

The Role of Institutional Quality for Growth, Income Inequality and FDI: A Dynamic Panel Data Approach **Zaheer Ahmed Babar¹, Muhammad Abdul Quddus²**

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Institutional quality plays a pivotal role in a country's economic growth. The increase in institutional quality leads a country to a higher level of economic growth and stabilize this growth level for a longer time. Many studies have attempted to check the impact of institutional quality on economic growth, income inequality and FDI but this study also explore the impact of institutional quality on growth, inequality and FDI with a new and updated Kuncic's dataset of Institutional quality. The Institutional quality decomposed into a legal institution, political institution and economic institution. This study used 68 developing and developed economies and applied GMM and PLIML techniques. This study found that Institutional quality in all form like legal, political and economic play a very important role in GDP growth, Gini coefficient and FDI in both developing and developed countries. This study gave evidence of this argument; investor come there where a higher quality of institutions.

Keywords: Legal Institutions, Political Institutions, Economic Institutions, Panel GMM Methodology, Gini Coefficient, GDP Growth, FDI.

INTRODUCTION

There are always debate on the influence of those factors which contributed more on macroeconomic variables. Robert Solow (1956) focused on technology for growth of different macroeconomic variables. Later on Gregory Mankiw, David Romer extended this concept with addition of human capital. In late 1980s and early 1990s a new concept were floated into Economic growth literature which was Institutions. The pioneer works on this concept was developed by North (1991). He defined institutions as "formal and informal rules of games and their enforcement characteristics". After the North, there are lot of empirical literature (Hall & Jones, 1999, Acemoglu et al. 2001, 2003, 2005; Levine & Easterly, 2003; Knack & Keefer, 1995) which established the relationship between institutions and economic growth. Institutional Quality has positive impact on GDP per Capita. Physical and human capital lead to higher level of development if good institution are there. The role of institutions in channeling to increase capital which ultimately increase the public investment in human capital.

If higher the institutional quality, the more equitable income distribution. Poor performance in institutions may increase income inequality. It also affects the social sector and slow down the growth rate of a country (Acemoglu et al., 2001, 2003, 2005; Levine & Easterly, 2003; Knack & Keefer, 1995). For example, the country which have higher level of Institutional Quality such as Denmark, Sweden and New Zealand have more equitable income distribution. On the other hand countries such as Bangladesh, India and Pakistan at the highest level of corruption and low level of Institutional Quality are also less equitable in income distribution.

Foreign Direct Investment (FDI) and Institutional Quality has also relationship. The Institutional Quality boosting the investment and which ultimately impact on economic development. Those country which have good institutions, attract the investors and which have low quality of Institutions are low

level of foreign investment. There are lot of literature on it where dominant view is that if good governance, low level of corruption, protection of property rights and good judicial system then it simulate the investor to invest in these countries (Buchanan, 2014; Habib & Zurawicki 2001; Gani, 2007; Gliberman & Shapiro, 2002; Peres, 2018).

There is lot of empirical literature which established the link among institutional quality and other macroeconomic variables. But in these studies still lacks a common sense of what institutions are and how can they be classified. There is still issue how conceptualize the theoretical institutions into empirical research. The Kuncic (2014) tackled this issue at some extended level. He used 30 well established indicators for institutional quality and decomposed it into three types of institutions like legal institutions, economic institutions and political institutions. In this paper we updated Kuncic (2014) dataset and try to established relationship with GDP growth, Gini coefficient and FDI of developing and developed countries.

There is need to conduct a longitudinal study which examined the impact of institutions into legal institutions, economic institutions and political institutions on GDP growth, Gini coefficient and FDI. The institutional quality should be consider separately as compare to consider as a whole subject. There is heterogeneity in institutional quality in developed and low developing countries so there is need to conduct separately analysis between developing and developed counties.

Objective of study

1. Explore the relationship between Institutional quality (legal, political, economic) and GDP growth, in developed and developing countries.
2. Explore the relationship between Institutional quality (legal, political, economic) and income distributions in developed and developing countries.

3. Explore the relationship between Institutional quality (legal, political, economic) and FDI in developed and developing countries.
4. To suggested some policy implication.

LITERATURE REVIEW

This study is going to investigate impact of institutional quality on GDP growth, Income inequality and FDI. In this sections, comprehensive and detailed literature review is arranged to explored impact of institutional quality on GDP growth, Income inequality and FDI.

