(govexp)	71	26.52	9.50	35.83	57.84	10.09
Debt (% GDP)(debtgdp)	71	5.97	3.08	51.50	14.56	0.73
Debt (% of export)(debtser)	71	17.61	14.31	81.30	92.79	2.30
Budget balance (% GDP) (budgdp)	71	-2.76	2.64	-95.53	2.39	-10.94
Current account balance (% GDP)(curgdp)	71	-3.71	7.45	-200.79	16.70	-24.38
Inflation (annual %)(infla)	71	11.06	23.54	212.96	178.40	-13.16
Gross international reserves in months imports (#) (groimp)	71	3.66	2.12	57.82	9.16	0.29
Gross international reserves (% GDP) (inters)	71	13.52	8.40	62.14	45.94	0.72
Trade (% GDP) (tragdp)	71	85.14	41.31	48.52	219.20	20.86
Gross foreign direct investment (% GDP)(fdigdp)	71	5.17	4.50	87.06	20.26	0.01
Real Interest rate (%) (rintrat)	71	9.38	15.99	170.44	65.15	-59.35
Real GDP per capita (log of, average) (gdppc)	71	7.29	0.99	13.56	9.01	4.97
Infant mortality rate (per 1000 live births) (imr)	71	35.61	27.96	78.52	110.80	4.63
Adult literacy rate (%)(litrat)	71	83.11	17.31	20.83	100.00	41.00
Poverty (%) (pove)	62	29.57	14.55	49.21	70.00	4.60

Source: WB, UNDP, ILO

economic indicators used in the present analysis. Table 4.1 shows the list of fifteen indicators, in terms of their mean (simple average), standard deviation (SD), coefficient of variation (CV) (%), and maximum (maxi) and minimum (mini) values. One of the highlights of this Table is the countrywise difference in the levels of economic condition. This differential level of economic situation would be reflected in our analysis of economic governance index in the later part of this paper. In Table 4.2, we present the correlation matrix of the indicators that are used for computing the

Table 4.2: Correlation matrix of the indicators used for computing QEGI

	govexp	Debtgdp	*debtser*	*budgdp*	*curgdp*	*Infla*	*groimp*	*intres*	*tragdp*	*fdigdp*	*rintrat*
Govexp	1.000										
debtgdp	0.294*	1.000									
debtser	-0.112	0.401**	1.000								
budgdp	-0.234*	0.058	-0.164	1.000							
Curgdp	-0.363**	0.045	0.065	0.106	1.000						
Infla	0.037	-0.096	-0.047	0.001	0.094	1.000					
Groimp	-0.071	0.079	0.331**	-0.084	0.303*	-0.211	1.000				
Intres	0.413**	0.199	-0.218	0.037	-0.019	-0.250*	0.528**	1.000			
Tragdp	0.508**	0.104	-0.510**	0.125	-0.136	0.066	-0.323**	0.426**	1.000		
Fdigdp	0.411**	0.077	-0.151	0.057	-0.535**	-0.192	0.027	0.422**	0.377**	1.000	
Rintrat	0.016	0.141	0.406**	-0.242*	0.007	-0.348**	0.143	-0.058	-0.254*	-0.104	1.000

*, ** coefficients are statistically significant at 5%, and 1 % level respectively (2-tailed test).

QEGI. The Table also provides the statistical significance level of the pair wise correlation coefficients values.

Following our methodology, as described in Section 3, we estimate the QEGI for a sample of 71-country by combining all the eleven indicators of economic governance. In the Table below, we show the QEGI values (along with their normalised values, the procedure described in previous section) and corresponding rankings of all countries. Here, the index measures the quality of their economic governance. The higher values of the rankings indicate the better economic governance, and vice versa. The rank 1 indicates country with the best economic governance level, and country rank 71 indicates the worst performance in terms of economic governance. The QEGI (normalised) value is in the scale of 0 to 1, since we

scaled the QEGI on the basis of maximum and minimum values of the QEGI in the sample. From the Table 4.3, we readily see the countries relative status in terms of economic governance index.

Table 4.3: Quality of economic governance index, 1998-2000.

