The Impact of Institutional Governance on Economic Growth: A Panel Data Analysis

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Abstract
This study is an attempt to analyse the nexus between institutional governance and economic growth for the panel of 91 countries over 1999-2014, using Random Effect Model and System GMM. We have examined the direct impact of governance by index of institutional governance. In addition, our analysis includes complementary role of institutions through the channel of population which is calculated by interaction variable of population and governance index. The results indicate that institutional governance has direct and significant impact on economic growth for selected panel of countries. Moreover, it has also indirect impact on economic growth through the channel of population; as direct impact of population is found to be negative and significant, whereas when institutional governance interacts with the population, sign turns positive and significant.

Keywords: Institutional Governance, Economic Growth, Random Effect Model, System GMM
JEL Codes: F30, F43

I. Introduction

Economic Growth has been in the debate of economics since the beginning of economic thought. The idea goes back to the times of Adam Smith (1776) when he pointed out that the level and growth rate of output per head must in every nation be regulated by two different circumstances: first by the dexterity and judgment with which its labour is generally applied; and, secondly, by the proportion between the number of those who are employed in useful labour and that of those who are not so employed." Smith's thoughts directly or indirectly attributed three major sources of economic growth: first, the growth in factors of production i.e. labour force and stock of capital; second, improvements in the efficiency with which capital is applied to labour through greater division of labour and technological progress and third, foreign trade that widens the market and reinforces the other two sources growth. Further, he thinks that the process of growth is self-reinforcing in the progressive state. As long as the growth favours profits, there are savings and further capital accumulation, and hence, further growth. Smith emphasized that growth in productivity is due to the division of labour, which depends upon the extent and size of the market. The purpose of this discussion is that economic growth in not a new area in the field of economics. Since then, economic growth continues to be one of the most active research areas in macroeconomics.

New strand of growth theory emerged in 1990s, which incorporates the economic and political institutions as a determinant of economic growth. An explanation for the cross-country differences in growth rates is provided by North (1990) and Acemoglu et al. (2001). These thoughts consider capital accumulation and technological developments are only the proximate causes of growth while the deeper determinants of growth are others. The founder of the institutional school, North (1990) writes that the institutions determine the constraints and incentives of economic actors and thereby, the shape of economic outcomes. These ideas provide room for policies and social set up to affect long-run growth. North (1991) argues that, institutions develop the framework of the incentive structure of an economy; as that structure evolves in the economy, it frames the dimension of economic change towards growth, stagnation or decline.

This study is an attempt to evaluate the nexus between institutions and growth patterns, using the panel data of 91 countries for 1999-2014. The ultimate objective of every economic and social policy is to achieve an economic growth and development accompanied by low poverty, inequality, stable prices, good health and, education standards. So, it is matter of great concern that how an economy can achieve high growth and development. Enormous literature discusses the determinants of growth and development. Each study attempts to find that which factors can promote growth and development. Initially, it was recommended that higher capital leads to higher growth. Later on, growth theory emerged which suggests to focus on human capital as well. But still real growth patterns observed in the world cannot be explained by the traditional theories. Till 1980s, development economists have been emphasizing on sustainable and inclusive growth, reducing poverty and inequality. Hall et al. (2010) examines the impact of institutions on economic growth through the channel of human capital. Our study evaluates the impact of institutional governance on economic growth through the channel of population.

This study uses the institutional governance, measured by average of control over corruption, rule of law, regulatory quality, voice and accountability, government effectiveness and political stability & absence of violence. These indicators are crucial for economic growth and development process, as the institutional governance determines the preferences of regulators to cope with the economic as well as social issues of the countries. To tackle poverty, low education, inequality, unemployment, fiscal deficits, hurdles in easy justice, and diplomatic relationships with other nations are the main concerns of all the countries. While focusing the economic growth, policy makers must have focus on sustainable economic growth, hence they have to find the factors which are major hurdles in sustainable economic growth. This paper complements the literature by analysing the role of institutional governance by using the index of institutional governance on economic growth for panel data of 91 countries. It is also analysed that how institutions can affect growth pattern through the channel of population in these countries. The study is organized as follows; Section 2 contains review of literature, Section 3 consists of methodology (Analytical framework, Econometric model, & Econometric technique). Data and Variables are given in Section 4. Section 5 contains empirical results and Section 6 gives conclusion.