Ajide and Alimi (2020) investigated the conditioning role of institutions in environment- health and growth nexus in region of Africa. The study used panel system GMM technique and found that institutional dysfunctions have negative impact on health outcomes. It weaken the life expectancy and increase the infant deaths. The study concluded that if institutional quality improve then it will effect positively on health-related outcomes of African Region.

Lee and Lee (2018) investigated the influence of country risk on income inequality. The study used country risk data of “ICRG” on economic, political and financial risk and income inequality dataset used “SWIID” of Solt (2009). The study used 110 countries in analysis and made different level of income groups. The study tackled the endogeneity problem with GMM methodology. The study concluded that higher economic and political risk made higher level of inequality. The study found that lower income country faced higher level of income gape and they have also higher level of risk on financial, economic and political. In this study, it’s a country’s stability lead to improve the income distribution.

Asghar et al. (2015) investigate the role of institutional quality on economic growth. The study used panel data (1990-2013) of selected developing economies of Asia. The study used Kuncic (2014) institutional quality index and it consist on economic, political and legal institutions. The other variables study used GDP growth rate, Gross Fixed Capital Formation, Log of Labor Force and Trade Openness. The study drawn the result through Panel ARDL and Panel causality techniques and these results showed that institution quality exerts positive results on economic growth. The study concluded that radical changes and integrated efforts are required in these institutions for quality, ultimately it will boost other sectors of the economy.

Amendola et al. (2013) examined the role of institutional development in income distribution of developing economies. The study argued that institutions are stable and consolidated in developed economies while in developing economies, institution are unstable and more frequently fail. The study measured economic institution in form of property rights, political institution in form of period of democracy and Gini coefficient as income inequality variable. The study used sixty three developing countries which are defined as low and middle income economies. The study examined the role of institution through cross-section data analysis and panel data analysis. Both analysis suggested that property rights increases income inequality in developing economies. The study concluded that in the autocracy, institution performed poor and it decreases the share of middle class.

Murtaza and Faridi (2016) investigated the role of the quality of governance and democratic institutions for long run growth in Pakistan. The study used Time Varying Parameters Models (TVPs) which are used to explore dynamic relationship between growth and economic institutions. The study used Dataset of “Integrated Network for Societal Conflict Research (INSCR) and International Country Risk Guide (ICRG)”. The study concluded that economic institution has no impact on Pakistani growth directly but when inclusion of time trend it has impact on growth. This shows that economic institution evolve over time has positively impact on growth. Similarly democracy with inclusion of time has positive impact on growth otherwise very small impact.

Keefer and Knack (1997) explored the factors which a faster growing developing country did not sustain its growth. The study took a cross-country analysis through Institutional Explanation. The study concluded that poor institutions of a country are the major cause of this divergence to growth. The study employed rule of law, corruption, risk of expropriation and contract repudiation as indicators of institutional quality. The study strengthen his argument with empirical analysis that institutional environment played a major role to this divergence.

Kemp (2011) examined the political regimes and income inequality through pooled regression on a panel data. The study justified the Selectorate theory with empirical analysis. According to this theory, inequality is determined by a country historical facts, such as the colonial background, well function democracy, ethno-linguistic fractionalization. This study used “The Logic of Political Survival Data Source (LPS)” to quantify the Political regime and used military regime and stability of political parties coding in this dataset. Income inequality is measured through (UNU-WIDER, 2007) world income inequality database ver. 2.0. This study concluded that political regime, historical factors and ethno-linguistic are important determinants for income distributions in a country.

Krieger and Meierrieks (2016) examined the relationship between income inequality and economic freedom for panel of 100 countries for the period of 1971-2010. The study used panel Granger non-causality and system GMM approach to check causality relationship and dynamic estimation between inequality and economic freedom. This study rejected bi-directional approach between inequality and economic freedom and showed that inequality has negative impact on economic freedom with uni-direction. The study argued that negative impact of inequality on economic freedom is due to poor quality of political institutions. These political institutions defend the elite business tycoon and their economic interests. These poor quality institutions discourage innovation and reduce competition. The study concluded that if inequality is low then democratic institutions protected the economic freedom otherwise democratic institutions do not prevent the erosion of economic freedom.

