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Comments welcome**

# **Does Governance Matter?**

## **Some Evidence from Indian States**

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### **Abstract**

This paper attempts to propose a methodology to combine different dimensions of governance indicators into a composite index. The governance index is computed as the weighted average of principal components of the standardized governance indicators, where weights are variances of successive principal components. Since the notion of good governance is multi-dimensional, it is conceptualised as a goal and as a process that accelerates growth, equity and human development potential. We therefore estimate the governance index on the basis of five indicators, such as crime rates, riots, industrial disputes and strikes, Gini index, and debt-income ratio. Then we propose to explore whether the quality of governance determines development outcomes such as life expectancy, literacy, infant mortality rate and per capita income (logarithms of), within the panel data model framework. The evidence from 16 major Indian states (from state/regional level) strongly suggests that better quality of governance leads to better development outcomes.

**KEY WORDS:** Governance, Development, Index, Panel Data

**JEL classification:** O1, N4, C0

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## **I.: Introduction:**

Over the years different factors have been stressed as being essential for development<sup>1</sup>. Currently, the importance of good governance is being emphasised by the international institutions (World Bank, IMF, UN, OECD, ADB and others). It is basically a multi-dimensional concept, and it is not that good governance was ignored earlier, but different aspects of governance have been stressed at different times depending on what were considered to be the major constraints to development. Furthermore, each country has their own culture, history, geography and economic and political structures, hence providing different opportunities. This would possibly mean different institutional arrangements and practices for each of the countries according to their specific needs. Yet, the notion of good governance should be conceptualised as a goal and as a process that accelerates growth, equity and human development potential for the people and the society.

In the 50s and 60s the role of the government in providing infrastructure, mainly physical infrastructure was stressed<sup>2</sup>. Simultaneously, they expanded their role to tackle the balance of payments problem because of a limited market access of the primary goods which developing countries exports to the rest of the world. Thus the governments sought to manage the exports of primary goods either to protect their exporters from price

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<sup>1</sup> See for more discussion on this , Hirschman (1958), Baran (1957), Nurkse (1961), Guha (1982), Streeten (1983), Sen (1988), UNDP HDIs and WB WDRs.

<sup>2</sup> World Development Report (1994) defines “economic infrastructure...includes services from: *public utilities*-power, telecommunications, piped water supply, sanitation and sewerage, solid waste collection and disposal, and piped gas; *public works*-roads and major dam and canal works for irrigation and drainage; *other transport sectors*-urban and interurban railways, urban transport, ports and waterways and airports”. Generally, the physical infrastructural services include public utilities like provision of electricity and gas, road and rail transport, irrigation, telecommunication, sanitation, safe drinking water, etc; and on the other hand social infrastructural services include education, health and medicare, environmental concerns, etc.

volatility or to extract revenues for investments. The eighties and nineties saw a turn in economic policy towards reducing import protection, reducing government's intervention in export marketing and the emergence of more liberalised economic policy across the board. Hence the newly integrated world economy has provided many challenges to the concept of good governance and development inter-linkage on a wider spectrum.

One aspect of good governance could be respect for human rights and democracy, freedom of free speech and of the press and appointed leaders, transparency of decision-making and the rule of law, in particular the elimination of corruption.

Perhaps more importantly there is another aspect to governance. There is an increasing realisation that because of asymmetric information and the problems of moral hazards and adverse selection, markets do not work on their own. There is need for government action to bring order to the market, whether it is to provide property rights or incentive compatible markets<sup>3</sup>.

Since good governance is a multifaceted concept, it can be examined along different dimensions. The ability to provide basic law and order (stressed everybody, particularly libertarians), the ability to provide social services to build up human capital (stressed by endogenous theorists), provide physical infrastructure (stressed by traditional growth theorists) or economic management are all within the framework of governance. We need to examine all of them in relation to each other.

Good governance for the World Bank is synonymous with the sound development management. According to UNDP (1997), the result of good governance is development that 'gives priority to poor, advances the cause of women, sustains the environment, and

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<sup>3</sup> See for example, Shleifer & Vishny (1993), Van Boven (1995), Mauro (1995), World Bank (1997), Fisman and Gati (1999), Knack and Keefer (1995,1997), Tanzi & Davoodi (1997), Ross (1997).

creates needed opportunities for employment and other livelihoods'. The ADB (1998) defines "governance as the manner in which power is exercised in the management of a country's social and economic resources for development. Put more simply, governance means the way those with powers use that power." Indeed this has motivated policy makers and researchers to examine the relationship between good governance and the outcomes of economic development, which is currently at the heart of all policy debates.

In this paper, we propose a methodology to construct a quality of governance index. We make an attempt to measure the different dimension of good governance. Moreover, for policy issues, we also examine the relationship between good governance and the development outcomes: life expectancy, literacy, infant mortality rate and per capita income (logarithms of). We illustrate our empirical results on the basis of four time points, i.e., the data relating to 1970s, 1980s, 1990s, and 1997-latest pooling cross sections at each of the time points for 16 major Indian states (**Annex 1**).