II. Literature Review

Literature on institutional economics shows that institutions are non-market decisions and rules of game in society such as, property rights protection, contract enforcement, rule of law and religious and social norms. Neo-classical approach of analysing the structure and economic performance doesn't incorporate the role of institutions, hence ignores the positive transaction cost. In the economies, where property rights are not well-defined, where contract enforcement is not pursued and law & order situation is bad, face the positive transaction cost, which is hurdle in capital formation, because people invest their time and money in a place where the returns are maximized and their rights are secured. Hence, institutions (non-market decision making) play an important role in determining the growth of economies. The literature review gives insights to institutions and economic growth i.e. how institutions affect economic growth. It contains the theoretical literature on defining the institutions and empirical literature on institutions and economic growth.

Greif (2006) defines institutions as a system which regulates the social behaviour; this system includes rules, belief, and norms that together play their role in uniformity of social behaviour. Institutions are the "Rules of Game" or humanly formulated constraints, which shape human interaction in a society (North, 1990). Importance of institutions is best described by North (1991) as; institutions frame the incentive structure of an economy; as that structure evolves in the economy, it frames the dimension of economic change towards growth, stagnation or decline.

Fig.1: Role of Political institutions. (See, North, 1994)

North (2005) argued that neoclassical economics doesn't explain the process of economic change, whereas institutional economists aim to understand change by analysing human incentives, norms, beliefs and rules that they formulate to achieve their goals. Djankov et al. (2003) argued that institutions are persistent. They pointed that the reasons of this persistence are, history, colonial origins, and social choices. They concluded that institutions have second order effect on growth, whereas human and social capital have first order effect as these factors shape the institutional framework of the society.

Flachaire et al. (2014) analysed the role of political and economic institutions in economic growth for the panel of 79 developed and developing countries with time series sample spanning 1975-2005. The key findings of the study are: the role of economic institutions in growth is larger in low democracy regime as compare to that of in high-democracy regime, indicating that in low-democracy regime, the growth is more responsive to change in economic institutions. The analysis has further shown that economic institutions have significant and positive impact on growth, but political institutions have not direct impact on growth, rather these institutions indirectly affect the growth by determining the regime.

Siddiqui and Ahmed (2013) empirically analysed the impact of institutions on economic growth by using the sample of 84 countries for 2002-2003 and found that good quality institutions have positive effect on economic growth. Acemoglu et al. (2001) investigated a strong positive impact of institutions on GDP per capita using the difference in colonial experience as a source of variation. Cavalcanti et al. (2008) investigated that the institutional reforms have positive impact on private credit-to-output ratio and on rate of investment.

Nawaz (2015) examined the institutional effects on economic growth for 56 countries comprising 22 low-income and 34 high-income countries using the six disaggregated measures of institutions. The results concluded that all the disaggregated measures of institutional quality have significant positive effect on economic growth. Similarly, Butkiewicz and Yanikkaya (2006), illustrated the impact of institutional quality on economic growth for 100 developed and developing countries. The empirics concluded that rule of law and democratic institutions both have positive role in economic growth. Moreover, they pointed out that democratic institutions are important especially for developing economies.