Pedauga et al. (2017) examined the relationship among corruption, political orientation and income inequality from Latin American countries. This study consider measurement error in empirical estimation of corruption impact on income inequality. The study found that corruption has a positive impact on income

inequality and if improved the policies and corruption control mechanisms that would yield good results in term of income inequality. The political orientation of Latin American were not affected on income distributions due to low statistical significance. The study found that populist regimes of Latin America has negative impact on income distribution but social democratic governments seem not to have significant impact on income inequality.

Alexiou et al. (2014) employed ARDL methodology to investigate the relationship between institutional environment and economic performance in the case of Sudan. Time series data for the time period of 1972 to 2008 was used. Independent variables included political freedom, government spending, population growth, inflation, trade openness, domestic credit and domestic investment. Results showed negative and significant impact on political freedom on GDP per capita. Policy makers were suggested to take measures for further improvement among institutions. Investment and population showed positive while trade openness showed negative influence on economic prosperity.

Elgindi (2017) conducted a study to investigate the impact of non-liberal globalization, population growth, dependency on natural resources, FDI, trade openness and institutional quality on income inequality. Panel data for 96 developing economies was used for the time period of 1980 to 2010. Results of Prais–Winsten regressions showed population growth as significant factor of income inequality. Dependency on natural resources showed positive impact for income inequality. Negative coefficient value of trade openness and positive coefficient value of FDI were found towards the income inequality. Institutional quality was negatively associated with income inequality.

Naude and Krugell (2007) employed cross-country econometric technique to examine the responsible factors of foreign direct investment in Africa. Generalized method of moments was used to conduct panel regression analysis. The study used inflation, literacy and government consumption as independent variables. Governance was considered as a major determinant of foreign direct investment and governance was measured through including accountability, rule of law, regulatory burden and political stability. Results showed insignificant impact of geography on FDI. Among all the determinants, political stability was found as significant driving factor of foreign direct investment in Africa.

DATA AND METHODOLOGY

In order to measure the impact of institutional qualities on Economic Growth, Income Inequality and FDI, different studies have used different proxies for Institution quality but in this paper, we used Kuncic (2014) dataset and updated it till 2018. The Data of Gini coefficient obtained from Solt (2019) dataset. The data on GDP per Capita, FDI and other control variables obtained from World Development Indicators (WDI). The countries used in this analysis which 33 are developing and 35 are developed and their list are shown in appendix II.

The institutional quality variables are assumed to be endogenous because causality may run in both direction so these regressors may be correlated with error term. The presence of

lagged dependent variable give rise to autocorrelation and panel dataset has a short time dimension (T= 29) as compare to country dimension (N=68). To cope these problems, we used Generalize Method of Moments (GMM) technique and for robustness used Panel Limited Information Maximum Likelihood (PLIML) technique to explore the institutions impact. The Arellano-Bond (1991) difference GMM give batter result as compare to two-stage least square method (2SLS) because 2SLS results show that instruments are weak. The advantage of GMM technique is that it used Hansen test which check the over identifying the instrument. According to our empirical models to be estimated can be rewritten as:

$$LGDPPC_{it} = \alpha_1 LGDPPC_{it-1} + \alpha_2 IQ_{it} + \alpha_3 K_{it} + U_{it} \dots (1)$$

$$GINI_{it} = \alpha_1 GINI_{it-1} + \alpha_2 IQ_{it} + \alpha_3 K_{it} + U_{it} \dots (2)$$

$$FDI_{it} = \alpha_1 FDI_{it-1} + \alpha_2 IQ_{it} + \alpha_3 K_{it} + U_{it} \dots (3)$$

EMPIRICAL RESULTS

The Determinants of GDP per Capita

This model specified to examine the Determinants of GDP per Capita (LGDPPC). The model focused to explore the factors which affect LGDPPC in Developed and Developing Economies. The model is simplified further into six sub models. Equations 1, 3, 5, included Economic Institutional Quality, Legal Institutional Quality and Political Institutional Quality and equations 2, 4 and 6 included furthermore 3 variables likes, Unemployment rate, FDI and Gini Coefficient. The results obtained from applying this model are the following (Table 1). These results shows that all the variables are significant with expected signs. The table 1 reveal EIQ has a significant and positive impact on LGDPPC in both Developing and Developed countries during the period under investigation. An increase of 1% in EIQ generate the increase of 0.165, 0.329, 0.134, 0.220, 0.140 and 0.214 percent in GDP per capita respectively in table 1.