The present paper is organised as follows: Section II briefly reviews the governance literature. Section III provides the issue of choice of the indicators considered for the construction of the quality of good governance index (QGOI, henceforth) and describes the data based on 16 major Indian states, used in computing the index, along with the indicators of development to explore the possible relationship. Section IV describes the method of computation of QGOI. The results are discussed in Section V. The paper ends with concluding remarks in Section VI.

## **II.: Literature Review:**

Since early nineties, there has been a growing interest among the international institutions and more importantly among the developing countries to strengthen the efficiency of the institutional arrangements and practices in the economy<sup>4</sup>. It is believed that through all the institutional arrangements, the government should be able to efficiently deliver the resources to the public so as to improve well being of the people.

The World Bank (1992) in its report on ‘Governance and Development’ indicated about the urgent need to look comprehensively at the institutional environment in order to pursue a constant effort for all round development<sup>5</sup>.

The IMF in its Interim Committee meeting (1996), 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<sup>6</sup>. The IMF's involvement in bringing about good governance can be looked upon into following two spheres:

- Improving the management of public resources through covering public sector institutions (e.g., the treasury, central bank, public enterprises, civil service, and the official statistics function), including administrative procedures (e.g., expenditure control, budget management, and revenue collection); and

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<sup>4</sup> In recent years, the key element of reform is to correct the institutional bottleneck in the developing countries. The focus of this so-called Second-Generation reform is to highlight the role played by institutional development, particularly legal capacity building, in high-quality growth. See for more information [www.imf.org/external/pubs/ft/1999/reforms/index.htm](http://www.imf.org/external/pubs/ft/1999/reforms/index.htm)

<sup>5</sup> See also World Bank (1994); Picciotto (1995); Hansen (1996).

<sup>6</sup> The Interim Committee Declaration of September 29, 1996 on Partnership for Sustainable Global Growth, Washington. DC., IMF.

- Supporting the development and maintenance of as transparent and stable economic and regulatory environment conducive to efficient private sector activities (e.g., price systems, exchange and trade regime, and banking systems and their related regulations).

It has also been strongly urged that the developing countries must improve judiciary for better development outcome. Singh (1996) discussed the governance issue in the light of India's experience with reforms. The paper pointed out the need for more attention on institutional reforms, such as in the legal system and judiciary for obtaining better outcome through reform process in India.

In one of the earlier work on the issue of measurement of governance by combining different dimensions, was proposed by Huther and Shah (1998). They proposed 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 grouping the countries into good governance, fair governance and poor governance categories.

In an influential study, 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 is used to group the countries according to levels of their governance. Moreover, Kaufmann et al (1999b) 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. Then they examined the associationship 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 <sup>7</sup>.

In the next section, we discuss the different dimensions and data sources of the governance indicators employed to compute the QGOI. We also discuss the other indicators that we use to examine the relationship and impact of good governance on development outcomes.

### **III.: Data Sources and Measurement:**

In the computation of the QGOI, we have considered four different dimensions of governance. The index is supposed to capture some of the important issues on the basis of current thinking on the selectivity nature of governance indicators. However, in the present analysis, we pay special attention to the availability of consistent data of the indicators that we use for all the 16 major states since 1970s. Hence, we design the 'quality of governance index' on the basis of the following dimensions:

- *peace and stability*,
- *people's sensibility*,
- *social equality*, and
- *management of government*

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<sup>7</sup> See also for the relationship between governance and economic development, Rodrik (1997), Hall and Jones (1999), Chong and Calderon (2000), Kaufmann (2000); and for further reference see, Knack (1999) and Mello and Barenstein (2001). For survey on governance and economic performance, see Dethier (1999).

These four dimensions have therefore driven the choice of indicators in our present study for the 16 major Indian states. We consider two different indicators to focus the first dimension, viz., estimates of crime rates, and of riots. The estimates of industrial disputes and strikes are used to capture the second dimension of the 'quality of governance'. The measure of the Gini index is used to capture the extent of 'social equality' exists in the states. Finally, our measure of the government's efficiency in managing the economy as a whole is supposed to be identified by 'debt-sdp ratio'. In this paper, we measure the 'quality of governance index' as an inverse to the index value. Since, we consider all the five indicators for estimating QGOI inversely, a lower value of the index denotes a better governance outcome in all the 16 Indian states.

We now briefly describe the indicators and data sources of QGOI, as below:

➤ Estimates of Crime rates (**ECR**) (ratio):

This indicator estimates the total number of cases reported in each of the states on account of crimes including, murder, dacoity, robbery, burglary, theft and other types of crimes, like kidnapping, extortion etc. We deflate the total number of such cases with the total population figure of the states. We have obtained data from the Statistical Abstract of India. The data are for the years 1973, 1982, 1990, and 1997.

➤ Estimates of Riots (**ERI**) (ratio):

This indicator also highlights the violence and instability in the states. The estimation is an indication of the law and order condition and also the spirit of communal harmony in the respective states. Here also we have deflated the total number of riots reported in each states with the total population figures, and the data time points and the sources are the same as before.



