

# Does Institutions effect growth in Pakistan? An Empirical investigation

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28. December 2009

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**Abstract**

*This paper presents an index of institutionalized social technologies for Pakistan, covering its two main dimensions namely Risk reducing technologies and Anti Rent seeking technologies and in turn covers several social, institutional, political and economic aspects. It is also analyzed empirically whether the overall index as well as sub-indexes constructed to measure the single dimensions affects economic growth. The results show that over all, institutions promote growth in long run for Pakistan. . Therefore for a policy implication, success of any policy could be influenced by the soundness of institutions.*

## 1. Introduction

Despite of the fact the role of institutions in shaping economic history has given significant importance but the empirical literature focusing on the concept of institutions is not adequate in social sciences [3]. The contributors to the voluminous descriptive literature on institutions are, Olson (1982), Baumol (1990), North (1990). They defines institutions as the rules of the game in a society or, more formally, "the humanly devised constraints that shape human interaction". These rules of the game can be in the form of formal institutions like laws and regulations or informal ones which assimilated to culture or social capital (Tabellini 2005, Putnam 1993). Some institutions lowers transaction cost thereby result in innovation and productivity whereas other institutional features impedes information flow, raising information costs and eroding the gains from information, and limits the entrepreneurial activity. Examples of the institutions that stunt economic growth include government, police,

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[3] For detail survey of varied meanings of institutions in political science, see Hall and Taylor (1994) or Powell and DiMaggio (1991) for sociological perspective.

court corruption, excessive taxation and regulation, unstable inconsistent monetary and fiscal policy. (Frye and Shleifer, 1997; Johnson, McMillan, Woodruff, 1999, 2000; Gwartney, Holcombe and Lawson, 1998, 1999; Johnson, Kaufmann, Zoido-Lobaton, 1998; Shleifer and Vishney, 1993, 1994; Soto, 1989, 2000).

The relationship between economic performance and the quality of domestic institutions has emerged recently as a major subject of interest. The literature shows that the higher the quality of domestic institutions the better the effects on the Human development and growth of a country. The causality between institutions and economic performance is also important issue and studies shows better institutions leads to a higher income rather than causation being in the opposite direction. However most of the empirical evidence about the relationship between institutions and growth are based on cross-sectional and cross-country analysis. Quite apart from general methodological flaws relating to model specification and econometric procedure, there are two fundamental limitations that make results from any cross-country study on the subject rather dubious. First, cross-country regression analysis is based on the implicit assumption of "homogeneity" in the observed relationship across countries. This is very restrictive assumption. Secondly, given vast difference among countries with respect to nature and quality of data, cross-country comparison is fraught with danger. These considerations point a need for undertaking econometric analysis of individual countries over time in order to build a sound empirical foundation for informing the policy debate. Furthermore, no attempt to our knowledge has yet been made in this direction for Pakistan. This paper tries to contribute to the literature in examining the effects of several dimensions of institutions on growth empirically for Pakistan. Since many of these dimensions are highly correlated, it is impossible to include them all individually in one regression. Therefore, the paper develops an index covering its most important aspects. To measure these dimensions, 12 variables have been combined to two subindexes using an

objective statistical method. The sub-indexes are in turn aggregated into one single index of institutions. Several other studies attempted to aggregate institutions but this aggregation is based on the institutions' relative importance in economic performance as their authors' sees it, this clearly lacks proper theoretical bases. In this study we tried to aggregate variables to judge Pakistan's institutional quality in a proper theoretical framework.

We take our queue from theoretical framework set by Douglass North (1981, pp. 20-27). Who on explaining the roles of institutions, proposes two theories, a "Contract theory" of the state and a "Predatory theory" of the state. Accordingly, in this study, we attempted to explore these roles through the notion of institutionalized social technologies. The term "social technologies" involve patterned human interaction rather than physical engineering, also has been put forth by (North and Wallis 1994; Boserup 1996 and Day and Walter 1987). Nelson and Sampat (2001) proposed, not all social technologies are institutions, but rather only those that have become a standard and expected thing to do, given the objectives and the setting. Institutionalized social technologies define low transaction cost ways of doing things that involve human interaction. Hence in effectively institutionalized social technologies, individuals capture the social returns to their actions as private returns North and Thomas (1973). It protects the output of individual productive units from diversion and also resolves the problem of asymmetric information as it develop mutual trust among agents. Whereas ineffective institutionalized social technology will not only increase the risk but also divert economic agents from innovative activities to seeking rents. Accordingly Our index of institutionalized social technologies is divided into Risk reducing technologies and Anti Rent seeking technologies.

Paper is organized as follows section 1 introduction, section 2 covers review of literature, section 3 covers methodology and rational for index, section 4 Empirical estimates, Section 5 Analysis and Results and Section 6 gives conclusions and recommendations.

## 2. Review of Literature

The Contract theory literature, starting with Coase (1937, 1960) and Williamson (1975, 1985), links the efficiency of organizations and societies to what type of contracts can be written and enforced, and thus underscores the importance of contracting institutions (see also Grossman and Hart 1986; Hart and Moore 1990; and Hart 1995). In contrast, other authors advocating predatory theory, emphasize the importance of private property rights, especially their protection against expropriation (see, among others, Jones, 1981; De Long and Shleifer, 1993, or Olson 2000). Concept of institutions as social technologies is consonant with the notion that institutions are "the rules of the game". Nelson and Sampat (2001) proposed that particular social technologies become institutionalized through different mechanisms and are sustained through different structures. Pelikan (2003), Institutionalized social technology are those rule routines(technology) that are imposed by society or government through laws, norms, expectations, governing structures and mechanisms, customary modes of transacting and interacting, and converted into rule constraints. Nelson (2007) point out "Societies clearly have a degree of control over institutions like the formal structure of laws, and formal organizational designs and designated authority relationships". Baumol (1990) pointed out information asymmetry through rent seeking or organized crime is curbed through strong institutions--so only venue left for competition and dominance is through innovation. Hence in the setting of effective enforcement, these asymmetries will lead to innovation as the only venue left to earn information rents.

First component in our index of institutional technologies is Risk reducing technologies. Increased risk divert resources from productive activities to protecting there rights. Hall & Jones (1999) showed quantitatively, how important these effects are. Productive activities are vulnerable to predation. As they put it, Social control of diversion has two benefits. First, in a society free of diversion, productive units are rewarded by the full amount of their production, and where there is diversion, on the other hand, it acts like a tax on output. Second, where social control of diversion is effective, individual units do not need to invest resources in avoiding diversion. In many cases, social control is much cheaper than private avoidance. Social control act as a threat of punishment, which itself is free and the only resources required are those needed to make this threat credible. In other word social control does not means collectively hiring guards by society proves to be cheaper. Magee, Brock and Young (1989) and Murphy Shleifer and Vishny (1991) explain how inadequate controls affect growth.

Second and perhaps more important measure of institutional quality is index of anti-rent seeking technologies. As shown earlier, the rent-seeking (behaviour) refers to "the socially costly pursuit of wealth transfers" (Tollison, 1997). In other words, rent-seeking is manifested when the bottom-line of its social consequences is negative.

Mehlum et al.(2003) explains the notion of destructive creations asserts that it all starts from the breakdown of institutions, generating new opportunities of extracting rents without producing. A vast literature can be found linking entrepreneurship, rent seeking and growth (Murphy, Shleifer and Vishny, 1991; Baumol, 1990, 1993; Acemoglu, 1995; Acemoglu and Verdier, 1998 ).

There is dearth of literature exploring relationship between institution and economic performance. In particular (Acemoglu et al. 2001, 2002, 2005) show that quality of institutions have a more important effect on long term growth than on short term one. Jalilian

et al. (2007) emphasises the role of regulatory institutional capacity in accounting for cross-country variations in economic growth Méon and Weill (2006) , Olson et al. (1998) find evidence suggesting that institutional factors are strongly related to total factor productivity. As productivity growth is higher in countries with better institutions and quality of governance.