Table 1: The Determinants of GDP per Capita: Panel GMM Methodology

| | Developed Countries | | Developing Countries | | All Sample Countries | |
|-----------------------|---------------------|---------|----------------------|----------|----------------------|---------|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| GDPPC _{t-1} | 0.933* | 0.811* | 0.952* | 0.884* | 0.948* | 0.862* |
| | -174.5 | -83.87 | -109.05 | -29.7 | -264.1 | -131.07 |
| EIQ | 0.165* | 0.329* | 0.134* | 0.220* | 0.140* | 0.214* |
| | -11.19 | -9.09 | -5.21 | -4.78 | -12.74 | -9.86 |
| PIQ | 0.168* | 0.193* | 0.391* | 0.415* | 0.368* | 0.536* |
| | -5.4 | -3.25 | -23.4 | -5.04 | -15.93 | -15.92 |
| LIQ | 0.167* | 0.185* | 0.130* | 0.140*** | 0.173* | 0.114* |
| | -15 | -5.1 | -3.25 | -1.76 | -10.33 | -5.37 |
| GINI | - | -1.37** | - | -1.356* | - | -1.02* |
| | | -2.18 | | -10.46 | | -4.09 |
| FDI | - | 0.005* | - | 0.003* | - | 0.001 |
| | | -6.1 | | -4.25 | | -0.94 |
| UNEMP | - | -0.179* | - | -0.006 | - | -0.139* |
| | | -6.79 | | -1.28 | | -11.89 |
| AR1 (p-value) | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.02 |
| AR2 (p-value) | 0.31 | 0.09 | 0.23 | 0.21 | 0.6 | 0.81 |
| Hansen Test (p-value) | 1 | 1 | 1 | 1 | 0.76 | 1 |
| Observations | 945 | 945 | 891 | 891 | 1836 | 1836 |
| Total Countries | 35 | 35 | 33 | 33 | 68 | 68 |

Note: *, **, *** denote significant at 0.01, 0.05 and 0.10 level respectively and t-values are in parenthesis.

The table 1 reveal that LIQ has a significant and Positive impact on LGDPPC in both Developing and Developed countries during the period under investigation in all equations. An increase of 1%

in LIQ generate the increase of 0.167, 0.185, 0.130, 0.140, 0.173 and 0.114 percent in GDP per capita respectively in table 1.

The table 1 reveal that PIQ has a significant and positive impact on LGDPPC in both Developing and Developed countries during the period under investigation in all equations. An increase of 1% in PIQ generate the increase of 0.168, 0.193, 0.391, 0.415, 0.368 and 0.536 percent's in GDP per capita respectively in all six equations.

FDI has a significant and Positive impact on GDPPC in both Developing and Developed countries during the period under investigation. Gini Coefficient and Unemployment has a significant and negative impact on LGDPPC in both Developing and Developed countries during the period under investigation. The Hansen test indicates that instruments are not weak in all six models. The Value of AR (2) show that there are no autocorrelation in these models.

Robustness Analysis for GDPPC

For robustness analysis we used Panel Limited Information Maximum Likelihood (PLIML) Technique for GDPPC Determinants. This technique is estimating the dynamic panel structural equations when endogenous variables are in a models. This technique give the consistent estimations and also has an asymptotic normality. The Panel GMM and PLIML have same estimation result for general panel structural equations (Akashi & Kunitomo, 2010). In this study, we applied PLIML to verify our estimations of GMM techniques for GDPPC Determinants.