Countries	QEGI values	QEGI (normalised)	QEGI-Rank
Lesotho	1.818	1.000	1
Fiji	1.004	0.759	2
Jordan	0.886	0.724	3
Yemen, Rep.	0.815	0.703	4
Maldives	0.807	0.701	5
Swaziland	0.773	0.691	6
Malaysia	0.741	0.681	7
Czech Republic	0.669	0.660	8
St. Vincent and the Grenadines	0.620	0.645	9
Seychelles	0.601	0.640	10
Bulgaria	0.553	0.626	11
Thailand	0.537	0.621	12
Chile	0.455	0.596	13
Nicaragua	0.443	0.593	14
Hungary	0.437	0.591	15
Slovak Republic	0.420	0.586	16
Estonia	0.419	0.586	17
Mongolia	0.366	0.570	18
Venezuela, RB	0.329	0.559	19
Grenada	0.313	0.555	20
Azerbaijan	0.308	0.553	21
Jamaica	0.296	0.550	22
Trinidad and Tobago	0.283	0.546	23
Algeria	0.254	0.537	24
Croatia	0.242	0.533	25
China	0.237	0.532	26
Lithuania	0.209	0.524	27
Poland	0.196	0.520	28
Albania	0.196	0.520	29
Latvia	0.195	0.519	30
Philippines	0.113	0.495	31
Mauritius	0.065	0.481	32
Nepal	0.062	0.480	33
Bolivia	0.056	0.478	34
El Salvador	0.053	0.477	35
Sri Lanka	-0.018	0.456	36
Peru	-0.042	0.449	37

Country			
Morocco	-0.044	0.449	38
Vietnam	-0.083	0.437	39
Uruguay	-0.083	0.437	40
Tunisia	-0.157	0.415	41
Panama	-0.161	0.414	42
Kazakhstan	-0.181	0.408	43
Indonesia	-0.233	0.393	44
Costa Rica	-0.236	0.392	45
Moldova	-0.241	0.390	46
Colombia	-0.270	0.382	47
India	-0.286	0.377	48
Papua New Guinea	-0.309	0.370	49
Uganda	-0.321	0.367	50
Turkey	-0.373	0.351	51
South Africa	-0.398	0.344	52
Paraguay	-0.457	0.326	53
Cote d'Ivoire	-0.472	0.322	54
Kenya	-0.495	0.315	55
Georgia	-0.512	0.310	56
Argentina	-0.523	0.307	57
Dominican Republic	-0.528	0.305	58
Guinea	-0.534	0.304	59
Madagascar	-0.540	0.302	60
Ukraine	-0.542	0.301	61
Burundi	-0.591	0.287	62
Mexico	-0.592	0.286	63
Brazil	-0.605	0.282	64
Pakistan	-0.614	0.280	65
Ghana	-0.615	0.280	66
Bangladesh	-0.657	0.267	67
Russian Federation	-0.674	0.262	68
Ecuador	-0.883	0.200	69
Cameroon	-0.952	0.180	70
Belarus	-1.560	0.000	71

Our measure of economic governance puts Lesotho at the top of the list, and is followed by Fiji, Jordan, Yemen, Maldives, Swaziland, etc. On the other hand, countries like Belarus, Cameroon, and Ecuador are at the bottom in the QEGI rankings. China (26), Philippines (31), Peru (37), Kazakhstan (43) are in the fair

group of QEGI rankings. In the poor category, we have countries like, India (48), Turkey (51), South Africa (52), Argentina (57), Bangladesh (67) etc.[13].

We now analyse the QEGI on the basis of different regions. We have classified the countries in six different regions, following the World Bank regional

Table 4.4: Status of countries according to QEGI

Good Economic Governance ($QEGI \succ 0.600$)	Fair Economic Governance ($0.400 \prec QEGI \leq 0.600$)	Poor Economic Governance ($QEGI \leq 0.400$)
Lesotho	Chile	Indonesia
Fiji	Nicaragua	Costa Rica
Jordan	Hungary	Moldova
Yemen, Rep.	Slovak Republic	Colombia
Maldives	Estonia	India
Swaziland	Mongolia	Papua New Guinea
Malaysia	Venezuela, RB	Uganda
Czech Republic	Grenada	Turkey
St. Vincent and the Grenadines	Azerbaijan	South Africa
Seychelles	Jamaica	Paraguay
Bulgaria	Trinidad and Tobago	Cote d'Ivoire
Thailand	Algeria	Kenya
	Croatia	Georgia
	China	Argentina
	Lithuania	Dominican Republic
	Poland	Guinea
	Albania	Madagascar
	Latvia	Ukraine
	Philippines	Burundi
	Mauritius	Mexico
	Nepal	Brazil
	Bolivia	Pakistan
	El Salvador	Ghana
	Sri Lanka	Bangladesh
	Peru	Russian Federation
	Morocco	Ecuador
	Vietnam	Cameroon
	Uruguay	Belarus
	Tunisia	
	Panama	
	Kazakhstan	

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[13] We do the ranking of each of the 11 variables included in QEGI separately, and then rank the aggregate score. The rank correlation of QEGI with this aggregate score is 0.890 (significant at % level). This is some sort of confirmation about the substantive nature of the QEGI values.

classifications. These regions are as follows, EAP (East Asia and Pacific, 9 countries in the sample), ECA (East Europe and Central Asia, 18 countries), MENA (Middle east and North Africa, 5 countries), SA (South Asia, 6 countries), SSA (Sub-Saharan Africa, 13 countries), and LAC (Latin American and Caribbean, 20 countries).