With regards to causal effect between institutions and economic performance , studies like Acemoglu, Johnson, and Robinson 2000; Olson et al. 1998; Rodrik et al. 2004; Kauffman et al. 2005, p. 38), indicates indicate that a better institutions leads to a higher income rather than causation being in the opposite direction. In particular Kauffman suggests that a one standard deviation improvement in governance institutions leads to a two to threefold difference in income levels in the long run.

Acemogu and Johnson (2005) who attempted to distinguish between anti-rent seeking institutions and risk-reducing institutions, as they termed them as "property rights" and "contracting" institutions respectively. They found strong support for the importance of anti-rent seeking institutions on economic outcome but In contrast, indicate that the role of risk reducing institutions is more limited. The reason they give to this fact is, in absence of formal risk reducing institutions – contracting institutions, the gap is filled by private alternative institutional arrangement. Like in earlier times when formal institutions of courts and police don't exist or ineffective, people then resort to dwell in groups where contracts are honoured through informal pressure and risk of expulsion from group. Hence their rights are secured in other ways. In contrast, protection from rent seeking behaviour relates to the relationship between the state and the citizens. When the state have major problems of corruption, inefficiency or no checks on the state, on politicians, and on elites, individuals don't have a level playing fields and adds to uncertainty. In this case, they are also unable to enter into private arrangements to circumvent these problems. In regional context, Fernandes

and Kraay (2007) employing firm level data found the similar evidence that firms in the South Asian countries are able to circumvent failures in formal "contracting institutions", by resorting frequently to informal channels such as belonging to a business association.

Some studies find that the quality of governance and institutions is important in explaining the rates of investment, as they suggested they effect economic performance through improving the climate for capital creation (Kirkpatrick, Parker, & Zhang 2006; World Bank, 2003). Other studies reiterated institutional roles in improving international capital flows in particular FDI (Reisen and De Soto 2001; Smarzynska and Wei 2000). And portfolio investment Gelos and Wei (2002)

A number of studies have made attempts to examine institutions in Pakistan as well in south Asian region. Mahbub ul Haq Human Development Centre (1999), Ahmed (2001) illustrated that institutions appears to be a significant problem in South Asia. Specially in Pakistan, institutional decay has led to poor

governance, which has resulted in *ad hoc* policy-making. Instability and unpredictability has discouraged long-term investment and encouraged lobbying, corruption,

and misuse of power, resulting in frustration and dysfunctional behaviour [For details, see DRI/McGraw-Hill (1998)]. [Hussain (1999)]. Asserts weak institutions have been used by èlite to extract rents in Pakistan. Institutional impact on poverty is explored in Pakistan (1999), Hassan (2002) Haq and Zia (2009), which shows institutions are negatively and significantly correlated with poverty, hence weak institutions to increase in poverty in Pakistan. However in contrast to the popular notion, Studies like Shafique and Haq (2006) based on world bank's governance indicators, find weak institutions do improve welfare of the society but it has negative influence on GDP growth rate. At another place, Fernandes and Kraay (2007) and Easterly (2003) in a study suggest that Pakistan have per capita incomes that are considerably higher than their very weak institutional performance would suggest

based on average cross-country relationships. The similar assessment in the context of political institutions in made by SPDC (2000), which shows that while governments under authoritarian rule in Pakistan were good for economic growth, they were not necessarily as successful in improving human endowment. Authoritarian rule normally associated of weak institutions whereas vice versa for democracy.

# 3. Methodology and Rational of index.

In this section we focus on index description, data sources, Normalization procedure and lastly weighting and aggregation methodology.

## 3.1 Description of Indices

In this section we define the computation of the following indices.

### Index of institutionalized Social Technologies (sci)

Technologies consist of those factors that increase efficiency and productivity. This index measures technologies that are bundle of information that consists of routines and processes imposed by society, which creates positive rents in the economy. These rents are pareto improving and results in Schumpeterian creative destruction, whereas improperly enforced institutional technology creates negative rents doesn't result in increasing return to scale at economy level, but results in mere redistribution of wealth within the economy creating inequality. This is an aggregate cross national index that encompasses the impact of all institutional performance indicators and comprises of Index of Risk Reducing Technologies and the Index of Anti Rent seeking Technologies. (See Table 1).

**Table 1**
**Components of Index of Institutionalized Social Technology (IIST)**

| A | Ri | Index of Anti Rent Seeking Technology | | 0.5 |
|---|---|---|---|---|
| | 1 | RiB | Bureaucracy Quality | 0.18 |
| | 2 | RicC | Corruption | 0.07 |
| | 3 | RpA | Democratic Accountability | 0.16 |
| | 4 | RpP1 | executive recruitment | 0.15 |

| | | | | |
|---|---|---|---|---|
| | 5 | RpP2 | political compitetion | 0.16 |
| | 6 | RpR | political rights | 0.11 |
| | 7 | RpV | civil liberties | 0.17 |
| **B** | **Sii** | **Index of Risk Reducing Technologies** | | **0.5** |
| | 1 | SicC1 | Investment Profile | 0.26 |
| | 2 | SilL1 | Law and Order | 0.17 |
| | 3 | SilL2 | Torture, Extrajudicial Killing, Political Imprisonment, and Disappearance indicators | 0.16 |
| | 4 | SisG | Government Stability | 0.23 |
| | 5 | SisB | executive constraints | 0.18 |

## 1. Index of Risk reducing Technologies (Sii)

First component of institutionalized social technology is called risk reducing technology. It measures institutional arrangements that reduce transactional risk. Risk is an important component of business decisions which requires long term transactions, which require transactional trust. Well enforced Risk reducing technologies strengthen this transactional trust. The absence of transactional trust advantages individuals who can overcome the resulting institutional deficiencies. For example, a biased or ineffective justice system makes property rights insecure for all except those who have power to secure it privately. As a result returns to investment for those people would be considerably more than the rest who bears higher risk due to insecurity. As a result it will divert individuals and businesses from innovative activities to become predictive rent seekers.

Moreover increased risk diverts resources from productive activities to protecting their rights. As a result it lowers productivity. Rephrasing a bookish example, if a farm cannot be protected from theft, then thievery will be an attractive alternative to farming. A fraction of the labor force will be employed as thieves, making no contribution to output. Farmers will spend more of their time and resources protecting their farms from thieves like they must hire guards and put up fences and consequently grow fewer crops from available resources. In short Risk Reducing technology removes information asymmetry, creates mutual trust and hence decreases the risk of creating long term business relationships. This intern increase productivity and growth.

Index of risk reducing technologies is aggregate form of following variables

1) Investment profile majoring Contract Viability/Expropriation,Profits Repatriation, Payment Delays 2) Law and Order 3) Torture, Extrajudicial Killing, Political Imprisonment, and Disappearance indicators 4) Government Stability and 5) executive constraints. There weights in risk reducing technology index are 26%, 17%, 16%, 23%, and 18% respectively.

## 2. Index of Anti-Rent seeking Technologies (Ri)

Predatory rents can be gained through weak institutionalization of risk reducing technologies as explained earlier. However this component exclusively focuses on those rents seeking opportunities that arise due to loopholes in ineffective or week institutions. Rent-seeking is defined as a situation in which an individual or firm makes money by manipulating economic environment rather than by profit making through innovation. Gaps in institutions create rents for controlling agents betting them higher return then though innovation hence society moves from innovative to rent seeking activities. Rent extraction is a strategic substitute for productive activities as improved opportunities of rent extraction leads to higher profits to parasites on the expense of the producers, in short run it will hampers productive investments but in the longer run the profit differential induces a reallocation of entrepreneurs away from production. As production declines and congestion among parasites sets in, both parasites and producers lose profits Usher (1987). In other words while more efficient producers raise income both for producers and parasites, more efficient parasites lower the income for both. In short rent seeking does produce rents for predicators but there impact in economy is zero or negative, since resources are not used in increasing the size of the economic pie, but diverted to snatching the bigger piece from others. Specifically, this index focuses on technologies which helps eliminate three kinds of rent. Accordingly it is subdivided into the following components. 1) Bureaucracy Quality 2) Corruption 3) Democratic Accountability

4) executive recruitment 5) Political competition 6) Political rights and 7) civil liberties. Their weights in Index are 18%, 7%, 16%, 15%, 16%, 11%, 17% respectively.