➤ Estimates of Industrial Disputes and Strikes (**EIDS**) (ratio):

We believe that this indicator is a proxy for the workers' dissatisfaction towards the labour laws and other labour related policies that adversely affect their working conditions and livelihood. In this data, we deflate the estimates of the disputes and strikes by the total number of working population in the organised sectors for each of the time (1974, 1982, 1990, and 1997) points across 16 the states.

➤ Gini Index (**GI**) (percentage):

Gini index measures the extent of economic inequality existing in the economy. The higher the index value, the greater is the inequality in consumption expenditure in the state. Therefore, an egalitarian society would always strive to have policies to arrest the increase in the level of inequality in the society. As more inequality leads to several negative externalities in the economy, such as, increasing crime rates, violence, and other major problems, which hinder the well being of the society and economy. We consider, therefore, this as an important dimension in measuring the 'quality of governance'. We obtain the relevant data from a research paper by Jha, and are related for the years 1971, 1978, 1991, and 1997.

➤ Debt-SDP Ratio (**DSR**) (percentage):

We believe this indicator to focus on how the state governments are functioning in efficiently delivering the public goods. As the revenue of the governments is directed toward capacity creation in the economy for a source of more favourable investment potential in future, but if a state government runs out of financial resources, the choices are then limited either to borrowing from the central government or from the markets and institutions. If the loan amount increases, a larger share of state governments revenue is

then used on an account for debt servicing. Hence, the state governments attempt to limit the amount for debt serving, so that it could utilise the resources for developmental purposes. Once the state governments fails to do so, then this leads to an increase in the debt-sdp ratio, which would imply that the state governments are not managing the economy and its resources efficiently. However, we must not forget several other historical and external factors that are quite important in differential trend in the pattern of debt-sdp ratio across the Indian states. Broadly speaking, perhaps the increase in debt-sdp ratio would pose some unfavourable conditionality in allocating resources for developmental activities both in terms of efficiency and optimality. We have this data for debt-sdp ratio for the years 1974-75, 1981-82, 1991-92, and 1996-97, and are calculated on the basis of the data as obtained from the state budget documents of all 16 states.

We have separately used the data on per capita income (i.e. the state domestic product: SDP), and also have made use of data on literacy and infant mortality rate, life expectancy and population density for these states in order to explore the relationship among them in the present paper.

We now briefly describe the following data as below:

➤ Per Capita Net State Domestic Product (PCNSDP) (in Rupees):

The measure of per capita income is widely used as a key indicator of the level of growth in the economy. Instead of taking PCNSDP for a single year, we have considered three-year averages for each period. The data on 1970s, relates to the average of PCNSDP for 1970-71, 1971-72, 1972-73; for the 1980s, it relates to 1980-81, 1981-82, 1982-83; for the 1990s, we have data for 1990-91, 1991-92, 1992-93 average; and for the latest period, we take average for the years 1995-96 and 1996-97. However, the data in real terms for

some years, is in 1970-71 prices, and for other years at 1980-81 prices. We have converted the PCNSDP for all the years of 16 States to 1970-71 prices, by using conversion factor for 1980-81 for which PCNSDP data are available at both the prices. The data are obtained from CSO and also from EPW Research Foundation and Chandhok & Group. In the estimation we use logarithms of per capita state domestic product (denoted as LY).

➤ Literacy Rate (**LIT**) (percent):

In the Census of India (2001), a person is treated as literate, aged 7 years and above who can both read and write with understanding any language (for 1971, the literate person age related to 5 years and above). This indicator is supposed to show the availability of human resources in each state, and is considered to be an important factor for several positive externalities in the economy. We use the literacy data for the census years, i.e., 1971, 1981, 1991, and 2001.

➤ Life Expectancy at Birth (**LE**) (years):

LE indicates overall economic and social development of the states. We use data for the years 1971, 1981, 1991, and 1995. The sources of the data are the Statistical Abstract of India, and CMIE respectively.

➤ Infant Mortality Rate (**IMR**) (per 1000 live births):

This is supposed to indicate the health services availability in the states. We obtain the data on this indicator from the Census of India, and CMIE for the years 1971, 1981, 1991, and 1997, respectively.

➤ Population Density (**PODE**) (total number of population in per sq. km area):

This indicator is meant to show the population pressure in each of the 16 states. It is believed that with the increasing population density in the states, there is perhaps an increasing difficulty in providing the public services efficiently. Perhaps this would possibly lead to an outbreak of social unrests, and other forms of crime, violence, and different negative externalities. We obtain this data for 1971, 1981, 1991 and 2001 from CMIE and Census of India (**Annex 2**).

As we have mentioned that the literature on the governance highlights the importance of rule of law as an important indicator of the 'quality of governance index'. The average disposal rate of the cases pending per courts could be a relevant proxy on this account. Unfortunately, due to lack of such data for all the different time points since 1970s for all these 16 major Indian states, our measure therefore could not incorporate the rule of law dimension in the computation of QGOI<sup>8</sup>. The detailed computational methodology for the 'quality of governance index' (QGOI) is provided in the next section.