Then, we group the countries into three categories: good, fair and poor economic governance. Table 4.4 shows the categorisation of the countries in terms of their economic governance status. 12-countries are in the good governance category, 31- countries are in the fair governance category, and the other 28-countries fall in the poor economic governance category.

Table 4.5 illustrates how the status of economic governance is distributed among these six different regions. A look at this Table reveals that for EAP, ECA, MENA, and LAC region, the number of countries in the fair governance category is higher than the other two groups. SA and SSA region shows that the number of countries in the poor category is higher than the good and fair economic governance groups. This Table is some sort of an indication of the regional divergence in the performance level of economic governance.

Table 4.5: Distribution of QEGI according to six regions

	EAP	ECA	MENA	SA	SSA	LAC	Total (%)
Good QEGI	3	2	2	1	3	1	12(17)
Fair QEGI	4	10	3	2	1	11	31(44)
Poor QEGI	2	6	0	3	9	8	28(39)
# of countries	9	18	5	6	13	20	**71**

Notes: Classifications are based on Table 4.3

Causation from economic governance to economic performance

As described above, the causation from economic governance to income and development are now getting increasing attention in the literature. In this subsection, we present some results to show the relationship, if any, between economic governance and per capita income. Also, we explore the relationship of economic governance with social development outcomes, including the poverty level, health status, educational status and the HDI (a broader measure of socio-economic development of a country).

Before, we do a cross-country regression model analysis for per capita income, we present some scatter diagrams to show the preliminary indication of our hypothesis that good governance leads to improvements in social development and also to higher income level. The scatter diagram of QEGI and IMR shows a negative trend line, indicating with better governance, there is a decline in the IMR, leading to improvements in the health status. Similarly, the QEGI with Adult literacy rate scatter shows a positive trend. The scatter between QEGI and Poverty also show a negative trend. The better the country's economic governance, the more a country would experience a fall in the absolute level of poverty[14]. We also use the International Country Risk Guide (ICRG) ratings to evaluate the countries relative positions in terms of international investors perception of the country's risk level (composite risk rating includes, political, economic and financial component). The scatter diagram also indicates that with better economic governance, the countries face a lower risk (as the high index value of ICRG country implies lower level of risk). The scatter of per capita income and QEGI shows a clear positive associationship.

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[14] See Desai (2000) for conceptual discussion on poverty and governance relationship.

The UNDP's HDI is considered to be a yardstick of countries level of human development[15]. We use the HDI 2000 values for the countries, to see how the economic governance relates to this socio-economic dimension of the countries. Here, also we find overall positive trend between the two measures. This suggests, our preliminary hypothesis that with the better economic governance, the feedback to the income and social development is positive. (See Appendix Scatter Figures, Figure A.1-A.7).

Now, we ran a cross-country OLS regression for the set of 71-country sample. The basic cross-country regression model is given as,

$$Per\,capita\,Income(log\,of) = \alpha + \beta_1 QEGI + \beta_2 DSSA + \beta_3 DEAP + \beta_4 DlegBritish + \beta_5 DlegSocialist + \beta_6 DTransition + \varepsilon$$

Where the dependent variable is average annual per capita income (log of), for three years 1998-2000. Independent variables are QEGI (the measure of the quality of our economic governance), and we use some dummy variables in the model. These are the following, two of them are based on regions (EAP and SSA, value 1 if the country is in the region, and 0 otherwise), and the other two dummy variables are based on the origin of countries legal system. We use British and Socialist type of legal system in the analysis[16]. Finally, we have a dummy variable indicating if the countries are in transition economy category. In the estimated equation, α is intercept term, and ε is error term of the model. In this cross-country regression equation, we assume that the

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[15] See Nagar and Basu (2002) for more discussion on the HDI, and related refinement scheme for computing the human development index.
[16] Classification is done on the basis of the World Bank database.

Table 4.6:Effects of quality of economic governance on per capita income

(annual average, 1998-2000)

Explanatory variable	GDP per capita (Dependent variable)
QEGI	0.463**
	(0.206)
DSSA	-0.746**
	(0.291)
DEAP	-0.018
	(0.402)
DlegBritish	-0.567**
	(0.267)
DlegSocialist	-1.622**
	(0.639)
Dtransition	1.278*
	(0.682)
Intercept	7.740***
	(0.180)
# of countries	67
R^2	0.267

Notes: The estimated results are based on OLS. White heteroskedasticty consistent standard errors are presented in parentheses. ***-significant at 1%,** -significant at 5 % level,*- significant at 10 % level (2- tailed tests).

error term has zero mean, and variance σ^2. Here, in the OLS regression results, we are primarily interested in the statistical significance of the QEGI, β_1 coefficient. If the coefficient of QEGI were positive, then only we could establish a link that better economic governance leads to improvement in the per capita income level.