Law et al. (2013) examined the causality between institutions and economic development and concluded that there is two-way causality in full sample of countries, however for the sub-sample of high income countries there is unidirectional causality running from institutional quality to economic development and for sub-sample of low-income countries there is unidirectional causality running from economic development to institutional quality. Institutions have also significant impact on economic volatility. Klomp and Haan (2009) illustrated that there is negative linkage between democracy and economic volatility. Similar results are shown by Tang et al. (2008) and Angelopoulos et al. (2011). Seputiene (2008) was aimed to analyse that how much variations in economic growth are explained by the institutional environment. Aggregate Governance Index (AGI) is used to capture all dimensions of governance. The most of the variations in economic growth are explained by institutions. There is positive relationship between institutions and economic growth in 60 countries, where institutional environment is positive and this relationship is weak for 93 countries where institutional environment was negative.

Young and Sheehan (2014) investigated the link between foreign aid, institutional quality and growth for 116 countries using the annual time series sample of 1970-2010. The study was aimed to investigate the impact of institutions on economic growth, effect of aid on institutional quality and effect of aid on growth. The results indicate that only economic institutions have positive effect on growth. Moreover, aid flows cause deterioration in the legal system, property rights and volume of international trade flows.

Jamali et al. (2007) investigated the importance of intellectual property rights and political regimes and found that economic growth in democracies and bureaucracies is far better than that of in autocracies. Similarly, Wu et al. (2013) further

elaborated the role of intellectual property rights (IPR) and trade flows in the growth process. The results suggest that IPR and trade flows have positive effect on economic growth, moreover it is pointed out that to get higher economic status a country should focus on both trade and IPR. Another dimension of institutional role in the development process illustrated by Esfahani and Ramirez (2003). They analysed the impact of institutions and infrastructure on GDP per capita growth rate for 75 countries. The empirical results show that institutions cause effectiveness and credibility in government policy which leads development through the channel of infrastructure growth. In this way institutions play a mediator role in the economic growth: Zhang et al. (2015) evaluated the role of private property rights protection on intellectual property rights (IPR) and economic growth relationship. The purpose of study was to examine the role of financial markets in IPR-growth relationship. The findings suggest that underdeveloped markets affect the role of IPRs in the growth process. Moreover, the results show that there is strong IPR-growth relationship by combining IPR and private property rights.

Bonnal and YaYa (2015) analysed the relationship between political institutions, trade openness and economic growth. The purpose of the study was to examine; whether political institutions hamper economic growth? And whether GDP per capita and trade openness limit the persistence of institutions? They explored that there is weak evidence of impact of political institutions on economic growth, increase in GDP per capita and trade openness lead to competitive elections, which implies that GDP per capita and trade openness lead to more democratic political system. Mohtadi and Ruediger (2014) examined the relationship between IPR, human capital and economic growth and found a negative impact of IPR on economic growth when there is human capital below the threshold level. And there is positive impact of IPR on economic growth when human capital is above of threshold level.

Le (2009) examined the relationship between trade, remittances, institutions and economic growth, and explored that institution have indirect effect on economic growth through the channel of trade. Eicher and Leukert (2009) analysed the relationship between institutions and economic performance. They concluded that there is significant parameter heterogeneity across global and smaller samples. Moreover, it is pointed out that the instruments which significantly perform in global sample, neither perform in OECD nor in non-OECD sample. Busse and Hefeker (2007) examined the role of political risk and institutions in Foreign Direct Investment (FDI) inflows. The findings expose that in cross sectional analysis, government stability, democratic accountability and religious tensions in the host countries have negative and significant impact on FDI inflows, whereas GMM technique suggests that internal and external conflicts, law & order, ethnic tensions and bureaucratic quality are significant factors determining the FDI inflows.

Janjua and Samad (2007) examined the role of IPRs on economic growth and found that IPR have no significant impact on economic growth for 10 middle-income countries. Glaeser et al. (2004) investigated the role of institutions on economic growth. They concluded that there is no direct impact of institutions on growth while human capital has strong impact on growth. Furthermore, it is pointed out that poor countries gain from dictators' policies, which leads to high income as a result it promotes quality of institutions. Literature on institutions and economic growth analyses the role of political and economic institutions in determining the growth. Most of the studies show that institutions have direct positive impact on economic growth, whereas some studies points out that institutions play their role in growth through indirect channels by affecting human capital, physical infrastructure and innovations.