Description of index of institutionalized social technology and its subcomponents are provided in table 1.

## 3.2 Data Sources and Description

Variables used in construction of indices are taken from various data sources. Most prominent is Political risk service's international country risk guide. Since January 1984, the ICRG has been compiling economic, financial, political and composite risk ratings for 90 countries on a monthly basis. The ICRG rating system comprises 22 variables, representing three major components of country risk, namely economic, financial and political. We included 6 variables mostly measuring political risk in creation of our index. As this data is on monthly basis, we use 12 month average to convert to annual frequency. Three variables of political nature is taken from POLITY 4 project managed by Center for Systemic Peace. Its data is of annual frequency available since 1975 and has become the most widely used data resource for studying regime change and the effects of regime authority. Data of political rights and civil liberties are taken from Freedom of the world index, published by Freedom house published annually since 1955. The variable of Torture, Extrajudicial Killing, Political Imprisonment, and Disappearance indicators is taken from Physical integrity index composed by Cingranelli-Richards (CIRI) Human Rights Dataset containing human rights data for 195 countries, annually from 1981. Description of variables used in index are included in table 2 whereas their details are given in Appendix 1.

## Table 2
## Index Composition and Data description

| Name | Abbreviation | Parent index | Theoretical Ranges | Source | Type |
|---|---|---|---|---|---|
| Bureaucracy Quality | RiB | Index of Anti Rent Seeking Technology ri | 1-4+ | International Country Risk Guide(ICRG) -Political Risk Services(PRS),Newyork <www.prsgroup.com> | Expert assessments subject to peer review at the topic and regional levels |
| Corruption | RicC | | 1-6+ | | |
| Democratic Accountability | RpA | | 1-6+ | | |
| executive recruitment | RpP1 | | 1-8-+ | Marshall Monty G., Jaggers Keith." POLITY IV PROJECT",Center for Systemic Peace, <www.systemicpeace.org/polity> | |
| political competition | RpP2 | | 1-10-+ | | |
| political rights | RpR | | 1-7-- | Freedom in the World (various editions) ,Freedom House,New York <http://www.freedomhouse> | |
| civil liberties | RpV | | 1-7-- | | |
| Investment Profile | SicC1 | Index of Risk Reducing Technologies-sii | 1-12+ | International Country Risk Guide(ICRG) -Political Risk Services(PRS),Newyork <www.prsgroup.com> | Expert assessments subject to peer review at the topic and regional levels |
| Law and Order | SilL1 | | 1-6+ | | |
| Governme/nt Stability | SisG | | 1-12+ | | |
| Torture, Extrajudicial Killing, Political Imprisonment, and Disappearance indicators | SilL2 | | 0-8-+ | CINGRANELLI DAVID L., RICHARDS DAVID L.,THE CIINGRANELLII-RIICHARDS (CIIRII) HUMAN RIIGHTS DATA PROJECT <http://www.humanrightsdata.org/> | |
| executive constraints | SisB | | 1-7-+ | Marshall Monty G., Jaggers Keith." POLITY IV PROJECT",Center for Systemic Peace, <www.systemicpeace.org/polity> | |

## 3.3 Normalization Procedure

Because of different measuring scales used in different variables, to include them in index, we use normalization treatment thereby converting each variable to an index with a zero to one scale, where higher values denote more strong institutions. When higher values of the original variable indicate weak institutions (like country ranks), the formula (Vmax-Vi)/(Vmax-Vmin) is used for transformation. Conversely, when higher values indicate strong institutions, the formula (Vi-Vmin)/(Vmax- Vmin) is used. Here Vi=original values, Vmax = Maximum value attained by country in original index, Vmin = Minimum value attained by country in original index. Similar strategy is being employed in creation of various indices notably Gwartney and Lawson (2008), Miller and Holmes (2009) and Schwab and Porter (2008). Descriptive statistics of these variable is provides in Table 3

**Table 3**
**Descriptive Statistics of variables used in index**

| Variables Abb. | Mean | Std. Deviation |
|---|---|---|
| RiB | 0.95652 | 0.20851 |
| RicC | 0.47464 | 0.22074 |
| RpA | 0.39529 | 0.25862 |
| RpP1 | 0.43478 | 0.43444 |
| RpP2 | 0.55797 | 0.43406 |
| RpR | 0.58696 | 0.34219 |
| RpV | 0.10870 | 0.29987 |
| SicC1 | 0.47467 | 0.22523 |
| SilL1 | 0.51742 | 0.26748 |
| SilL2 | 0.44348 | 0.25553 |
| SisG | 0.60039 | 0.28968 |
| SisB | 0.54348 | 0.42999 |

## 3.4 Weighting and Aggregation methodology.

Principal component analysis is used to determine the weight given to each component in the construction of the index. This procedure partitions the variance of a set of variables and uses it to determine the linear combination—the weights— of these variables that maximizes the variation of the newly constructed principal component. In effect, the newly constructed principal component is the variable that captures the variation of the underlying components most fully. It is an objective method of combining a set of variables into a single variable that best reflects the original data. As Gwartney and Lawson (2001: 7) point out, this procedure is particularly appropriate when several sub-components measure different aspects of a principal component. The component weights derived by this procedure are shown in parentheses in Figure 1. The same procedure was also used to derive the weights for the sub indices that are used in the construction of main indices referred in Figure1.

More specifically first, principal components analysis is used to extract factors (Manly, 1994). We choose factors that fulfil these considerations: (i) have associated eigenvalues larger than one; (ii) contribute individually to the explanation of overall variance by more than 10%; and (iii) contribute cumulatively to the explanation of the overall variance by more than 60%. Details of extracted factors are provided in table 4. These factors are then rotated in order to minimise the number of individual indicators that have a high loading on the same factor. The idea behind transforming the factorial axes is to obtain a "simpler structure" of the factors. Rotation is a standard step in factor analysis – it changes the factor loadings and hence the interpretation of the factors, while leaving unchanged the analytical solutions obtained *ex-ante* and *ex-post* the rotation. Weights are then calculated through the square of factor loadings after rotation which represents the proportion of the total unit variance of the indicator which is explained by the factor. Similar approach is used by Nicoletti *et al.*, (2000) that is of grouping the individual components with the highest factors loadings into intermediate Factor. These Factors aggregated by assigning a weight to each one of them equal to the proportion of the explained variance in the data set. The components of extracted and rotated factors along with component weights are given in table 5.

**Table 4**

**Factor Extraction and Rotation based on Principal Component Analysis**

| S. N0. | Indices | Extracted Factors | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|---|---|
| | | | Eigen values | % of Variance | Cumulative % | Eigen values | % of Variance | Cumulative % |
| 1 | Ri | 1 | 3.967145474 | 56.67350678 | 56.67350678 | 3.31815758 | 47.40225114 | 47.40225114 |
| | | 2 | 1.182852284 | 16.89788977 | 73.57139654 | 1.384364119 | 19.77663027 | 67.17888141 |
| | | 3 | 0.931173398 | 13.30247712 | 86.87387366 | 1.378649458 | 19.69499225 | 86.87387366 |
| 2 | sii | 1 | 2.608787128 | 52.17574257 | 52.17574257 | 2.49698881 | 49.9397762 | 49.9397762 |
| | | 2 | 1.057745676 | 21.15491353 | 73.33065609 | 1.169543995 | 23.39087989 | 73.33065609 |
| 3 | iist | 1 | 1.448818986 | 72.44094932 | 72.44094932 | | | |