Table 2: The determinants of GDP per Capita: The Panel LIML Methodology

| | Developed Countries | | Developing Countries | | All Sample Countries | |
|-------------------------|---------------------|----------|----------------------|--------|----------------------|---------|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| C | 2.18* | 1.57* | 1.16* | 1.25* | 1.23* | 1.04* |
| | -43.95 | -11.93 | -18.22 | -13.24 | -35.28 | -26.8 |
| EIQ | 1.57* | 1.29* | 2.27* | 2.04* | 2.12* | 2.0* |
| | -6.4 | -3.15 | -14.91 | -13.51 | -21.15 | -12.52 |
| LIQ | 0.70* | 8.63* | 0.89* | 1.20* | 1.09* | 0.86* |
| | -2.99 | -2.14 | -4.58 | -4.01 | -7.16 | -4.93 |
| PIQ | 0.59* | 6.87** | 0.61* | 0.54* | 0.81* | 1.23* |
| | -7.82 | -2.14 | -6.46 | -7.05 | -5.21 | -18.61 |
| GINI | - | -0.88* | - | -0.24* | - | -0.41* |
| | | -15 | | -12 | | -18.61 |
| FDI | - | 0.003*** | - | 0.04* | - | 0.003* |
| | | -1.65 | | -3.44 | | -25.9 |
| UNEMP | - | -0.047* | - | -0.02* | - | -0.003* |
| | | -13.4 | | -11.6 | | -8.26 |
| R ² | 0.646 | 0.792 | 0.347 | 0.314 | 0.668 | 0.648 |
| Adjusted R ² | 0.645 | 0.805 | 0.344 | 0.31 | 0.667 | 0.647 |

Note: *, **, *** denote significant at 0.01, 0.05 and 0.10 level respectively and t-values are in parenthesis.

The Determinants of Gini Coefficient

This model specified to examine the Determinants of GINI. The model focused to explore the factors which affect GINI in Developed and Developing Economies. The model is simplified further into 6 sub models. Equations 1, 3 and 5, included Economic Institutional Quality, Legal Institutional. Quality and Political Institutional Quality and Equation 2, 4 and 6 included furthermore three variables likes Tax to GDP ratio, Unemployment and GDP per capita.

Table 3: The Determinants of Gini Coefficient: Panel GMM Methodology

| | Developed Countries | | Developing Countries | | All Sample Countries | |
|-----------------------|---------------------|---------|----------------------|---------|----------------------|---------|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| Gini ₁ | 1.012* | 0.972* | 0.832* | 0.685* | 0.986* | 0.94* |
| | -54.5 | -41.54 | -56.2 | -22.2 | -128.7 | -106.1 |
| EIQ | -0.015* | -0.166* | -0.003* | -0.087* | -0.011* | -0.041* |
| | -7.38 | -4.84 | -3.93 | -2.88 | -14.9 | -6.88 |
| PIQ | - | -0.016* | -0.011* | -0.013* | -0.096* | -0.014* |
| | 0.007** | | | | | |
| | -2.19 | -4.3 | -6.13 | -3.29 | -8.96 | -6.68 |
| LIQ | -0.009* | -0.171* | - | -0.08** | -0.053* | -0.026* |
| | | | 0.036** | | | |
| | -3.63 | -4.84 | -2.01 | -2 | -8.93 | -2.48 |
| GDPPC | - | -0.017* | - | -0.035* | - | -0.010* |
| | | -2.51 | | -3.22 | | -3.32 |
| TGDP | - | -0.001 | - | -0.008* | - | -0.028* |
| | | -1.13 | | -3.66 | | -4.24 |
| UNEMP | - | 0.003* | - | 0.001** | - | 0.002* |
| | | -2.52 | | -2.02 | | -4.29 |
| AR1 (p-value) | 0.012 | 0.012 | 0.023 | 0.026 | 0.017 | 0.017 |
| AR2 (p-value) | 0.32 | 0.22 | 0.3 | 0.32 | 0.36 | 0.36 |
| Hansen Test (p-value) | 1 | 1 | 1 | 1 | 0.94 | 0.99 |
| Observations | 945 | 945 | 891 | 891 | 1836 | 1836 |
| Total Countries | 35 | 35 | 33 | 33 | 68 | 68 |

Note: *, **, *** denote significant at 0.01, 0.05 and 0.10 level respectively and t-values are in parenthesis.

The results obtained from applying this model are the following (Table 3). These results show that all the variables are significant with expected signs. The table 3 reveal that EIQ has a significant and negative impact on GINI in both Developing and Developed countries during the period under investigation. An increase of 1% in EIQ decrease of 0.015, 0.166, 0.003, 0.087, 0.011 and 0.041 percent in GINI respectively in all six equations. The table 3 reveal that LIQ has a significant and negative impact on Gini Coefficient in both Developing and Developed countries during the period under investigation. An increase of 1% in LIQ decrease of 0.009, 0.171, 0.036, 0.08, 0.053 and 0.026 percent's in GINI respectively in all six equations. The table 3 reveal that PIQ has a significant and negative impact on GINI in both Developing and Developed countries during the period under investigation. An increase of 1% in PIQ decrease the 0.007, 0.016, 0.011, 0.013, 0.096 and 0.014 percent's in GINI respectively in all six equations. TGDP has a significant and negative impact on GINI in both Developing and Developed countries during the period under investigation. LGDPPC has a significant and negative impact on GINI in both Developing but not in Developed countries during the period under investigation. Unemployment has a significant and positive impact on GINI in both Developing and Developed countries during the period under investigation. The Hansen Test indicates that instruments are not weak in all six models. The Value of AR (2) show that there are no autocorrelation in Gini Coefficient models.