#### **IV.: Computation of Quality of Governance Index (QGOI):**

We now briefly describe the model to compute the 'quality of governance index':

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

$$\text{Let } QGOI = \alpha + \beta_1 X_1 + \dots + \beta_k X_k + e$$

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<sup>8</sup> The QGOI should ideally also include the parameters like corruption indices, judicial efficiency, and accountability of the governments, bureaucratic efficiency, among many of the other dimensions. However, our computation of QGOI is incapable to incorporate all these important dimensions due to lack of data since 1970s for all these 16 states.

where  $X_1, X_2, \dots, X_K$  is set of indicators that are used to capture the 'quality of governance index', so that the total variation in the QGOI is composed of two orthogonal parts: a) variation due to set of indicators, and b) variation due to error.

Now if the model is well specified, including adequate number of indicators, so that the mean of the probability distribution of  $e$  is zero, ( $Ee = 0$ ), and error variance is small relative to the total variance of the latent variable QGOI. We can reasonably assume that the total variation in QGOI is largely explained by the variation in the indicator variables included for the computation of this composite index.

However, in the 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<sup>9</sup>.

To compute PCs, we proceed as follows:

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

$$X_k = \frac{X_k - \min X_k}{\max X_k - \min X_k},$$

where maximum  $X_k$  and minimum  $X_k$ , are the values of  $X_k$  for  $k=1,2,\dots,16$

(number of states in the sample)

- Then solve the determinantal equation

$$|R - \lambda I| = 0 \text{ for } \lambda$$

where  $R$  is a  $K \times K$  matrix ;this provides a  $K^{th}$  degree polynomial equation in  $\lambda$  and hence  $K$  roots.

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<sup>9</sup> For further theoretical details see Anderson (1984).

These roots are called eigenvalues of R. Let us arrange  $\lambda$  in descending order of magnitude, as

$$\lambda_1 > \lambda_2 > \dots > \lambda_k$$

- o corresponding to each value of  $\lambda$ , we solve the matrix equation

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

$$\alpha' \alpha = 1.$$

Let us write the characteristic vectors as

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

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

- o The principal components are obtained as

$$\left. \begin{aligned} P_1 &= \alpha_{11}X_1 + \dots + \alpha_{1k}X_k \\ P_2 &= \alpha_{21}X_1 + \dots + \alpha_{2k}X_k \\ &\vdots \\ P_k &= \alpha_{k1}X_1 + \dots + \alpha_{kk}X_k \end{aligned} \right\}$$

Thus we compute all these PCs using elements of successive eigenvectors corresponding

to eigenvalues,  $\lambda_1, \lambda_2, \dots, \lambda_k$ , respectively.

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

$$QGOI = \frac{P_1\lambda_1 + P_2\lambda_2 + \dots + P_k\lambda_k}{\lambda_1 + \lambda_2 + \dots + \lambda_k}$$

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

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

Now 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 ( $\lambda_2$ ) are attached to this, and so on<sup>10</sup>.

- Finally, we normalise the QGOI value by the following procedure,

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

where  $k= 1, 2, \dots, 16$  ( States of India) and then re-scaled the index value from 0 to 10 where 0 best performing state and 10 worst performing state in the sample of 16 states of India.

We have categorised the 16 major states over the entire study period into three categories on the basis of their QGOI value: the good governance state category if the QGOI value is equal or less than 5.00 (on a 0 to 10 scale), fair governance state category, if the index value is greater than 5.00, but equal or less than 7.00, and poor governance state category, if the values are greater than 7.00. Thus, on the basis of the QGOI value, we classify the state's status on the quality of governance level. We have divided the states on the basis of the QGOI so that we can analyse the trend of their governance level over the entire study period.

## **V.: Analysis of the Empirical Results:**

### **V.a :The QGOI Results:**

We illustrate here the results on the basis of the QGOI for the states and also the ranking over the different periods. Then in the next part, we describe the relationship

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<sup>10</sup> The methodology and computation of QGOI is heavily dependent on the earlier researches such as, Nagar (1999), Nagar and Rehman (1999), Nagar and Basu (2001a,b and 2002).

between good governance and development outcomes. Table 1 presents the summary results of the all the different indicators: average, coefficient of variation (%), and range (maximum minus minimum).

Now, we discuss the results of the quality of governance index in the entire period to see the trend and performance level of the 16 major states in the present analysis.

➤ 1970s: The status of the states:

The analysis of Table 2 indicates the classification of the states on the basis of QGOI. We observe that Himachal Pradesh is the best performing state according to the quality of governance index, and is followed by Punjab, Haryana, Assam, and Gujarat; whereas Tamil Nadu, Uttar Pradesh, West Bengal, Kerala and Andhra Pradesh are the states having the poor record in terms of quality of good governance.

Table 3 reports the status of the states in the three different categories. We notice that during this period, there are three states that are in the ‘good governance’ category; two states in the ‘fair governance’ category, and eleven states are in the ‘poor governance’ category.