## Table 5
## Extracted Factor loadings and weights

| S. N0. | Indices | Components | Rotated Factor loadings | | | Squared Factor loadings | | | Squared Factor loadings (Scaled to unity) | | | Weights | Weights (Scaled to unity) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | | |
| 1 | Ri | RiB | 0.0873 | 0.1153 | 0.9560 | 0.0076 | 0.0133 | 0.9140 | 0.0023 | 0.0096 | 0.6630 | 0.1503 | 0.18 |
| | | RicC | 0.6012 | -0.1958 | 0.5878 | 0.3614 | 0.0383 | 0.3455 | 0.1089 | 0.0277 | 0.2506 | 0.0568 | 0.07 |
| | | RpA | 0.9045 | -0.2039 | 0.0882 | 0.8181 | 0.0416 | 0.0078 | 0.2465 | 0.0300 | 0.0056 | 0.1345 | 0.16 |
| | | RpP1 | -0.8848 | -0.3695 | -0.1316 | 0.7829 | 0.1365 | 0.0173 | 0.2359 | 0.0986 | 0.0126 | 0.1287 | 0.16 |
| | | RpP2 | 0.8873 | 0.3498 | 0.1517 | 0.7873 | 0.1223 | 0.0230 | 0.2373 | 0.0884 | 0.0167 | 0.1295 | 0.16 |
| | | RpR | 0.7389 | 0.4392 | 0.2661 | 0.5459 | 0.1929 | 0.0708 | 0.1645 | 0.1393 | 0.0514 | 0.0898 | 0.11 |
| | | RpV | 0.1219 | 0.9162 | 0.0165 | 0.0149 | 0.8394 | 0.0003 | 0.0045 | 0.6063 | 0.0002 | 0.1380 | 0.17 |
| | | Sum | | | | 3.3182 | 1.3844 | 1.3786 | | | | 0.8277 | |
| | | weights | | | | 0.5456 | 0.2276 | 0.2267 | | | | | |
| 2 | sii | SicC1 | -0.0155 | 0.9332 | | 0.0002 | 0.8709 | | 0.0001 | 0.7446 | | 0.2375 | 0.26 |
| | | SilL1 | 0.7634 | 0.4543 | | 0.5827 | 0.2064 | | 0.2334 | 0.1765 | | 0.1589 | 0.17 |
| | | SilL2 | -0.7357 | 0.1060 | | 0.5413 | 0.0112 | | 0.2168 | 0.0096 | | 0.1476 | 0.16 |
| | | SisG | 0.8817 | 0.2626 | | 0.7775 | 0.0690 | | 0.3114 | 0.0590 | | 0.2120 | 0.23 |
| | | SisB | -0.7715 | 0.1099 | | 0.5952 | 0.0121 | | 0.2384 | 0.0103 | | 0.1623 | 0.18 |
| | | Sum | | | | 2.4970 | 1.1695 | | | | | 0.9185 | |
| | | weights | | | | 0.6810 | 0.3190 | | | | | | |
| 3 | iist | ri | 0.8511 | | | 0.7244 | | | | | | 0.5000 | |
| | | sii | 0.8511 | | | 0.7244 | | | | | | 0.5000 | |
| | | weights | | | | 1.4488 | | | | | | | |

For Aggregation, we employ linear aggregation which is the summation of weighted and normalised individual indicators. Table 6 shows the results for the index of institutionalized social technologies as well as its sub indices of Pakistan for the period 1984 to 2006.

**Table 6**
**The Index of Institutionalized Social Technology and its sub indices**

| Obs. | IIST | IIST | |
|---|---|---|---|
| | | RI | SII |
| 1984 | **0.2741** | 0.1820 | 0.3662 |
| 1985 | **0.5128** | 0.4687 | 0.5569 |
| 1986 | **0.5330** | 0.4980 | 0.5679 |
| 1987 | **0.5081** | 0.5007 | 0.5154 |
| 1988 | **0.6487** | 0.7190 | 0.5785 |
| 1989 | **0.6112** | 0.7190 | 0.5034 |
| 1990 | **0.4609** | 0.6065 | 0.3152 |
| 1991 | **0.4524** | 0.5215 | 0.3833 |
| 1992 | **0.4906** | 0.5215 | 0.4597 |
| 1993 | **0.4969** | 0.5490 | 0.4448 |
| 1994 | **0.5920** | 0.5970 | 0.5870 |
| 1995 | **0.5951** | 0.6130 | 0.5772 |
| 1996 | **0.6678** | 0.5935 | 0.7421 |
| 1997 | **0.7395** | 0.6496 | 0.8294 |
| 1998 | **0.6476** | 0.5885 | 0.7067 |
| 1999 | **0.4658** | 0.4972 | 0.4345 |
| 2000 | **0.3989** | 0.4192 | 0.3786 |
| 2001 | **0.4535** | 0.4163 | 0.4908 |
| 2002 | **0.4601** | 0.3975 | 0.5226 |
| 2003 | **0.4273** | 0.3962 | 0.4585 |
| 2004 | **0.4204** | 0.3962 | 0.4447 |
| 2005 | **0.4420** | 0.3962 | 0.4879 |
| 2006 | **0.4822** | 0.3962 | 0.5683 |

# 4. Empirical Analysis

The aim of the empirical section of the paper is to investigate links between nations' institutional quality and economic growth, using OLS as well as GMM instrumental variable estimation method in order to control for endogeneity. This subsection describes data, the regression specifications and methodology.

## 4.1 Data Description

The dependent variable is the  Real GDP per capita in real term. There are two sets of independent variables. First is the institutional variables and send is control variables. We take index of institutionalized social technology, as well as its sub indices of Risk reducing technologies and Anti-rent seeking technologies for measurement of institutional quality.

Dependent and control variable such as total trade are taken from Heston and Summers (2009) whereas other control variables such as Gross domestic savings and Inflation, are taken from World Development Indicators. Table 7 gives detailed information about the variables and their data source.

**Table 7**
**Estimation Variables' Data Sources and Description**

| | Variable Name | Description | | Source |
|---|---|---|---|---|
| 1 | RGDPPC | Real GDP per capita at constant price (Laspeyres) | initial Factor | Heston and Summers (2009) |
| 2 | SAVGD | Gross domestic savings (% of GDP) | Savings | World Development Indicators, World Bank |
| 3 | INFCPI | Inflation, consumer prices (annual %) | Macro-economic Stability | World Development Indicators, World Bank |
| 4 | OPEN | Total trade (Exports plus Imports) as a percentage of GDP. (export, import and GDP figures are expressed in real values) | Openness | Heston and Summers (2009) |
| 5 | IIST | Index Institutionalized Social Technologies | Institutions | Authors' own calculations |
| 6 | Sii | Aggregate Index of Risk reducing Technologies | Institutions | Authors' own calculations |
| 7 | Ri | Index of Anti-Rent seeking Technologies | Institutions | Authors' own calculations |

## 4.2 Regression Specification

The role of institutions quality in economic performance, is explained by north in "contract theory" and a "predatory theory" of the state. To assess these roles we used standard growth regression framework which mostly follow growth empirics literature, such as (Barro 1991; Mankiw et al. 1992; and Leving and Renelt 1992).

$$Y_t = \beta_0 + \beta_1 I_t + \beta_2 X_t + \epsilon_i$$

where $t$ is time period $\epsilon_t$ is the error term. The economic growth $y_t$ is measured by GDP per capita in real terms, $I_t$ stands for institutional variables, whereas $X_t$ is the vector of control variables for other determinants of growth.

Other determinants of growth denoted by $X_t$ include variables to control for other factors that influence growth. In most empirical studies, the choices of additional control variables are ad hoc across studies. As one example, the data appendix in Levine and Renelt (1992) lists over 50 possibilities. In our study, we will be using variables pertaining to macroeconomic stability, savings and Openness. Macroeconomic stability factor in growth empirics is normally captured by consumer price inflation. It is expected that higher inflation tends to reduce growth due to a high level of price instability hence could have a negative expected sign. As Kormendi and Meguire (1985) and Grier and Tullock (1989) find that inflation are negatively related to growth. Saving represented by gross domestic saving as % of GDP, is considered a crucial variable of growth equation. With positive expected sign, higher saving leads to higher investment which in turn leads to higher economic growth. The presumption is that higher saving precedes economic growth. In a typical model of economic growth such as the Solow (1956) model, a clear connection is made between saving and economic growth. Romer (1987,1989) suggests that saving has too large an influence on growth and take this to be evidence for positive externalities from capital accumulation. On the empirical fount, (Modigliani 1970, 1990; Maddison 1992; and Carroll and Weil 1994) prove robust positive correlation between saving and growth. Another important variable included in our model is trade liberalization. Removal of trade restrictions helps to stabilize the development process by improving efficiency and return economies from distorted factor prices to production frontiers. Moreover, trade openness will improve domestic technology, production process will be more efficient, and hence productivity will rise (Jin, 2000). Trade liberalization and growth relations may occur through investment, and trade openness may provide greater

access to investment goods (Levine and Renelt, 1992). Countries that liberalize their external sector and reduce impediments to international trade can experience relatively higher economic growth. It is generally agreed that an open trade regime is crucial for economic growth and development (Sukar and Ramakrishna, 2002). Desceibtive Statistics of variables used in empirical analysis are shown in Table 8.

