**Quality of Institutions, Macroeconomic Performance and Economic Growth Volatility**

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**Abstract**

Economic stability is an important for sustainable economic growth which is widely required after great depression of 1930’s. But still in this decade many developing countries face great level of volatility. The paper finds the relationship of quality of institutions, agriculture, industrial and service sector with growth volatility, the time period for this purpose is 2002-2014. And found that there is negative relationship of quality of institutions, agriculture, industrial and service sector with growth volatility. The paper uses average of six indexes from international country risk guide as proxy of quality of institution.

**JEL Classification:** E02, E31, O13, O43, P23

**Keywords:** Growth volatility, Population, Inflation, Agriculture, Service sector

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**Introduction:**

Economic stability is an important for sustainable economic growth which is widely required after great depression of 1930’s. But still in this decade many developing countries face great level of volatility while Easterly et al. (2000) suggested that growth volatility has declined in OECD countries. Barrell and Gottschalk (2004) have tried to describe difference of overtime and across countries economic volatility. Although, there are various issues in determining economic volatility in existing literature. Some of the studies applied standard deviation of GDP growth as a sign of volatility of economics. This sign in rolling panel model incorporates autocorrelation and does not consider differences in economic growth (Klomp and Haan 2008). This paper therefore uses the relative standard deviation of GDP growth rate which correct this issue.

The paper uses average of International Country Risk Guide (ICRG) indicators namely Voice and Accountability (VA), Political Stability and Absence of Violence(PS), Government Effectiveness (GE), Regulatory Quality (RQ), Rule of Law (RL) and Control of Corruption (CC) as proxy of quality of institutions (Whiford S.M., 2014). Where VA represents to association freedom, expression freedom and press freedom also degree of people associate in selecting government. PS represents that government destabilization probability that terrorism violent. GE refers to the civil and public services efficacy, the policy formulation quality and political pressures independence also government credibility to make policies. RQ indicates that power of government to choose regulations and policies which encourage private sector progress. RL expresses degree to which society rules followed by citizens which includes crimes risk. CC describes that strength of public power is applied for private gain and the degree of country is overwhelmed by elite.

The paper applied Fixed and Random effect in order to find out the Panel data relationship of macroeconomic performance of agriculture, services and industry sectors on growth volatility as well as Granger causality test in order to find the causality effect. This paper has taken Panel data of 140 countries from 2002-2014. The paper organized as Section 2 comprises Literature Review, Section 3 includes Theoretical Framework, Section 4 describes data and variable information, Section 5 consists with Results and Section 6 includes Conclusion.

**LITERATURE REVIEW:**

Economic volatility is link to bad macroeconomic performance in standard macroeconomic views. As per this view, budget deficits, large size of government sector, high inflation, and exchange rate fluctuation will end in macroeconomic crisis. High rate of inflation rises uncertainty reduces technological changes and investment, changes relative prices and stands in the path of sustainable growth (The World Bank 1987). While explaining Argentina and Mexico crisis Dornbush et al. (1995) documented that real exchange rate is the key of relative prices, when its high it hurts the economic growth and financial instability and eventually become crashing down, it also reported that real exchange rate is policy variable.

The real business cycle postulates that the primary source of business cycle volatility is that the exogenous technological output shock (Tang et.al. 2003). However, the real business cycle theory has been aborted to the account for US dynamic and aggregate data of G7. In addition, the paper focus the impact of quality of institutions and macroeconomic performance economic growth volatility. North and Thomas (1973) and North (1981) exhibited that lack of quality of institutions restrains physical and human capital investment which reduced economic growth. The weak institutions will have an important influence on macroeconomic performance. Acemoglu et al., (2001) exhibited that there is impact of institutions on macroeconomic development. Bleanyand Fielding (1999) used standard deviation of real GDP growth rate as dependant variable and exchange rate, terms of trade, income, agriculture share and regional dummies for developing countries for the time period of 1965-1989 and found that there is a significant effect of agricultural share Standard deviation of terms of trade and Country size has significant effect on standard deviation of real output growth. Klomp and Haan (2008) found the relationship of political institution, agricultural, industrial and services share on output volatility from the time period of 1960-2005 of 95 countries and found that democracy is inversely related to output volatility.

In addition, Mobarak (2005) discussed that those countries which has trained sector like the service sector are more capable to fight with domestic shocks. Moreover, the huge population may provide internal diversification as the base of resource is possible to be wider. Furthermore, when a trade member or union of economic declare the country can diversify external shock like members can migrate to other country when domestic country has negative shocks.

**THEORETICAL FRAMEWORK:**

In this paper the output volatility is measured by the residual standard deviation of its mean. Cariolle (2012) reported that the literature contributes the cost analysis and significances of macroeconomic volatility. Most studies reach a decisionthat economic volatility negative impact on long run growth and over the time economic volatility devotes to low level of consumption, factor productivity and investment. Hnatkovska and Loayza (2005), Loayza et al (2007) andAizenman and Pinto (2005) documented that economic performance are marked to least developing countries, these countries are often more substantial to external shocks and does not allow internal condition to absorb the shock easily.

The major constrain to growth is the macroeconomic volatility (Cariolle, 2012). the average value of volatility of sample of 79 countries by the value of its standard deviation outcomes in an average cost 1.3 points for GDP growth over the time period of 1960-2000 and for the decade of 1960-200 the points were 2.2. Since, the economic and social developments do not prosper due to the economic volatility. It is difficult for developing countries always have mechanism to enable them absorb shocks so that these countries are more exposed to shocks. The factors which exposed them to shocks are population size, degree of economic diversification and the operating counter cycle economic capacity, and quality of institutions.