➤ 1980s: The status of the states:

The result shows that during this period, Punjab ranked the top in the list, and is followed by Himachal Pradesh, Assam, Haryana, and Rajasthan. On the other hand, Maharashtra ranked at the bottom of the list, and is followed by Tamil Nadu, Bihar, Uttar Pradesh, and Madhya Pradesh (Table 2).

However, the number of states in the ‘good governance’ category has increased to five, three states are in the ‘fair governance’ category, while the remaining eight states are in the ‘poor governance’ category (Table 3).



➤ 1990s: The status of the states:

In this period, we observe that Punjab tops the list again, and is followed by Andhra Pradesh, Haryana, Himachal Pradesh, and Orissa. A closer look at the ranking of the states, show that Assam has slipped down quite sharply during this period and Orissa has moved up into the top 5 states. Similarly, Uttar Pradesh remained the most poorly governed state in India, and is followed by Bihar, Madhya Pradesh, Kerela and Assam.

Table 3 shows four states are in the category of ‘ good governance’ and three states are the in ‘fair governance’ category, whereas nine states are in the ‘poor governance’ category.

➤ 1997-latest: The status of the states:

The situation remained generally unchanged, as during the current period Assam tops the list, and is followed by Himachal Pradesh, Punjab, Orissa, and West Bengal. The most notable change here is that of West Bengal as for the first time the state has entered in the top 5 best performing states in terms of quality of governance. The result also indicates that the situation in Bihar is getting worsen day by day, and is followed by Andhra Pradesh (notable change during the period), Maharashtra (slipped down into 7 ranks during the period), Tamil Nadu, and Kerela. But another remarkable feature in the period is that of Uttar Pradesh, which has moved up to rank 6 during the last couple of years (Table 2).

The situation did improve after 1990s, as the number of states in the ‘good governance’ category are now at six, three states are in the ‘fair governance’ category, and rest seven states are in the ‘poor governance’ category.

This overall better performance, especially after the nineties, in terms of quality of governance could be attributed to the India's new economic reform policies since 1991. After India has embarked upon the path of reforms, there has been a sea change in many aspects of the society and economy, both at the national and sub-national level policies. The governments have undertaken several measures to reduce different bottlenecks that used to undermine the development potential, such as 'license-raj', rampant corruption, etc. These reform measures have actually started paying-off its positive impacts by now in the economy as a whole.

We then have made an attempt to see whether the ranking of the states by QGOI has changed over the study period. The rank correlation shows that the ranking of the states over the period has changed a bit, specifically with respect to few states (Table 4). The rank correlations between the 1970s to the rest of the three periods are in between 0.500 to 0.694. The rank correlation in between 1990s to 1997- has shown remarkably low value at 0.285. This, result indicates that there has been a change among the ranking of the states during the last three decades of our present study, which basically corroborates to our earlier conclusion about the trend in the performance level of the states.

States such as Punjab, Himachal Pradesh and Haryana (except for 1997), have always been in the ‘good governance’ category (Table 3). On the other hand, Bihar,

Kerala, Tamil Nadu and Uttar Pradesh are the states that have always been in the 'poor governance' state category.

A closer look at the table shows that Assam has been doing well in the governance, except for the 1990s, when it slipped down to 'poor governance' category state, perhaps because of the internal political and insurgency problems that rocked the state during nineties. Gujarat and Karnataka are the states that have shown ups and downs during the study period. Orissa has constantly been improving, as it was in the 'poor governance' category in the 1970s, and later it moved up to 'fair governance' category, and in the latest period, the state is now in the 'good governance' category.

Table 3, also indicates that Madhya Pradesh (except for the 1997-) and Maharashtra (except for the 1990s) are the states that have been in the 'poor governance' category. Whereas in Rajasthan, the state was in the 'poor governance' category state in 1970s, then it moved up to 'good governance' category, but in the 1990s again in the 'poor governance' category, and in the latest period it is in the 'good governance' category state. The status of quality of governance in the West Bengal has been quite fluctuating in the study period as well. As in the 1970s, it was in the 'poor governance' category, moved up to 'fair governance' category in the 1980s. For the latest period, the state is now in the 'good governance' category, before it slipped down to 'poor governance' category in 1990s which could be the result of deterioration of centre-state relationship and few internal problems: both in terms of political and economic sphere.

However, we must note that the stability of the 'Left Front' coalition governments in the state of West Bengal for the last two decades has its imprints in this

regard, as we see that the institutional arrangements have become better, and also because of the different developmental programmes at the rural grass root level, there has been a lower level of the overall social unrest , and increased level of economic and social well being .

This analysis indicates the changes in the ‘quality of governance’ among the states over the last three decades. The result also suggests that the number of states in the ‘good governance’ index category has doubled from three (viz., Haryana, Himachal pradesh, and Punjab) in the 1970s to six (viz., Assam, Himachal Pradesh, Orissa, Punjab, Rajasthan, and West Bengal) for the latest period (Table 3).

Now we investigate as to what extent the good governance could influence the development outcomes of the states. As mentioned above, there are couple of studies that have empirically examined a strong positive relationship between good governance and development outcome. In the next part of this section, we examine the relationship between governance and the development outcome.