**Table 8**
**Descriptive Statistics**

| | RGDPPC | IIST | RI | SII | WSAVGD | WINFCPI | OPEN |
|---|---|---|---|---|---|---|---|
| Mean | 2619.487 | 0.5122 | 0.5062 | 0.5182 | 13.7610 | 7.4730 | 30.0948 |
| Median | 2632.580 | 0.4906 | 0.5007 | 0.5034 | 14.6839 | 7.8443 | 29.5600 |
| Maximum | 3388.570 | 0.7395 | 0.7190 | 0.8294 | 17.6117 | 12.3682 | 38.6100 |
| Minimum | 2058.170 | 0.2741 | 0.1820 | 0.3152 | 5.9293 | 2.9141 | 26.3000 |
| Std. Dev. | 335.2862 | 0.1050 | 0.1243 | 0.1224 | 3.5298 | 3.1318 | 3.1742 |
| Skewness | 0.5038 | 0.2035 | -0.3773 | 0.7651 | -0.8793 | 0.0319 | 1.1306 |
| Kurtosis | 3.0544 | 3.0077 | 3.3453 | 3.4498 | 2.6478 | 1.7241 | 3.8064 |
| Jarque-Bera | 0.9759 | 0.1589 | 0.6599 | 2.4378 | 3.0824 | 1.5639 | 5.5235 |
| Probability | 0.6139 | 0.9236 | 0.7189 | 0.2955 | 0.2141 | 0.4575 | 0.0632 |
| Sum | 60248.1900 | 11.7809 | 11.6422 | 11.9197 | 316.5022 | 171.8781 | 692.1800 |
| Sum Sq. Dev. | 2473170 | 0.2426 | 0.3401 | 0.3296 | 274.1078 | 215.7741 | 221.6568 |
| Observations | 23.0000 | 23.0000 | 23.0000 | 23.0000 | 23.0000 | 23.0000 | 23.0000 |

## 4.3 Estimation Methodology

We will be using OLS as well as GMM procedure in our analysis as there might be the problem of endogenity that could arise in independent variables specifically in institutional variables, as these variables have a strong positive correlation with growth. In literature, depending on the context, GMM has been applied to time series, cross-sectional, and panel data. Inevitably, GMM builds from earlier work, and its most obvious statistical antecedents are method of moments (Pearson, 1893, 1895) and instrumental variables estimation ( Reiersol 1941; Sargan 1958; Hansen 1982). The starting point of GMM estimation is a theoretical relation that the parameters should satisfy that is to choose the parameter estimates so that the theoretical relation is satisfied as “closely” as possible. The GMM is a robust

estimator in that, unlike maximum likelihood estimation, it does not require information of the exact distribution of the disturbances. The theoretical relation that the parameters should satisfy are usually *orthogonality conditions* between some (possibly nonlinear) function of the parameters $f(\theta)$ and a set of instrumental variables $z_t$:

$E\,(f(\theta)'Z) = 0$

Where $\theta$ are the parameters to be estimated. The GMM estimator selects parameter estimates so that the sample correlations between the instruments and the function $f$ are as close to zero as possible, as defined by the criterion function:

$J(\theta) = (m(\theta))'\,Am(\theta)$

Where $m(\theta) = f(\theta)'Z$ and $A$ is a weighting matrix. Any symmetric positive definite matrix $A$ will yield a consistent estimate of $q$. However, it can be shown that a necessary (but not sufficient) condition to obtain an (asymptotically) efficient estimate is to set $A$ equal to the inverse of the covariance matrix of the sample moments $m$.

To apply this methodology, the following equation is estimated by GMM:

$$\Delta y_i = \beta_0 + \beta_1 I_i + \beta_2 X_i + \epsilon_i$$

The instrumental variables for the equation are twice lags of dependent variable and first lag of all explanatory variables.

# 5. Results and Analysis

**Table 9**
**Average Periodic Trend**

| Period | RGDPPC | IIST | RI | SII | SAVGD | INFCPI | OPEN |
|---|---|---|---|---|---|---|---|
| **1984-87** | 2163.990 | 0.457 | 0.412 | 0.502 | 8.005 | 4.972 | 26.793 |
| **1988-91** | 2418.430 | 0.543 | 0.642 | 0.445 | 12.387 | 9.381 | 29.273 |
| **1992-95** | 2574.730 | 0.544 | 0.570 | 0.517 | 16.092 | 11.049 | 30.325 |
| **1996-99** | 2680.893 | 0.630 | 0.582 | 0.678 | 14.581 | 8.030 | 28.135 |
| **2000-03** | 2788.538 | 0.435 | 0.407 | 0.463 | 16.442 | 3.430 | 31.013 |
| **2004-06** | 3247.290 | 0.448 | 0.396 | 0.500 | 15.492 | 8.143 | 36.677 |

Table 1 focuses on periodic trends in institutional quality and growth. Over all institutional indicators fairly remain stable. They witness stable increase in periods of 1984 to 1999. Especially 1996-99 periods witnessed sharp increase in institutional quality. But afterwards, institutional index saw a sharp decline but again saw some improvements in later periods. On the political front, democratic era of 1988 to1999 saw a considerably higher institutional quality index then era govern by military dictatorships. Era of Transition to civilian democracy in 1988 witnessed sharp increase of about 19% in institutional quality especially anti-rent seeking technologies increases by about 55%, while Era followed by military takeover after 1999 saw a sharp decline of about 31% in institutional quality. This trend can also be witnessed from Figure 1. Hence strong political institutions do produce a huge impact of other social institutions in the country and reforming and strengthening the political institutions become pivotal in economic and social development. On the other hand, growth in economy measured by real GDP per capita, witnessed a stable increase over the years. However, comparatively higher growth was witnessed in era of 1984- 91. In era of 90s, income level became fairly stable, and it sharply picked up later in 2000-06 period (Figure 2). Among other variables, savings remain fairly stable at about 15%. Inflation followed income, remained started a bit higher, remains lower throughout the middle are witnessed a surge in 2003 onwards as economic witnessed a shape growth. Trade openness also witnessed a stable

increase and picked up momentum after 2002 as policies towards liberalization took their ground.