III. Methodology and Empirical Model

We have developed a model to examine the nexus between institutions and economic growth on the base of literature. A substantial body of literature provides the fact that not only physical capital, human capital and labour are the factors that determine growth, rather we should incorporate the political and economic institutions which shape the market environment under which key economic factors do perform. Following the work of Hall et al. (2010) and other literature, our model takes the form:

Economic Growth = f (Physical Capital, Population, Human Capital, Institutional governance, Trade openness, FDI)

We have developed the following equations;

$$Y_{it} = \alpha_0 + \alpha_1 K_{it} + \alpha_2 HK_{it} + \alpha_3 TO_{it} + \alpha_4 FDI_{it} + \mu_{it} \qquad (1)$$

To evaluate the direct impact of institutions, we have included an index of institutional governance in Eq.1.

$$Y_{it} = \beta_0 + \beta_1 K_{it} + \beta_2 HK_{it} + \beta_3 TO_{it} + \beta_4 FDI_{it} + \beta_5 Gov_{it} + \varepsilon_{it} \qquad (2)$$

To analyse the indirect role of institutional governance through the channel of population, we have included the population, and interaction variable of log of population and institutional governance index in Eq.1.

$$Y_{it} = \gamma_0 + \gamma_1 K_{it} + \gamma_2 HK_{it} + \gamma_3 T_{it} + \gamma_4 FDI_{it} + \gamma_5 P_{it} + \gamma_6 Govp_{it} + \epsilon_{it} \qquad (3)$$

Here Y shows log of real GDP per capita used as proxy of economic growth that is used in the literature (see, for example, Siddique et al., 2016), K shows log of Gross fixed capital formation, P represents the log of population, HK shows human capital index, T shows the trade openness, Gov shows index of institutional governance, GovP shows interaction variable of log of population and institutional governance index and $\mu_{it}, \varepsilon_{it}, \epsilon_{it}$ are random error terms of Eq. 1, 2 and 3 respectively. Earlier studies on the growth impacts of institutions taken the institutions as exogenous factor, but since last decade institutions are considered as endogenous factor which are determined by the level of income of the country, (See, for

example, Chong and Calderon, 2000, Acemoglu et al. 2001, Glaeser et al. 2004). So, we will also take the institutions as endogenous variable.

We want to analyse the impact of institutions on economic growth. As the major characteristics of institutional or governance indicators is that these vary in very small intervals, hence we shall address our research question on the panel data to find meaningful outcomes of the analysis. Major advantage of panel data is that we can find the heterogeneity of countries with respect to time and cross-sections. FEM and REM are basic techniques to estimate the panel data.

Fixed Effect Model
FEM uses the fixed effect dummies of countries to capture the country specific effects. Moreover, it can also be used to find time effects in the panel. FEM which captures country effects is also known as LSDV (Least Square Dummy Variable), because it uses N-1 dummies for countries, where, N is sample of countries in the panel.

$$Y_{it} = \alpha_{it} + \beta X_{it} + \varepsilon_{it}$$

Where, i shows country and t shows time. Y is economic growth; X is the vector of all explanatory variables, such as Capital, Human capital, rule of law, control over corruption, and trade openness.

Random Effect Model
Alternative way of estimating the panel data is Random Effect Model. REM is also known as Error Component Model. This model estimates an additional parameter of time variant dummy variable.

$$Y_{it} = \alpha_i + \beta i X_{it} + \mu_i + \varepsilon_{it}$$

One of major differences between FEM and REM is that the intercept of FEM gives fixed effect time invariant dummy of each cross section unit; on the other hand REM gives the intercept which consists of time variant dummy variables. Intercept of REM includes two components; unobservable stochastic part of error term and remaining part of the error term, these terms are normally distributed.

$$Y_{it} = \alpha_i + \beta i X_{it} + + v_{it} + \varepsilon_i$$

Here, ε_i specific effect of cross-sectional unit, whereas v_{it} is error component of both time and cross-sections.