#### **V. b: The Regression Results:**

We pool the data for 16 major Indian states with that of the four time points, and then estimate the result. The pooled method is believed to provide more efficient estimation and inference rather than either cross section or time series analysis.

We initially, look at the pooled least square model of estimation. The pooled model contains N units of observations (such as 'state' in the present analysis), over the T time points (four different time points in present case). The purpose is to estimate the following panel model:

$$Y^{PO}_{it} = \alpha + \beta'X_{it} + e_{it} \dots\dots\dots(1)$$

where  $i=1,2,\dots,N$  and  $t=1,2,\dots,T$ , by assumption the  $e_{it}$  are *iid* over  $i$  and  $t$ , i.e.,

$$E(e_{it}) = 0 \text{ and } \text{var}(e_{it}) = \sigma_e^2.$$

The vector  $X_{it}$  contains  $K$  regressors (exogenous/independent variables), not including constant term. We assume that there is a presence of cross sectional heteroskedasticity in the model, therefore we use Generalised Least Square (GLS) to obtain unbiased estimator. Then we estimate with the fixed effects model that allows us to take into consideration the unobservable differences in the dependent variable specific to individual states. As, in this specification all the intercepts differ across cross section units (16 states), i.e., the differences across cross sectional units are captured in differences in the constant term reflecting parametric shifts of the model for these different units.

In this Fixed Effect estimation model, specification for the individual state specific effects is given by:

$$y^{FE}_{it} = \alpha_i + \beta'X_{it} + e_{it} \dots\dots\dots(2)$$

$$i = 1, 2, \dots, N, t = 1, 2, \dots, T$$

where  $\beta'$  is  $1 \times k$  vector of constants and  $\alpha_i$  is a  $1 \times 1$  scalar constant representing effects of those variable peculiar to the  $i^{th}$  individual. The error term  $e_{it}$  represents the effect of omitted variable that are peculiar to both the individual periods and time periods.

We assume that  $e_{it}$  can be characterised by *iid* random variable with mean zero and variable  $\sigma_e^2$ .

We now discuss the estimation results on the basis of the two different model specifications noted above, as shown below:

$$Y_{it}^{PO} = \alpha + \beta^{QGOI} QGOI_{it} + \beta^{PODE} PODE_{it} + e_{it} \dots\dots\dots(3)$$

where PO implies the pooled least squares regressions, and  $i=1, \dots, 16$  (states),  $t=1970s, 1980s, 1990s, \text{ and } 1997-$  (four time points), and the Y (dependent variable) takes the variables LE, LIT, IMR and LY( logarithms of per capita income), respectively while keeping the independent variables constant.

From the equation (2), the specification of the model is rewritten, as follows:

$$Y_{it}^{FE} = \alpha_i + \beta^{QGOI} QGOI_{it} + \beta^{PODE} PODE_{it} + e_{it} \dots\dots\dots(4)$$

where FE denotes fixed effects regression model.

We estimate the equation (3) and (4) on the basis of different dependent variables: the development outcomes, given the QGOI and PODE. The basic hypothesis to be tested is whether all the coefficients are individually equal to zero or not (t-test).

The estimated results of equation (3), are reported in Table 5, shows that with better governance, all the development outcomes improves significantly. More specifically, the QGOI is statistically significant for LE, LIT, IMR and LY. Moreover,

the PODE is also having the expected sign, and is statistically significant in all the four different specifications of the dependent variable.

The table also presents the  $\text{adj.R}^2$  value which indicates the overall goodness of fit of our estimated model, with values such as 0.872, 0.420, 0.980, and 0.932 respectively, for the different specifications of the dependent variables.

Hence, we could conclude that with this pooled estimation, the better governance leads to a better development outcomes in terms of all the different specifications of dependent variables: LE, LIT, IMR and LY.

We now present the result on the basis of the equation (4). Table 6 presents the pooled regression results, however in this case the constant term is now decomposed into 16 state specific dummy variables (not reported in the table). This state specific effect is also statistically significant. The close look at the Table 6 indicates that here our estimation results also tend to show that with the better governance there is better development outcome, except for the IMR, which is not statistically significant.

Here also PODE shows that the coefficients are of expected sign as before and are statistically significant. We observe that our result with this specification clearly satisfies the goodness of fit criteria: as the  $\text{adj.R}^2$  is quite high in all the model specifications. This panel model again clearly shows that governance really matters. The better quality of governance leads to better development outcomes.

## **VI. Concluding Remarks:**

In this paper, we have two basic objectives. In the first place, we propose a methodology to compute the 'quality of governance index' (QGOI) on the basis of five different indicators for 16 major Indian states. Next, we examine the relationship between the governance and the development outcomes.

The indicators that we have chosen are based on the multi-faceted notion of governance, and also the data that are obtained consistently over the last three decades. The computation of the governance index allows us to rank the 16 states during the different time periods. It also indicates the overall performance trend of the states as discussed in the results above.