**Figure 1**

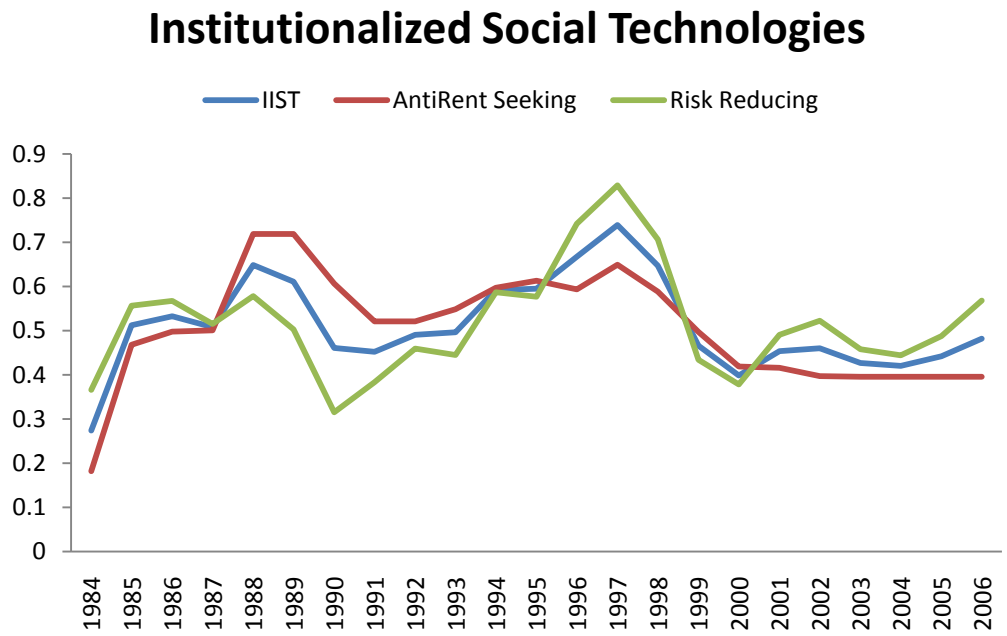
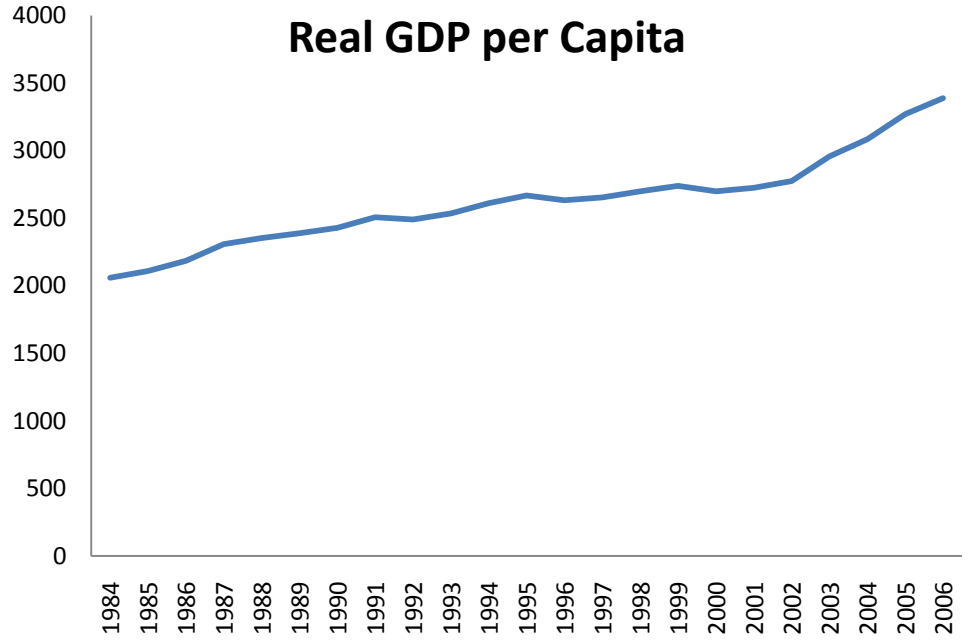



**Figure 2**



There are quit a few studies that found inverse link between institution and GDP growth. In a simulation to investigate this link, we regress GDP growth with our index, we found negative significent sign for institutions backing the previous studies, then we employ regression using GDP per capita as a proxy of growth, In our estimation procedure, we employ both OLS and GMM methodology. The estimation results clearly indicate a robust positive impact of institutional variables on growth (Table 10)

## Table 10
## Regression Results

**Dependent Variable: RGDPPC**

| Variable | OLS | OLS | OLS | GMM | GMM | GMM |
|---|---|---|---|---|---|---|
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 |
| C | -482.0337<br>-1.129771 | -343.0652<br>-0.968838 | -116.5476<br>-0.249137 | -2400.519<br>(-3.004094)*** | -1321.135<br>(-3.148513)*** | -851.174<br>-1.566939 |
| IIST | 806.8443<br>(2.114754)** | | | 2853.558<br>(3.114908)*** | | |
| Sii | | 685.3715<br>(2.536967)** | | | 1675.579<br>(5.246994)*** | |
| Ri | | | 296.3029<br>0.775096 | | | 196.6219<br>0.47228 |
| SAVGD | 28.39167<br>(2.562602)** | 29.95536<br>(2.843858)** | 30.15453<br>(2.46218)** | 37.27116<br>(2.091764)* | 40.18182<br>(2.923394)*** | 17.07292<br>1.292803 |
| INFCPI | -28.68049<br>(-2.31649)** | -22.73401<br>(-2.143448)** | -21.85992<br>-1.509949 | -71.26568<br>(-3.492693)*** | -42.7683<br>(-3.107275)*** | -23.85208<br>-1.287906 |
| OPEN | 83.46544<br>(6.279713)*** | 78.58621<br>(6.591241)*** | 77.57006<br>(5.119038)*** | 118.2423<br>(5.919254)*** | 93.81972<br>(7.703166)*** | 108.6565<br>5.665894 |
| R-squared | 0.8307 | 0.844307 | 0.795464 | 0.667138 | 0.678589 | 0.661355 |
| Adjusted R-sq. | 0.793078 | 0.809709 | 0.750011 | 0.588817 | 0.602963 | 0.581673 |
| S.E. of regression | 152.5172 | 146.2597 | 167.6394 | 204.8789 | 201.3237 | 206.651 |
| DW stat | 1.462563 | 1.678548 | 1.100245 | 1.999214 | 1.834138 | 1.21778 |
| Sum squared resid | 418707.1 | 385054.2 | 505853.3 | 713581 | 689031.1 | 725978.5 |
| J-statistic | | | | 0.052536 | 0.02859 | 0.082943 |

First three models are tested on OLS. all variable have expected signs and are highly significant. Inflation measure having expected negative sign and significant suggests that unstable macro economic conditions have a negative effect on economic growth. Hence pursuing policies of inflation financed growth might not be fruitful in long run. Coefficient of

savings also remains positive in all three models and significant clearly showing saving is instrumental to growth as it increases capital accumulation and investments. The coefficient of openness represented by trade to GDP having expected positive sign and highly significant in all three models, showing increased trade liberalization impact growth in a positive way. In model 1, Our main institutional variable is tested. its coefficients is significant and positive indicate institutional quality positively and significantly influence growth. We also produce result of two subindices of index of index of institutionalized social technologies, namely risk reducing technologies in model 2 and anti-rent seeking technologies in model 3. All except anti-rent seeking index remains positive and significant. This show antirent seeking technologies although important, does not produce impact on growth alone, but when combined into aggregate index.

With some of the variables, there is an obvious endogeneity problem: previous research has shown, that, e.g., if saving increase, it will increase investment and leads to growth, hence it might be endogenous. The same is true for other variables. Endogeneity might even be a problem for our index. To encounter this problem these models are regressed based on GMM methodology. For this, First and Second lags of dependent variable and first lag of all independent variables are used as instruments. In model 4 to 6, Confirming the OLS results, the overall index of institutions and risk reducing index seems to significantly influence growth. there significant level also increased. The signs of other variable also remain same however they became even more significant. Overall the result remains unchanged.

Summing up, the overall index of institutionalized social technologies, have a significant (positive) influence on growth. The similar result witnessed in one of its sub index namely risk reducing technologies. However anti-rent seeking technologies remained insignificant. These institutional indices are also comparable as they all have similar range between 0 and

1. The highest coefficient on our main index clearly depict that both sub indices alone cannot produce as much influence on growth as when they are combined.

## 6. Conclusion

The results suggest a strong link between institutional quality and economic growth for Pakistan. All three measures of institutional quality significantly and positively affect growth. Moreover our analysis  indicate that between the two forms of institutions measured as a sub-indices of institutionalized social technologies, Risk reducing technologies impact growth considerable more than the Anti-rent seeking technologies. The other control variables shows macroeconomic stability, savings and openness also have significant impact as predicted by theory. On policy front, developing county such as Pakistan or any other country for that matter must make and strengthen their instructions in order to achieve sustainable development. In its absence, even best policies for development and attracting investment might fail as no incentive can balance the huge business risk that could arise if property rights are not secured and contract enforcement is week. Also menses of corruption and nepotism divert any policy incentives given to entrepreneurs towards rent seekers making economy stuck in structural rigidities making any policy ineffective.