Choice between FEM and REM
While estimating the panel data models, we often have to make choice between FEM and REM. These models give totally different results, if number of cross-sectional units, N is greater than time series T. Moreover, REM gives biased estimates of individual specific error term is correlated with independent variables of the model. In this case FEM is preferable. Hausman (1978) presents the test for making the choice between FEM and REM. This test, by using chi-square χ^2, compares the above two models; FEM and REM to check for the consistency.

System GMM for Dynamic Panel Data
Panel data are well suitable for analyzing the dynamic effects: i.e. in first order model:

$$Y_{it} = X'_{it}\beta + \gamma Y_{it-1} + \alpha_i + \varepsilon_{it}$$
$$= w'_{it}\delta + \alpha_i + \varepsilon_{it}$$

Where, w_{it} includes the lagged dependent variable. Introducing the lagged dependent variable is for the sake of adding dynamics to the equation. Any effect of X_{it} reflects the impact of new information.

In Fixed effect and Random effects both, lagged dependent variable is correlated with error term. This problem pertains even if assumption of no autocorrelation in error term is fulfilled.

A general approach has been developed in various stages in the econometric literature which relies on Instrumental Variables estimators, most recently by Arellano and Bond (1991) & Arellano and Bover (1995) on Generalized Method of Moment (GMM) estimators. Heterogeneity is swept from the model by taking first differences:

$$Y_{it} - Y_{i,t-1} = \delta(Y_{i,t-1} - Y_{i,t-2}) + (X_{it} - X_{i,t-1})'\beta + (\varepsilon_{it} - \varepsilon_{i,t-1})$$

If time series is long enough, we can use lagged differences $(Y_{i,t-2} - Y_{i,t-3})$ or the lagged levels, $Y_{i,t-2}$ and $Y_{i,t-3}$ as one or two IV for $(Y_{i,t-1} - Y_{i,t-2})$. The other variables can serve as their own instruments. Hausman and Taylor formulation of random effects model is extended by including lagged dependent variable:

$$Y_{it} = \gamma Y_{i,t-1} + X'_{1it}\beta_1 + X'_{2it}\beta_2 + Z'_{1i}\alpha_1 + Z'_{2i}\alpha_2 + \varepsilon_{it} + U_i$$
$$= \delta'w_{it} + \varepsilon_{it} + U_i$$
$$= \delta'w_{it} + \eta_{it}$$

Where,

$$W_{it} = [Y_{i,t-1} + X'_{1it} + X'_{2it} + Z'_{1i} + Z'_{2i}]'$$

It is $(1+K_1+K_2+L_1+L_2)*1$ vector.
Moment conditions used to formulate Instrumental Variable are;

$$E\left[\begin{pmatrix} x_{1it} \\ x_{2it} \\ z_{1it} \\ x_{1i} \end{pmatrix}(\eta_{it} - \eta i)\right] = E\left[\begin{pmatrix} x_{1it} \\ x_{2it} \\ z_{1it} \\ x_{1i} \end{pmatrix}(\varepsilon_{it} - \varepsilon_i)\right] = 0$$

IV. Data and Variables

Empirical estimation of the study uses the data of 1999-2014 for 91 countries. The logic behind selecting the panel data for estimation is that, we have to analyse the role of institutions on growth globally. The data on GDP per capita (constant 2005 US$) used as a proxy of economic growth, it is also used by Siddique and Majeed (2015). The data on gross fixed capital formation (constant 2005 US$), population (as total residents of country), Foreign Direct Investment (sum of inflow of equity capital), and trade openness (the ratio of volume of trade to GDP) has been taken from World Development Indicators (WDI) 2015. The data on human capital is taken from Penn World Tables PWT 8.1 (based on years of schooling and return on education).