Secondly, our findings also highlight the need for better governance, i.e., the more efficient institutional arrangements, in order to bring about better developmental outcomes in the economy. Hence, with our empirical evidence we provide a strong positive relationship between good governance and development outcomes. This proves our basic assertion that the quality of governance matters for the well being of the people, both at the national and sub-national level.

Nonetheless our paper has several shortcomings. Firstly, we have taken only a limited number of indicators to estimate the QGOI, and only four data points. Secondly, we believe that there is a need to combine different development outcomes into a single



index, and then examine together with QGOI for estimation<sup>11</sup>. Perhaps, we would undertake these issues in our future research.

We hope these preliminary results would throw some light into the ongoing research on governance and development literature. Our empirical evidence should be regarded as an initial attempt to examine the issue of measurement of quality of governance and that of its relationship with the development outcomes on the basis of the evidence from 16 major Indian States (from state/regional level).

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<sup>11</sup> See, for example, Agarwal and Basu (2001) for the computation of composite State Well being Index (SWBI) and the SWBI is based on fourteen different indicators related to the socio-economic condition of the major Indian states.

**Table 1:****Summary results of 10 indicators in 16 Indian states**

Indicator	Average				Coefficient of Variation (%)				Range( Max-Min)			
	1970s	1980s	1990s	1997-	1970s	1980s	1990s	1997-	1970s	1980s	1990s	1997-
/Years												
ECR+	59466.68	74079.93	89463.31	95526.56	87.48	68.48	67.27	60.91	203604.00	159734.00	197001	191459
ERI*	4462.06	6452.25	6262.75	5631.56	94.83	72.40	81.57	93.72	13624.00	14645.00	16893.00	21554.00
EIDS	12.52	12.52	7.50	4.69	65.03	65.03	86.72	100.07	29.22	29.22	27.32	18.21
GI	28.57	32.39	28.04	28.37	16.00	15.48	9.52	11.81	18.48	18.75	8.86	12.43
DSR	10.78	18.01	13.29	12.75	43.50	51.26	59.34	77.53	15.93	25.47	25.68	32.17
PCNSDP	679	1727	1605	1874	26.77	32.55	40.20	44.42	713	1962	2058	2860
LIT	31	46	55	66	33	28	24	18	41	52	52	44
IMR	118	99	74	66	25	30	34	31	109	113	108	82
LE	47	59	61	68	9	10	8	14	13	20	18	43
PODE	228.38	281.81	337.17	431.19	62.11	60.37	60.86	60.46	487	578	671	797

**Note:**

+ECR and \*ERI indicate the total number of reported cases taking all the 16 major Indian states.

**Table 2:****Quality of Governance Index (QGOI) and Rankings statewise**

States	Quality of Governance Index (normalised)				QGOI: Rankings			
	1970s	1980s	1990s	1997-	1970s	1980s	1990s	1997-
AP	8.55	7.25	2.50	9.88	5	8	15	2
AS	5.07	2.68	8.42	0.00	13	14	5	16
BI	7.54	9.44	9.67	10.00	10	3	2	1
GU	5.64	7.62	6.62	7.38	12	6	11	7
HR	3.84	2.71	2.91	5.79	14	13	14	10
HI	0.00	1.75	3.22	0.21	16	15	13	15
KA	7.19	5.77	7.06	6.23	11	11	9	9
KE	8.90	7.49	9.14	7.97	4	7	4	5
MP	8.01	7.80	9.43	6.48	8	5	3	8
MA	8.40	10.00	6.83	8.91	6	1	10	3
OR	8.00	5.78	6.57	3.77	9	10	12	13
PU	3.81	0.00	0.00	0.52	15	16	16	14
RA	8.30	4.37	7.15	4.24	7	12	8	11
TN	10.00	9.82	7.73	8.03	1	2	7	4
UP	9.53	7.92	10.00	7.82	2	4	1	6
WB	9.13	6.91	8.04	4.01	3	9	6	12

**Note:**

Rank 1 means the worst in terms of QGOI, and Rank 16 means the best in terms QGOI.

**Table 3:**  
**Status of the 16 states according to QGOI**

States/ Periods	1970s			1980s			1990s			1997-		
	GG	FG	PG	GG	FG	PG	GG	FG	PG	GG	FG	PG
AP			↔			√	↔					↔
AS		√		√						↔	↔	
BI			√			√				↔		↔
GU		√				√		√				↔
HR	↔			√			↔					↔
HI	↔			√			√				↔	
KA			√		√					↔		↔
KE			√			√				↔		↔
MP			√			√		√		↔		↔
MA			√			√		↔	√			↔
OR			√		√			√			↔	
PU	↔			√			↔				↔	
RA			√	√						↔	↔	
TN			√			√				↔		↔
UP			√			√				↔		↔
WB			√		√					↔	↔	

**Note:** Classification is based on Table 2

The states are grouped into three different categories. These are,

GG: Good Governance category, FG: Fair Governance category, PG: Poor Governance category.