# References


Acemoglu Daron and Thierry Verdier. 1998. “Property Rights, Corruption and the Allocation of Talent: A General Equilibrium Approach.”, Economic Journal volume 108 (September): 1381-1403.

Acemoglu Daron, Johnson S. and Robinson J. A. 2001. “The Colonial Origins of Comparative Development: An Empirical Investigation.” American Economic Review 91:1369-1401.

Acemoglu Daron, Johnson S. and Robinson J. A. 2002. “Reversal of Fortune: Geography and Institution in the Making of the Modern World Income Distribution.” Quarterly Journal of Economics 117:1231-1294.

Acemoglu Daron, Johnson S. and Robinson J. A. 2005. “Institutions as the Fundamental Cause of Long-Run Growth” in (eds), “Handbook of Economic Growth.” Ed. Aghion P., Durlauf S. Amsterdam:Elsevier 385-472.

Acemoglu, Daron. 1995. “Reward structures and the allocation of talent.”, European Economic Review 39:17-33.

Acemoglu, Daron. and Johnson, S. 2005. “Unbundling Institutions.” Journal of Political Economy 113: 949-95.

Ahmed.S. 2001. "Poverty Reduction and Governance in South Asia." *Mahbub ul Haq Human Development Review* 1:1.

Barro, R. J. 1991. “Economic growth in a cross section of countries.” Quarterly Journal of Economics 106:407–433.

Baumol, W. 1993. “Entrepreneurship, Management, and the Structure of Payoffs.” Cambridge, MA.: MIT Press.

Baumol, W.J. 1990. “Entrepreneurship: Productive, Unproductive and Destructive”, Journal of Political Economy **98**(5): 893–921.

Boserup E. 1996. “Development theory: an analytic framework and selected application.” Population and Development Review 22: 505–515.

Carroll, Christopher D. and David N. Weil. 1994."Saving and Growth: A Reinterpretation.” Carnegie-Rochester Conference Series on Public Policy 40:133–192.

Coase Ronald . 1937. “The Nature of the Firm.” Economica 4(16): 386-405.

Coase Ronald . 1960. “The Problem of Social Cost.” Journal of Law and Economics 3: 1-44.

Day R., Walter J. 1987. “Economic growth in the very long run: on the multiple-phase interaction of population, technology, and social infrastructure.” In “Economic Complexity: Chaos, Sunspots, Bubbles, and Nonlinearity.” ed: Barnett W., Geweke J., Shell K. Cambridge, MA.: Cambridge University Press,

De Long J.B., Shleifer A. 1993. “Prince and merchants: governments and city growth before the industrial revolution.” Journal of law and Economics 36: 671-702.

DRI/McGraw-Hill. 1998.(Ch. 5) "An Agenda for Effective Governance". in "*Enterprise 2010: Realising Pakistan’s Full Potential"*. l Lexington, MA:DRI/McGraw-Hil

Easterly, William. 2003. “The Political Economy of Growth Without Development: A Case Study of Pakistan" in "In Search of Prosperity: Analytical Narratives of Growth”, ed. Dani Rodrik, Princeton University Press Fernandes Ana Margarida and Aart Kraay. 2007.”Property Rights Institutions, Contracting Institutions, and Growth in South Asia: Macro and Micro Evidence.” In “South Asia: Growth and regional integration” ed **Ahmed Sadiq, Ghani Ejaz.** New Delhi: **MACMILLAN**

Frye T. and Shleifer A. 1997. “The Invisible Hand and the Grabbing Hand.” American Economic Review Papers and Proceedings 87: 354--58.

Gelos, Gaston, and Shang-Jin Wei. 2002. “Transparency and International Investor Behavior.” NBER Working Paper No. 9260:1–36, October.

Grier, Kevin and Gordon Tullock. 1989. “An Empirical Analysis of Cross-National Economic Growth, 1951-1980." Journal of Monetary Economics 24:259-276.

Grossman, Sanford and Oliver Hart. 1986. “The Costs and Benefits of Ownership: A Theory of Vertical and Lateral Ownership.” Journal of Political Economy 94: 691-719.

Gwartney J. and Lawson Robert with Norton Seth. 2008. “Economic Freedom of the World: 2008 Annual Report". Economic Freedom Network. Fraser Institute http://www.freetheworld.org/.

Gwartney J. Holcombe R. and Lawson R. 1998. “The Scope of Government and the Wealth of Nations.” Cato Journal 18:163--90.

Gwartney J. Holcombe R. and Lawson R. 1999. “Economic Freedom and the Environment for Economic Growth.” Journal of Institutional and Theoretical Economics 155: 643--663.

Gwartney, James; Robert Lawson. 2001. “Economic Freedom of the World: Annual Report.” Economic Freedom Network. Fraser Institute http://www.freetheworld.org/.

Hall P. and Taylor R. 1994. “Political Science and the Four New Institutionalisms.” Working paper, Department of government, Harvard University.

Hall, R. E., & Jones, C. 1999. “Why do some countries produce so much more output per worker than others?” Quarterly Journal of Economics 114(1): 83–116.

Hansen, L.P., and Singleton, K.J. 1982. “Generalized Instrumental Variables Estimation of Nonlinear Rational Expectations Models.” Econometrica 50:1269-1286.

Haq. Rashida and Zia. Uzma. 2009. “Does Governance Contribute to Pro-poor Growth? Evidence from Pakistan.” PIDE Working Papers no. 2009:52, Islamabad:Institute of Development Economic.

Hart Oliver and John Moore. 1990. “Property Rights and the Nature of the Firm.” Journal of Political Economy 98: 1119-1158.

Hart Oliver. 1995. “Firms, Contracts, and Financial Structure.” Oxford: Oxford University Press,

Hassan, Mian Tayyab. 2002. "Governance and Poverty in Pakistan".MIMAP Technical Series, No.13, Pakistan Institute of Development Economics. Islamabad.

Heston Alan, Summers Robert and Aten Bettina. 2009. "Penn World Table Version 6.3." Center for International Comparisons of Production, Income and Prices at the University of Pennsylvania, (August).

Hussain, I. 1999. "*Pakistan: The Economy of an Elitist State*." Karachi: Oxford University Press.

Jalilian Hossein, Kirkpatrick Colin and Parker David. 2007. “The Impact of Regulation on Economic Growth in Developing Countries: A Cross-Country Analysis.” World Development 35(1):87–103

Jin, Jang C. 2000. “Openness and Growth: An Interpretation of Empirical Evidence from East Asian Countries.” The Journal of International Trade and Economic Development 9(1):5-17

Johnson S., Kaufmann D. and Zoido-Lobaton P. 1998. “Government in Transition: Regulatory Discretion and the Unofficial Economy.” The American Economic Review 88: 387-392.

Johnson S., McMillan J. and Woodruff C. 1999. “Why do Firms Hide? Bribes and Unofficial Activity After Communism.” Research Discussion Paper no. 2105. Centre for Economic Policy

Johnson S., McMillan J. and Woodruff C. 2000. “Entrepreneurs and the Ordering of Institutional Reform: Poland, Slovakia, Romania, Russia and the Ukraine Compared.” Economics of Transition 8: 1-36.

Jones Eric L. 1981. “The European Miracle: Environments, Economies, and Geopolitics in the History of Europe and Asia.” New York: Cambridge University Press,

Kauffman Daniel., Kraay Aart., & Mastruzzi Massimo. 2005. “Governance matters IV: Governance indicators for 1996–2004.” World Bank Policy Research, May.

Kirkpatrick C., Parker D. and Zhang Y. 2006. "Foreign direct investment in infrastructure: Does regulation make a difference?" Transnational Corporations 15(1), April

Kormendi, Roger and Meguire, Philip. 1985. “Macroeconomic Determinants of 3rowth: Cross-Country Evidence.” Journal of Monetary Economics 16:141-163.