We have developed an index of institutional governance by taking simple average of six institutional governance indicators-Control over corruption; regulatory quality; rule of law; government effectiveness; voice & accountability; and political stability & absence of violence. We have developed and used it in our empirical analysis so that we can capture the overall aspects and quality of institutional governance. The data on institutional variables; control over corruption, regulatory quality, voice and accountability, political stability & absence of violence, and rule of law has been taken from World Governance Indicators (WGI).

V. Empirical Results

This section contains the results and interpretations. We have two basic models; one for economic growth, it is estimated by Random Effect Model and system-GMM. We have estimated three equations. The results of Hausman test and REM are given in Table 1 & 2 respectively. The results of system-GMM are given in Table 3 and diagnostic checks for the estimated equations are given in Table 4. Hausman (1978) presents the test for making the choice between FEM and REM. This test, by using chi-square χ^2, compares the two models; FEM and REM to check for the consistency.
H0: Apply REM
H1: Apply FEM

Table 1: Results of Hausman Test

Model	Probability (chi-square χ^2)	Result
Eq.-1	0.0001	Difference between coefficients is systemic
Eq.-2	0.0000	Difference between coefficients is not systemic

There is no systematic difference between REM and FEM. So we have reported the estimates of REM.

In Eq. 1, we have estimated the impact of capital, human capital, trade openness and foreign direct investment on economic growth. The results show that capital has positive and significant impact on economic growth. Its co-efficient is 0.322 that shows a 1% increase in capital leads to 0.322% average economic growth of selected panel of countries. The result is justified with economic theory, i.e. increase in capital leads to increase in production and hence employment, which enhances economic growth. Human capital has significant positive impact on growth. Its co-efficient is 0.437 which shows a 1 unit increase in human capital leads to 0.437% average increase in economic growth. Human capital is productive and effective part of population of any country, which can contribute in the economic activities, efficiently which enhances the economic growth. Trade openness has positive but insignificant impact on growth. This result can be interpreted in a way that trade openness leads to distortions in domestic economy of importing countries. FDI has positive significant impact on economic growth. Its coefficient is 0.0126 which shows a 1% increase in FDI inflows leads to on average 0.0126% increase in growth in the sample countries.

In Eq. 2, we have estimated the impact of capital, human capital, trade openness, FDI and index of institutional governance on economic growth. The capital, human capital and FDI has positive and significant impact on economic growth of sample countries. Trade openness has positive insignificant impact on economic growth. Index of institutional governance has significant positive impact on economic growth. Its co-efficient is 0.114 which implies a 1 unit increase in index leads to average increase of 0.114% in growth of the panel countries. Institutional governance is one of crucial determinants of growth. Institutional governance shows the socio-economic indicators of any countries; such as rule of law, control over corruption, voice & accountability. Good institutional governance creates incentives for economic agents to perform in the economy. Bad institutional governance creates positive transaction cost for economic agents, such as investors, human capital. Investors invest their capital, wherever they expect high returns, easy justice and no corruption. So the institutional governance is growth enhancing by creating incentives for economic agents.

In Eq.3, we have estimated the impact of capital, human capital, trade openness, FDI, population and interaction variable of population and institutional governance index. We have included the interaction term to see whether the institutional governance can play its role in population management so that population can contribute in more effective and beneficial way in the growth process. Estimates show that capital and human capital have positive impact on economic growth. FDI

has negative significant impact on economic growth. It is so because, FDI inflows create competition for domestic firms, which leads to fall in profits and consequently employment falls. It leads to fall in economic growth. The empirical results show that population has negative significant impact on growth, which indicate the fact that the high population leads to fall in growth. Moreover, it leads to increase in dependency ratio and problems of health, education, and management. Interaction term of population and institutional governance index shows positive significant impact on economic growth. Its co-efficient is 0.0142 which shows that good quality institutional governance can utilize its population in positive way in the growth process. Good quality governance can play its role by appropriate health, education and community development policies to get positive benefits from its population.