**Table 4:****Rank correlation coefficients of QGOI**

Period/ correlation	1970s	1980s	1990s	1997-
<b>1970s</b>	1.000			
<b>1980s</b>	0.694**	1.000		
<b>1990s</b>	0.500*	0.526*	1.000	
<b>1997</b>	0.568*	0.844**	0.285	1.000

Note: (\*) & (\*\*): the coefficients are statistically significant at 5% and 1% levels respectively.

**Table 5:**  
**Panel regression estimation results**

Independent Variable	Dependent Variable			
	LE	LIT	IMR	LY
	$\beta$	$\beta$	$\beta$	$\beta$
Constant	57.494*	42.259*	4.645*	7.577*
	(23.605)	(9.706)	(58.510)	(59.317)
QGOI	-0.878*	-1.220*	0.029*	-0.095*
	(3.344)	(2.589)	(4.098)	(5.404)
PODE	0.019*	0.046*	-0.013*	0.009*
	(3.615)	(5.053)	(5.987)	(5.388)
No. of Obs.	64	64	64	64
No. of States	16	16	16	16
No. of time points	4	4	4	4
$adj.R^2$	0.872	0.420	0.980	0.932

**Note:**

GLS estimation is used to obtain the  $\beta$ , assuming same slope and intercept for all the cross section units and White heteroskedasticity consistent standard errors (s.e).  $|t|$  statistics are in the parenthesis.

(\*): Coefficients are significant at 5% level.

**Table 6:**  
**Panel regression estimation results**

Independent Variable	Dependent Variable			
	LE	LIT	IMR	LY
	$\beta$	$\beta$	$\beta$	$\beta$
QGOI	-0.654*	-0.829**	0.004	-0.042**
	(3.694)	(1.867)	(0.793)	(1.897)
PODE	0.064*	0.113*	-0.002*	0.003*
	(13.563)	(13.401)	(12.199)	(7.301)
State specific effects	Significant	Significant	Significant	Significant
No. of Obs.	64	64	64	64
No. of States	16	16	16	16
No. of time points	4	4	4	4
$adj.R^2$	0.971	0.937	0.995	0.973

**Note:**

GLS estimation is used to obtain the  $\beta$ , assuming different intercepts for the cross section units and White heteroskedasticity consistent standard errors (s.e).  $|t|$  statistics are in the parenthesis.

(\*) & (\*\*): Coefficients are significant at 5% and 10 % levels respectively.

**Annex 1:****The Indian states and Union Territories**

States (Sample)	Code	States (not in sample)	UTs (not in sample)
Andhra Pradesh(S)	AP	Arunachal Pradesh( NE)	Andaman & Nicobar Island (E)
Assam (NE)	AS	Goa(S)	Chandigarh(N)
Bihar (E)	BI	Jammu & Kashmir (N)	Dadra & Nagar Haveli(W)
Gujarat (W)	GU	Manipur( NE)	Daman & Diu(W)
Haryana (N)	HR	Meghalaya (NE)	Delhi( N)
Himachal Pradesh(N)	HI	Mizoram( NE)	Lakshadweep(S)
Karnataka (S)	KA	Nagaland (NE)	Pondichery(S)
Kerala(S)	KE	Sikkim(E)	
Madhya Pradesh( c )	MP	Tripura NE)	
Maharashtra( W)	MA	Chhatishgarh( c )	
Orissa( E)	OR	Uttaranchal(c)	
Punjab( N)	PU	Jharkhand(c)	
Rajasthan(N)	RA		
Tamil Nadu(S)	TN		
Uttar Pradesh(c )	UP		
West Bengal(E)	WB		

**Note:**

Presently there are 28 States and 7 UTs in India. In 1956 (States Reorganisation Act), there were 14 states and 5 UTs only. Then, new states were created by the subdivision of older ones in 1960 & 1966, and some UTs have been converted into States. However, in this study, we only confine our study to 16 States of India, since 1970s. It may be noted that more than 95 % population of India are in these 16 major Indian states. States/UTs (.) where, S= Southern, N= Northern, W= Western, E= Eastern, NE= NorthEastern, C= Central region of India.



**Annex 2:****The Data sources and measurements of indicators**

Indicators	Units	Code	Sources
Estimates of Crime Rates	(ratio)	ECR	Statistical Abstract of India (various issues)
Estimates of Riots	(ratio)	ERI	Statistical Abstract of India (various issues)
Estimates of Industrial Disputes and Strikes	(ratio)	EIDS	Statistical Abstract of India (various issues)
Gini Index	( percent)	GI	Jha, 2000
Debt-SDP Ratio	(percent)	DSR	State Governments Budget Documents (respective states and corresponding years)
Population Density	( per sq .km)	PODE	CMIE (various issues), Census
Per Capita State Domestic Product	(Rs.)	PCNSDP	CSO (various issues), EPW Research Foundation, and Chandok Group
Life Expectancy at Birth	(years)	LE	Statistical Abstract of India and CMIE (various issues)
Literacy Rates	(percent)	LIT	Census of India, 1971, 1981, 1991, 2001
Infant Mortality Rate	(per 1000 live births)	IMR	Census of India and CMIE (various issues)

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