**MEASUREMENT OF ECONOMIC VOLATILITY:**

The literature sees economic volatility as connection of economic instability and risk. the traditional approach abides of evolving an indicator of volatility created an average deviation around a linear trend. Following estimated model is the simplest form of this technique.

X = λ1 + λ2 t +e ……………………1

Where X is the volatility variable which is being abide, the linear trend is t and λ is the constant and the error term is e. So the trend reference value is:

x̂ = λ̂1 + λ̂2 t ……………………2

there would be no effect on X in deviation from trend (e) in principle. In other words, these deviations are stationary around trend it is assumed and can reflect the X volatility. There are three hypothesizes which are belongs to volatility based measurement, one is that the series over time changes at constant rate, second is that the change in long term in predictable perfectly in series and the last is around the trend the deviations affecting it are transitory.

**DATA AND INFORMATION:**

The paper finds the relationship of quality of institutions, economic sectors performance on economic volatility. For this purpose, the proxy quality of institutions index is taken from International Country Risk Guide which has been calculated by taking average of all six indicators (Voice and Accountability, Political Stability and Absence of Violence, Government Effectiveness, Regulatory Quality, Rule of Law and Control of Corruption). The model is as:

G= π+ π1AG + π2IN+π3 SER+π4 POP+ π5 AVG +π6INF+ u……..3

Where G represents the growth volatility, AG stands from agriculture sector value added in percentage of GDP, IN stands for industry sector value added in percentage of GDP, SER represents service sector value added in percentage of GDP, POP means population in total billion. All variables are taken from World bank database. AVG is proxy of quality of institutions and INF is the inflation rate which is measured by consumer price index.

**RESULTS:**

The paper uses Fixed effect and Random effect for the panel data from the period of 2002 to 2014. In table 1 pooled regression results are represented in which agriculture and service sector has significant effect on growth volatility. Quality of institutions has significant effect on volatility of growth. Moreover, population has significant effect on growth volatility.

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| Table 1: Regression  |
| Variable | Coefficient | t-Statistic | Prob.   |
| AGRI | -0.0663 | -1.8077 | 0.07 |
| INDUS | -0.0202 | -0.6644 | 0.50 |
| SERV | -0.0928 | -2.5717 | 0.01 |
| POP | -0.3917 | -2.2290 | 0.02 |
| AVG | 2.2392 | 1.9156 | 0.05 |
| INF | 0.0350 | 1.3041 | 0.19 |
| C | 9.6537 | 2.8782 | 0.00 |
| R-squared | 0.0165 | F-statistic | 4.486728 |
| Adjusted R-squared | 0.0128 | Prob(F-statistic) | 0.000163 |

Fixed effect results has been posted in Table 2, where Quality of institutions has significant effect on volatility of growth Agriculture and service sector has significant effect on growth volatility results are not much different than pooled regression. Inflation and population has significant effect on economic volatility.

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| Table 2: Fixed Effect: |
| Variable | Coefficient | t-Statistic | Prob.   |
| AGRI | -0.1247 | -2.6340 | 0.005 |
| INDUS | -0.0506 | -1.4719 | 0.143 |
| SERV | -0.2093 | -4.4876 | 0.000 |
| POP | -1.3198 | -4.0397 | 0.001 |
| AVG | -10.082 | -1.8150 | 0.015 |
| INF | 0.0511 | 1.7085 | 0.088 |
| C | 26.7600 | 4.9878 | 0.000 |
| R-squared | 0.339518 | F-statistic | 5.241101 |
| Adjusted R-squared | 0.274738 | Prob(F-statistic) | 0.000000 |

Table 3 represents the random effect in which quality of institutions has no significant effect on growth volatility. Service sector and agriculture sector has significant effect on growth volatility. On average 4 percent increase in inflation will increase volatility of growth.

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| Table 3: Random Effect |
| Variable | Coefficient | t-Statistic | Prob.   |
| AGRI | -0.1081 | -2.6026 | 0.0093 |
| INDUS | -0.0486 | -1.5049 | 0.1325 |
| SERV | -0.1571 | -3.8625 | 0.0001 |
| POP | -0.8331 | -3.3182 | 0.0009 |
| AVG | -1.9606 | -0.9125 | 0.3616 |
| INF | 0.0470 | 1.6694 | 0.0952 |
| C | 15.337 | 4.0645 | 0.0001 |
| R-squared | 0.0220 | F-statistic | 5.9920 |
| Adjusted R-squared | 0.0183 | Prob(F-statistic) | 0.0000 |

Hausman test reject the null hypothesis the null hypothesis is that random effect is better after rejecting null hypothesis fixed effect regression has been selected.

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| Table 4: Hausman Test |
| Variable | Fixed   | Random  | Var(Diff.)  | Prob.  |
| AGRI | -0.124778 | -0.108162 | 0.000517 | 0.4649 |
| INDUS | -0.050668 | -0.048661 | 0.000139 | 0.8650 |
| SERV | -0.209313 | -0.157121 | 0.000521 | 0.0222 |
| POP | -1.319804 | -0.833127 | 0.043698 | 0.0199 |
| AVG | -10.082207 | 1.960687 | 34.354455 | 0.0399 |
| INF | 0.051174 | 0.047097 | 0.000101 | 0.6853 |

**Conclusion:**

The paper examines the relationship of macroeconomic performance, quality of institutions on economic volatility. The paper applied standard deviation of residual of the regressor to calculate the growth volatility. The paper uses fixed and random effect model in order to identify the relationship quality of institution, agriculture, industrial and service sector on growth volatility. Hausman Test reject null hypothesis so the fixed effect results shows that there is significant and negative relationship of agriculture and service sector on economic growth which means as the macroeconomic performance improves the growth volatility reduces. Similarly, the quality of institutions increases the growth volatility decreases.

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