Robustness Analysis for Gini's Determinants

For robustness analysis we used Panel Limited Information Maximum Likelihood (PLIML) Technique for Gini's Determinants. In this study, we applied PLIML to verify our estimations of GMM techniques for Gini's Determinants. The model of Gini for the both Developing and developed countries has been estimated using Panel LIML Methodology. The result obtained from applying this model are the following (Table 4).

The result of Table No. 4 matched with GMM technique results of Table No. 3. All the variables are significantly affected the Gini with expected sign.

Table 4: The determinants of Gini coefficient: The Panel LIML Methodology

| | Developed Countries | | Developing Countries | | All Sample Countries | |
|-------------------------|---------------------|---------|----------------------|----------|----------------------|--------|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| C | 0.52* | 0.86* | 0.17* | 0.15* | 0.53* | 0.58* |
| | -7.05 | -4.49 | -14.01 | -7.82 | -8.39 | -6.79 |
| EIQ | -0.16* | -0.30* | -0.09* | -0.06* | -0.06* | -0.24* |
| | -7.83 | -14.9 | -4.6 | -2.78 | -3.34 | -13.13 |
| PIQ | -0.15* | -0.16* | -0.17* | -0.16* | -0.10* | -0.14* |
| | -4.92 | -4.54 | -4.41 | -3.9 | -3.61 | -4.35 |
| LIQ | -0.25* | -0.38* | -0.65* | -0.51* | -0.18* | -0.32* |
| | -8.31 | -11.71 | -13.28 | -8.03 | -6.53 | -10 |
| | - | -0.11* | - | -0.03* | - | -0.06* |
| LGDPPC | - | -18.28 | - | -4.14 | - | -16.3 |
| TGDP | - | -0.003* | - | -0.09*** | - | -0.01* |
| | - | -11.92 | - | -1.69 | - | -5 |
| UNEMP | - | 0.018* | - | 0.03* | - | 0.06** |
| | - | -3.7 | - | -7.15 | - | -2.01 |
| R ² | 0.488 | 0.625 | 0.18 | 0.357 | 0.238 | 0.402 |
| Adjusted R ² | 0.486 | 0.623 | 0.177 | 0.353 | 0.237 | 0.4 |

Note: *, **, *** denote significant at 0.01, 0.05 and 0.10 level respectively and t-values are in parenthesis.

The Determinants of Foreign Direct Investment

This model specified to examine the FDI. The model focused to explore the factors which affect FDI in Developed and Developing Economies. . The model is simplified further into 6 sub models. Equations 1,3 and 5 included Economic Institutional Quality, Legal Institutional Quality and Political Institutional Quality and Equations 2,4 and 6 included furthermore three variables likes, GDP per Capita and Exports. The model of FDI for the both Developing and Developed countries has been estimated using Panel GMM methodology. The results obtained from applying. This model are the following (Table 5). These results shows that all the variables are significant with expected signs. The table 5 reveal that EIQ has a significant and Positive impact on FDI in both Developing and Developed countries during the period under investigation. An increase of 1% in EIQ increase the 0.194, 2.10, 2.64, 2.27, 5.55 and 1.21 percent's in FDI respectively in all six equations.