Table 2: Results of REF Model

Variables	Eq. (1) Y	Eq. (2) Y	Eq. (3) Y
K	0.322***	0.310***	0.488***
	(0.0117)	(0.0121)	(0.0155)
HK	0.437***	0.497***	0.656***
	(0.0354)	(0.0373)	(0.0414)
T	2.30e-05	0.00010	-0.00017
	(0.00019)	(0.00019)	(0.00025)
FDI	0.0126***	0.0112***	-0.00115
	(0.00303)	(0.00312)	(0.00415)
P			-0.523***
			(0.0222)
GovP			0.0142***
			(0.00145)
Gov		0.114***	
		(0.0217)	
Constant	-0.230	-0.136	4.016***
	(0.250)	(0.245)	(0.287)
Obs.	866	866	866
No. of id	76	76	76
Standard errors in parentheses *** $p<0.01$, ** $p<0.05$, * $p<0.1$			

We have estimated our equations by applying system GMM (Table 3) for dynamic analysis and to tackle endogeneity in the model. In Eq.1, we have estimated the impact of capital, human capital, trade openness and FDI on economic growth. The coefficient of capital is 0.390 which shows a 1% increase in capital leads to 0.390% average increase in economic growth in selected countries. Human capital has also significant positive impact on economic growth. Trade openness and FDI have negative and insignificant impact on economic growth. Moreover, the co-efficient of lagged dependent variable is -0.00881. We can find whether the system is convergent or non-convergent by using this co-efficient. (1-(-0.00881))=1.00881; as the resulting root is greater than zero, so the system is non-convergent. It shows that any divergence of the system from its long-run path will increase every year by average 0.00881%.

Table 4 shows the results of AR2 and Sargan/Hansen tests. The P-value of AR2 is 0.615. It shows the acceptance of H_0 of "No Autocorrelation" between instrumental variables and errors of the model. P-value of Sargan test is 0.309, which favours acceptance of H0 of "No endogeneity". In Eq.2 we have estimated the impact of capital, human capital, trade openness, FDI and institutional governance index (Table 3). The coefficient of capital shows that 1% increase in capital leads to 0.291% average increase in economic growth of selected sample of countries. Human capital has co-efficient of 0.562. It shows that 1 unit increase in human capital leads to average increase in economic growth of sample countries by 0.562%. Trade openness and FDI have positive insignificant impact on economic growth. The coefficient of institutional governance index is 0.674 which indicate a 1 unit increase in institutional governance index leads to 0.674% average increase in economic growth of selected countries. The coefficient of lagged dependent variable is 0.282; (1-0.282) =0.718>0, so the system is non-convergent. If shock "A" is occurred in the system, it will increase by average 0.718% of magnitude of "A" every year. Diagnostic checks (Table 4) show that P-value of AR2 and Sargan/Hansen test is greater than 0.1. So there is no Autocorrelation and endogeneity in the model.

In Eq.3 the impact of capital, human capital, trade openness, FDI, population and interaction variable for population and institutional governance index on economic growth is analysed (Table 3). The apital has significant positive impact on economic growth and shows a 1% increase in capital leads to 0.372% average increase in economic growth of sample

countries. The Human capital has significant positive impact on economic growth of sample countries. Trade openness and FDI have negative and significant impact economic growth in sample countries. Population has significant negative impact on economic growth, its co-efficient shows that a 1% increase in population leads to fall in economic growth of sample countries, by average of 0.651%. Interaction variable of population and institutional governance index represent the role of institutional governance in population management through their public policies. Co-efficient of interaction term is 0.0367. It denotes that when good quality institutional governance complements the population, the population performs to increase the economic growth. In Table 4, the diagnostic checks show that P-value of AR2 is 0.227, whereas the P-value of Sargan/Hansen test is 0.380. So there is no autocorrelation and problem of endogeneity in the model.