Table 4.6 documents a cross-country regression results on the basis of the OLS estimation. In the equation specification, we find that QEGI is positively (statistically significant) related to per capita income. This basically confirms our hypothesis and also confirms the existing literature, that with the improvement in the economic governance, the per capita income improves. Also, some of the dummy variables are statistically significant, and corroborating some sort of common perception[17]. The countries in the SSA would imply negative per capita income levels. Similarly, the

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[17] In the World Bank classification, there is no mention about the legal origin of Croatia, Czech, Slovak and Yemen. So, finally we have 67 observations in a cross-country regression analysis.

legal origin also has some feedback to the countries economic performance. Our results, both the graphical and a cross-country regression analysis tend to suggest that quality of economic governance, i.e. improving the institutional arrangement, is essential for better outcome in the economic performance level.

5. Conclusion

In this paper, we present a methodology to compute the quality of economic governance with the latent/unobservable component model. Then, we rank the countries in terms of three different categories of economic governance. We also group the countries in terms of six different regions. We have explored empirical cross-country relationship between economic governance and economic performance levels. We showed, with scatter diagrams, how the economic governance measure is related to per capita income levels, and also with the different economic development indicators. Then with an econometric model, we have shown the positive link between the economic governance with the (log of) per capita income for a sample of 71-country.

We need to be cautious about making any sweeping conclusions from the results obtained on the rankings of the countries. This study is preliminary and there is ample scope for refining the selection of indicators to estimate the QEGI values. Moreover, we believe that there should be a periodic monitoring of the QEGI to properly reflect on the progress of the individual countries. Also, one could argue for a two-way causality regarding economic progress and governance[18]. Perhaps, simultaneous model would show some sort of causal direction between governance and related economic development indicators. One could also specify a model in a

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[18] See Kaufmann and Kraay (2002).

simultaneous panel model framework to better understand the significance of the above study, both at the theoretical and empirical level.

Finally, the countries share different socio-economic, political, and cultural environment. Therefore, a cross-country regression is rather a weak attempt to show the institution and economic performance relationship. Only a detailed *country level* study could shed better light on this key matter, especially with regard to choices in public policies.

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APPENDIX

Table A.1 List of countries in the sample

Country list	Country list	Country list
Albania-eca	Ghana-ssa	Panama-lac
Algeria-mena	Grenada-lac	Papua New Guinea-eap
Argentina-lac	Guinea-ssa	Paraguay-lac
Azerbaijan-eca	Hungary-eca	Peru-lac
Bangladesh-sa	India-sa	Philippines-eap
Belarus-eca	Indonesia-eap	Poland-eca
Bolivia-lac	Jamaica-lac	Russian Federation-eca
Brazil-lac	Jordan-mena	Seychelles-ssa
Bulgaria-eca	Kazakhstan-eca	Slovak Republic-eca
Burundi-ssa	Kenya-ssa	South Africa-ssa
Cameroon-ssa	Latvia-eca	Sri Lanka-sa
Chile-lac	Lesotho-ssa	St. Vincent and the Grenadines-lac
China-eap	Lithuania-eca	Swaziland-ssa
Colombia-lac	Madagascar-ssa	Thailand-eap
Costa Rica-lac	Malaysia-eap	Trinidad and Tobago-lac
Cote d'Ivoire-ssa	Maldives-sa	Tunisia-mena
Croatia-eca	Mauritius-ssa	Turkey-eca
Czech Republic-eca	Mexico-lac	Uganda-ssa
Dominican Republic-lac	Moldova-eca	Ukraine-eca
Ecuador-lac	Mongolia-eap	Uruguay-lac
El Salvador-lac	Morocco-mena	Venezuela, RB-lac
Estonia-eca	Nepal-sa	Vietnam-eap
Fiji-eap	Nicaragua-lac	Yemen, Rep.-mena
Georgia-eca	Pakistan-sa	

Notes: country-regional codes

Figure A.1-A.7 Scatter diagram of QEGI and other variables

IMR

$y = -10.035x + 35.61$
$R^2 = 0.0393$

Adult Literacy Rate

$y = 4.9532x + 83.111$
$R^2 = 0.025$

Poverty

$$y = -2.0089x + 29.518$$
$$R^2 = 0.0062$$

ICRG

$$y = 7.3004x + 66.292$$
$$R^2 = 0.2216$$

28

Per capita income

$y = 0.3438x + 7.2934$
$R^2 = 0.0369$

HDI

$y = 0.0519x + 6958$
$R^2 = 0.0514$