Table 5: The Determinants of FDI: Panel GMM Methodology

| | Developed Countries | | Developing Countries | | All Sample Countries | |
|-----------------------|---------------------|---------|----------------------|--------|----------------------|--------|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| FDI ₁ | 0.437* | 0.320* | 0.698* | 0.276* | 0.387* | 0.251 |
| | -39.5 | -15.02 | -17.84 | -12 | -355.7 | -39.41 |
| EIQ | 1.94* | 2.10*** | 2.64* | 2.27* | 5.55* | 1.21** |
| | -5.31 | -1.78 | -3.19 | -6.87 | -40.12 | -2.22 |
| PIQ | 14.6* | 12.83* | 4.60* | 4.75* | 1.76* | 6.33* |
| | -8.65 | -4.4 | -3.43 | -3.19 | -4.75 | -7.32 |
| LIQ | 4.47* | 5.14* | 4.84* | 0.139 | 1.73* | 1.61** |
| | -7.41 | -2.56 | -3.96 | -0.13 | -7.53 | -2.05 |
| GDPPC | - | 1.35* | - | 2.85* | - | 0.474* |
| | - | -5.18 | - | -17.9 | - | -4.32 |
| TGDP | - | 0.128* | - | 0.106* | - | 0.115* |
| | - | -33.8 | - | -16.9 | - | -24.8 |
| AR1 (p-value) | 0.011 | 0.01 | 0.001 | 0.002 | 0.04 | 0.041 |
| AR2 (p-value) | 0.59 | 0.61 | 0.22 | 0.44 | 0.43 | 0.56 |
| Hansen Test (p-value) | 1 | 1 | 1 | 1 | 0.99 | 1 |
| Observations | 945 | 945 | 891 | 891 | 1836 | 1836 |
| Total Countries | 35 | 35 | 33 | 33 | 68 | 68 |

Note: *, **, *** denote significant at 0.01, 0.05 and 0.10 level respectively and t-values are in parenthesis.

The table 5 reveal that LIQ has a significant and Positive impact on FDI in both Developing and Developed except in equation 3. An increase of 1% in LIQ increase the 4.47, 5.14, 4.84, 1.73 and 1.61 percent's in FDI respectively in all five equations. The table 5 reveal that PIQ has a significant and Positive impact on FDI. An increase of 1% in PIQ increase the 14.6, 12.84, 4.60, 4.75, 1.76 and 6.33 percent's in FDI respectively in all six equations. LGDPPC has a significant and Positive impact on FDI in both Developing and Developed countries. XGDP has a significant and Positive impact on FDI in Developed countries during the period under investigation. The Hansen test indicates that instruments are not weak in all six models. The Value of AR (2) show that there are no autocorrelation in these models.

Robustness Analysis for FDI Determinants

For robustness analysis we used Panel Limited Information Maximum Likelihood (PLIML) Technique for FDI's Determinants. In this study, we applied PLIML to verify our estimations of GMM techniques for FDI's Determinants.

Table 6: The determinants of FDI: The Panel LIML Methodology

| | Developed Countries | | Developing Countries | | All Sample Countries | |
|-------------------------|---------------------|--------|----------------------|----------|----------------------|--------|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| C | 0.05 | 6.38* | 0.07 | 5.62* | 1.09* | 1.80* |
| | -0.08 | -4.44 | -0.1 | -3.62 | -3.25 | -4.92 |
| EIQ | 5.32* | 10.01* | 5.86* | 5.88* | 2.84* | 5.96* |
| | -6.04 | -5.55 | -3.77 | -3.58 | -4.98 | -5.34 |
| PIQ | 0.94* | 10.70* | 0.13** | 10.32** | 0.36* | 8.78* |
| | -10.33 | -2.49 | -2.42 | -2.01 | -4.74 | -2.72 |
| LIQ | 0.02* | 10.69* | 0.09* | 12.02*** | 0.52* | 11.97* |
| | -2.86 | -2.72 | -3.73 | -1.76 | -8.83 | -3.53 |
| | - | 2.89* | - | 2.15* | - | 0.08* |
| LGDPPC | - | -5.3 | - | -4.31 | - | -12.77 |
| XGDP | - | 0.05** | - | 0.06* | - | 0.02* |
| | - | -7.65 | - | -5.69 | - | -5.31 |
| R ² | 0.296 | 0.416 | 0.642 | 0.753 | 0.482 | 0.591 |
| Adjusted R ² | 0.295 | 0.413 | 0.613 | 0.742 | 0.475 | 0.561 |

Note: *, **, *** denote significant at 0.01, 0.05 and 0.10 level respectively and t-values are in parenthesis.

The results obtained from applying this model are the following (Table 6). The result of Table No. 6 mostly matched with GMM technique results of Table 5. All the variables are significant affected the FDI with expected sign except Political Institutional Quality variable in equation 4 of Developing countries.