Levine, R., and Renelt, D. 1992. “A Sensitivity Analysis of Cross-Country Growth Regressions”, American Economic Review 82:942-963.

Levine, Ross and Renelt, David. 1992. “A Sensitivity Analysis of Cross- Country Growth Regressions." American Economic Review 82(4):942-963, September.

Maddison, A.1992. “A long run perspective on saving.” Scandinavian Journal of Economics 94:181–196.

Magee Stephen P., William A. Brock and Leslie Young. 1989. “Black Hole Tariffs and Endogenous Policy Theory,” Cambridge: Cambridge Univ. Press.

Mahbub ul Haq Human Development Centre. 1999. "Human Development in South Asia: “The Crisis of Governance." Pakistan:Mahbub ul Haq Human Development Centre and the Oxford University Press.

Mankiw N. D., Romer P. and Weil D. 1992. “A contribution to the empirics of economic growth.” Quarterly Journal of Economics 107:407–437.

Manly B. 1994. “Multivariate statistical methods.” UK:Chapman & Hall.

Mehlum Halvor, Moene Karl and Torvik Ragnar. 2003. "Destructive Creativity." Nordic Journal of Political Economy 29:77-84.

Méon Pierre-Guillaume and Sekkat, K. 2004. “Does the Quality of Institutions Limit the MENA’s Integration in the World Economy?” The World Economy 27:1475-1498.

Miller Terry, Holmes Kim R., with Kim Anthony B., Markheim Daniella, Roberts James M., and Walsh Caroline.,2009. "2009 Index of Economic Freedom" The heritage Foundation and Dow Jones & Company, Inc.

Modigliani, F. 1970. “The life cycle hypothesis of saving and inter country difference in the saving ratio.” In: “Induction, Trade and Growth: Essays in Honour of Sir Roy Harrod.” ed. Eltis, W.A.,Scott, M.F., Wolfe, J.N. London:Clarendon Press.

Modigliani, F. 1990. “Recent development in saving rates: A life cycle perspective.” Frisch Lecture, Sixth World Congress of the Econometric Society, Barcelona, Spain.

Murphy Kevin, Andrei Shleifer and Robert W. Vishny. 1991. “ The Allocation of Talent: The Implications For Growth.” Quarterly Journal of Economics 106:503-530.

Nelson Richard R. 2007. “Institutions, “Social Technologies”, and Economic Progress.” Working Paper Series no. 2007-03. The Global Network for Economics of Learning, Innovation, and Competence Building System http:// www.globelics.org/.

Nelson Richard R. and Sampat Bhaven N. 2001. “Making Sense of Institutions as a Factor Shaping Economic Performance.” Journal of Economic Behavior and Organization 44:31-54.

Nicoletti G., Scarpetta S. and Boylaud O. 2000. "Summary indicators of product market regulation with an extension to employment protection legislation." OECD, Economics department working papers No. 226, ECO/WKP(99)18. http://www.oecd.org/eco/eco.

North D., Wallis J. 1994. "Integrating institutional change and technical change in economic history: a transaction cost approach." Journal of Institutional and Theoretical Economics: 609–624.

North D. C. 1990. "Institutions, institutional change and economic performance." Cambridge, MA: Cambridge University Press, New York

North D. C. 1981. "Structure and Change in Economic history." New York : Norton.

North D. C., Thomas R. P. 1973. "The Rise of the Western World. A New Economic History." Cambridge, MA:Cambridge University Press.

Olson Mancur. 2000. "Power and Prosperity: Outgrowing Communist and Capitalist Dictatorships." Oxford: Oxford University Press.

Olson M., Sarna N., and Swamy A. V. 1998. "Governance and growth: A simple hypothesis explaining cross-country differences in productivity." Mimeo: Centre for Institutional Reform and Informal Sector (IRIS), University of Maryland.

Olson Mancur. 1982. "The Rise and Decline of Nations." New Haven: Yale University Press.

Pakistan, Government of .1999. "*Strategy for Improving Governance."* Islamabad: Planning Commission.

Pearson, Karl. 1893. "Contributions to the mathematical theory of evolution." Proceedings of the Royal Society of London 54: 329–333.

Pearson, Karl. 1895. "Contributions to the mathematical theory of evolution, II: Skew variation in homogeneous material." Philosophical Transactions of the Royal Society of London ARRAY 186: 343–414

Pelikan Pavel. 2003." Bringing institutions into evolutionary economics: another view with links to changes in physical and social technologies." Journal of Evolutionary Economics. 13(3): 237-258,

Powell W., DiMaggio P. 1991. "The iron cage revisited: institutional isomorphism and collective rationality in organizational fields." In "The New Institutionalism in Organizational Analysis." ed. Powell W., DiMaggio P. Chicago: University of Chicago Press:63–82.

Putnam R.D., Leonardi R., Nanetti R.Y. 1993. "Making Democracy Work: Civic Traditions in Modern Italy." Princeton: Princeton University Press.

Reiersol, O. 1941. "Confluence Analysis of Lag Moments and other Methods of Confluence Analysis." Econometrica 9:1-24
Reisen, Helmut and Marcelo Soto. 2001. "Which Types of Capital Inflows Foster Developing-Country Growth?" International Finance 4(1):1–14, Spring.

Rodrik D., Subramanian A., and Trebbi F. 2004. "Institutions rule: the primacy of institutions over geography and integration in economic development." Journal of Economic Growth 9(2):131–165.

Romer, Paul, M. 1987. "Crazy Explanation for the Productivity Slowdown." NBER Macroeconomics Annual, 163-210

Romer, Paul, M. 1989. "Human Capital and Growth: Theory and Evidence." NBER Working Paper No. 3173

Sargan, J.D. 1958. "The Estimation of Economic Relationship using Instrumental Variables." Econometrica 26:393-415

Schleifer A. and Vishney R.W. 1993. "Corruption." Quarterly Journal of Economics 108:599-617.

Schleifer A. and Vishney R.W. 1994. “Politicians and Firms.” Quarterly Journal of Economics 109:995-1025.

Schwab Klaus and Porter Michael E. 2008. “The Global Competitiveness Report 2008–2009.” World Economic Forum

Shafique, Saima and Haq, Rashida. 2006. “Governance and Income Inequality." The Pakistan Development Review 45( 4): 751–760 (Winter)

Smarzynska, Beata, K. and Shang-Jin Wei. 2000. “Corruption and Composition of Foreign Direct Investment: Firm-Level Evidence.” NBER Working Paper No. 7969:1–24, October.

Social Policy and Development Centre. 2000. "*Social Development in Pakistan— Annual Review 1999: Towards Poverty Reduction."* Karachi: Social Policy and Development Centre and the Oxford University Press.

Solow R. M. 1956. “A contribution to the theory of economic growth.” Quarterly Journal of Economics 70: 65–94.

Soto H. de. 1989. “The Other Path: The Invisible Revolution in the Third World.” New York: Harper & Row Publishers.

Soto H. de. 2000. “The Mystery of Capital: Why Capitalism Triumphs in the West and Fails Everywhere Else.” New York: Basic Books.

Sukar. Abdulhamid, and G.Ramakrishna. 2002. “The Effect of Trade Liberalization on Economic Growth: The case of Ethiopia.” Finance India XVI(4):1295-1305.

Tabellini G. 2005. “Culture and Institutions: Economic Development in the Regions of Europe.” CESIFO Working Paper no.1492.

Tollison R.D. 1997. “Rent seeking.” in “Perspectives on public choice.” ed. D.C. MUELLER, Cambridge: Cambridge University Press, 506-525.

Usher D. 1987. “Theft as a paradigm for departure from efficiency.” Oxford Economic Papers no.39: 235-252.

Williamson Oliver. 1975. “Markets and Hierarchies: Analysis and Antitrust Implications.” New York: Free Press.

Williamson Oliver. 1985. “The Economic Institutions of Capitalism.” New York: Free Press.

World Bank .2003. “Global economic prospects and the developing countries.” Washington, DC:World Bank.

World Bank, World Development Indicators, (various years).