Table 3: Results of System GMM

	(1)	(2)	(3)
Variables	Y	Y	Y
Lagged Dependent Variable	-0.00881	0.282*	0.0648
	(0.109)	(0.167)	(0.145)
K	0.390***	0.291***	0.372***
	(0.0737)	(0.0833)	(0.0758)
HK	0.629***	0.562**	1.152***
	(0.157)	(0.241)	(0.299)
T	-8.52e-05	0.00050	-1.21e-05
	(0.00059)	(0.00061)	(0.00064)
FDI	-0.000294	0.00071	-0.000513
	(0.00271)	(0.00309)	(0.00298)
P			-0.651*
			(0.388)
Gov*P			0.0367*
			(0.0206)
Gov		0.674**	
		(0.339)	
Obs.	381	369	369
Number of ID	58	58	58
Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1			

Table 4: Diagnostic checks

	Eq-1	Eq-2	Eq-3
AR2			
P-Value	0.615	0.273	0.227
Sargan / Hansen test			
P-Value	0.309	0.309	0.380

VI. Conclusions

Current age of globalization and industrial revolution has shifted the debate of economic growth to environment-friendly economic growth and development. Industrial development promotes economic growth. Good quality governance formulates long-term policy by incorporating the rights of future generation. Furthermore, it pursues the economic growth policies which don't hurt the rights of future generations. Governance is one of major factors which determine the growth process. Governance, by pursuing social and economic policies, determines the condition of transaction cost to perform in any economy. This study is an attempt to analyse the nexus between institutional governance and economic growth. We have used annual time series data of 1999-2014 for 91 countries, using REM, and System-GMM techniques. Our study examines the direct impact of governance which is measured by the index of institutional governance. In addition, our analysis includes complementary role of institutions through the channel of population which is calculated by interaction variable of "population and Governance index".

The results show that institutional governance has direct and significant impact on economic growth for selected panel of countries. Moreover, it has also indirect impact on growth through the channel of population; as direct impact of population is found to be negative and significant, whereas when institutional governance interacts with the population, sign turns positive and significant. The Whole empirical and theoretical analysis of the study shows that institutional governance is significant factors which can promote economic growth, directly as well through the channels of population. The good quality institutional governance is crucial to generate transactions-cost less economy, where economic agents can

effectively contribute in the growth process. Population complemented with bad institutional governance is a problem, whereas population with good quality institutional governance can enhance economic growth.

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List of Countries

1	Australia	24	Brazil	47	Colombia	70	Saudi Arabia
2	Austria	25	Honduras	48	Costa Rica	71	Serbia
3	Belgium	26	Jordan	49	Cuba	72	Suriname
4	Canada	27	Malaysia	50	Egypt	73	Swaziland
5	Cyprus	28	Mexico	51	EL Salvador	74	Turkmenistan
6	Denmark	29	Pakistan	52	Finland	75	UAE
7	France	30	Paraguay	53	Gambia	76	Uruguay
8	Germany	31	Peru	54	Haiti	77	Uzbekistan
9	Greece	32	Philippines	55	Iran	78	Venezuela
10	Hungary	33	Senegal	56	Ireland	79	Korea, Rep.
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12	Italy	35	Sri Lanka	58	Kyrgyz Republic	81	Morocco
13	Japan	36	Sudan	59	Latvia	82	Tanzania
14	Malta	37	Tajikistan	60	Luxembourg	83	Algeria
15	New Zealand	38	Thailand	61	Madagascar	84	Belize
16	Norway	39	Turkey	62	Mali	85	Armenia
17	Portugal	40	Vietnam	63	Netherland	86	Burkina Faso
18	Sweden	41	Argentina	64	Nicaragua	87	Brunei Darussalam
19	Switzerland	42	Azerbaijan	65	Oman	88	Jamaica
20	USA	43	Belarus	66	Poland	89	Maldives
21	UK	44	Botswana	67	Qatar	90	Nepal
22	Spain	45	Bulgaria	68	Romania	91	Panama
23	Bangladesh	46	Chad	69	Russian Federation		