CONCLUSION

There are lot of literature on institutional quality which shows its impact on different macroeconomic indicators. In this study, three different kind of institutional quality indicators (economic, legal and political) has positive impact on GDP per Capita in developing and developed economies. It shows that Institutions Quality is very important for a country development. Those countries which have high quality of Institutions are perform better in economic growth. This study found that all Institutional Quality Indicators are significant and negative impact on Gini coefficient in developing and developed economies. This study also justify the pervious literature on it. It shows that if institutional quality poor, it affected negatively the income distribution of a country. this study justify with empirical result that poor institutional quality enhanced inequality and those countries which have high level of Institutional Quality are less income inequality. This study also found that all Institutional Quality indicators are significant positive impact on FDI in all

developing and developed countries. This study give some evidence of this argument; investor come there where high quality of Institutions. If Institutional Quality improved then foreign capital also inflow in these countries.

Policy Recommendation

Finally, it is important to understand the role of institutional quality for a country growth. The empirical results of this study will help to trace those recommendations which improve the institutional quality.

- It should be strengthen regulatory body and government effectiveness.
- Improve the check and balance system of a country and control corruption level.
- Took those measures which reduce the institutional dysfunctions.

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Appendix I: Institutional Proxies

| Institutional Group | Sources |
|---|---------------------------------|
| Legal Institutions | |
| Property rights | The Heritage Foundation and WSJ |
| Religion in politics | ICRG |
| Legal environment | Freedom House |
| Law and order | ICRG |
| Civil liberties | Freedom House |
| Judicial independence | Fraser Institute |
| Rule of law | WB WGI |
| Impartial courts | Fraser Institute |
| Protection of property rights | Fraser Institute |
| Political Institutions | |
| Political environment | Freedom House |
| Corruption perceptions index | Transparency international |
| Political rights | Freedom House |
| Control of corruption | WB WGI |
| Institutionalized autocracy | Polity IV |
| Military in politics | ICRG |
| Checks and balances | WB DPI |
| Democratic accountability | ICRG |
| Corruption | ICRG |
| Bureaucratic quality | ICRG |
| Internal conflict | ICRG |
| Political terror scale | Political terror scale |
| Economic Institutions | |
| Investment profile | ICRG |
| Financial freedom | The Heritage Foundation and WSJ |
| Foreign ownership/investment restrictions | Fraser Institute |
| Business freedom | The Heritage Foundation and WSJ |
| Credit market regulations | Fraser Institute |
| Regulatory quality | WB WGI |
| Capital controls | Fraser Institute |
| Economic environment | Freedom House |
| Freedom to own foreign currency bank accounts | Fraser Institute |
| Business regulations | Fraser Institute |
| Labor market regulations | Fraser Institute |

Note: International Country Risk Guide (ICRG), World Bank World Governance index (WB WGI), Wall Street Journal (WSJ), World Bank Database of Political Institute (WB DPI).

Appendix II: Sample Countries

| Developing Countries | Developed Countries |
|-----------------------------|----------------------------|
| Bangladesh | Niger |
| Bolivia | Nigeria |
| Botswana | Pakistan |
| Cameroon | Papua New Guinea |
| Egypt | Paraguay |
| El Salvador | Philippines |
| Ethiopia | Rwanda |
| Ghana | Senegal |
| Guatemala | Sierra Leone |
| Guyana | South Africa |
| Honduras | Tanzania |
| India | Uganda |
| Indonesia | Vietnam |
| Kenya | Zambia |
| Malawi | |
| Mali | |
| Morocco | |
| Mozambique | |
| Namibia | |
| | Algeria |
| | Argentina |
| | Australia |
| | Austria |
| | Brazil |
| | Canada |
| | Chile |
| | China |
| | Denmark |
| | France |
| | Germany |
| | Hungary |
| | Iran |
| | Ireland |
| | Italy |
| | Japan |
| | Jordan |
| | Malaysia |
| | Mexico |
| | Netherland |
| | New Zealand |
| | Norway |
| | Panama |
| | Peru |
| | Russia |
| | South Korea |
| | Sri Lanka |
| | Sweden |
| | Switzerland |
| | Tunisia |
| | Turkey |
| | United Kingdom |
| | United States |
| | Uruguay |
| | Venezuela |