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Research Article

The Impact of Institutional Quality on Economic Performance: An Empirical Study of European Union 28 and Prospective Member Countries [1]

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Abstract

Using a panel set of 28 European Union member states and 8 prospective members to the bloc over a period of 1996-2014, this paper examines to what extent institutional quality (governance index) and its sub-indicators (control over corruption, government effectiveness, political stability, regulatory quality, rule of law and voice and accountability) can influence overall economic performance measured by gross value added per capita. The paper expands on existing literature by disaggregating the growth impact of institutions for all countries in the sample, developed and less developing countries. The independent variables included in the model are gross fixed capital formation as a percentage of GDP, net barter terms of trade, government size (expenditure), quality of institution and inflation while gross value added per capita is the dependent variable. Because of the weakness of the fixed effects model, system GMM is used to estimate the coefficients. Generally, the results show a positive and significant relationship between economic performance and the quality of institution. Precisely holding other things constant, a 10 units improvement in the quality of overall institution is predicted to increase gross value added per capita by 1.33 units. Also, the impact of institutional improvements on economic performance is higher and more predominant in developed countries than in less developed. A disintegrated analysis of institutions reveals that government effectiveness and voice and accountability have positive and significant impacts on economic performance of the 36 countries. However, control over corruption and political stability and absence of violence have negative signs. Also, there is no evidence of influence of regulatory quality and rule of law on economic growth.

Keywords: Economic Growth, Institutional Quality, European Union, Turkey.

JEL Codes: O11, O17, O43

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1. Introduction

In a globalized economy, the issue of what drives economic growth is becoming increasingly demanding for governments in both developed and developing economies. For policy makers, it is generally believed that institutional quality plays a paramount role in enhancing economic growth. Globally Europe in general and the European Union (EU) in particular have been at the front position in terms of having well developed institutions. Also in line with empirical evidence which suggests a positive relationship between economic growth and institutional quality, gross domestic product (GDP) per capita for countries in the EU are ranked among the best in the world. Nevertheless, in terms of its contribution to world GDP since 2007, EU's input has been following a decreasing trend (European Economic and Social Committee, 2016). Despite recent years of global economic crisis which saw a decline in economic growth rates, generally the bloc is still rated among the best in its institutional quality. However, according to Briegel and Bruinshoofd (2015) economic crisis might have caused an institutional slippage.

Economic growth models suggest that increase in a country's human capital, physical capital and technology determines country's overall economic output. According to Acemoglu and Robinson (2010) these factors are important determinants of economic growth. But not only do the above factors matter as far as enhancing economic growth is concerned. In addition to that, these factors working independently may not be sufficient in building a resilient and sustainable economy. Recently, the focus has been on the role played by good institutions in promoting economic development. Experience has shown that good institutions play an important role in stimulating economic performance and growth (Scully (1988), Knack and Keefer (1995), Aron (2000), Henisz (2000), Glaeser et al. (2004), Acemoglu and Johnson (2005), Acemoglu, Johnson and Robinson (2005), Djankov, McLiesh and Ramalho (2006) and Robinson and Acemoglu (2012)). North (1990) also argues that creating effective institutions is important and requires a shared mental vision. While the quality of institutions and their level of credibility and predictability is essential in providing a strong basis to enhance economic growth, literature on its transmission mechanism as well as its effect on economic growth is inconclusive. According to Farole, Rodríguez-Pose and Storper (2011) new economic models suggest that countries experience different economic trajectory due to differences in the quality of their economic, political and social institutions. In view of this, it is necessary to have high quality institutions not as substitute for other discretion policies and economic reforms but as adopted complements.

According to Tvrdon (2012), over the past two decades there have been disparities in terms of economic growth rates experienced by EU member states. Moreover, the author argued that varying levels of institutional quality and competitiveness were determined to be a contributing factor that incapacitates the EU in its quest to have inclusive growth by all member states. Farole, Rodríguez-Pose and Storper (2011) also highlighted the persistence in institutional differences faced by some EU member states which makes them continue to experience lower economic growth rates regardless of the integration. They further stressed that institutions contribute to agglomeration of economic activities through attracting best human capital and investment needed in development. However, institutions and their sub-pillars do not exert the same impact on economic performance across different countries and

sectors. Sometimes countries with same institutional quality face different economic trajectory. Few researchers (Valeriani and Peluso (2011), Nawaz, Iqbal and Khan (2014) and Nawaz (2015)) have empirically examined the effect differences in institutional quality exert on growth for countries that are at different stages of economic growth.

Using the system generalized method of moments model, this paper examines to what extent institutional quality along other variables impact on gross value added per capita of 28 EU countries and 8 prospective members to the EU bloc. The aim and contribution of this paper to existing literature is threefold. Firstly, the impact of overall institutional quality as measured by governance index and its six sub categories (control over corruption, government effectiveness, political stability, regulatory quality, rule of law and voice and accountability) on gross value added per capita of countries in the sample during 1996-2014 is analyzed. Secondly, how the impact of institution on economic performance in developed countries differ from that in less developed countries in the sample. Lastly, a disintegrated impact of the sub components of institutions on economic growth is analyzed. Results show that institutions have a positive impact on economic growth but their influence varies according to the level of development of a country. Also the impact of different institutions is not uniform across countries. Although, existing literature suggest that improvements in institutional quality is growth promoting, the impact is not uniform across different countries at different stages of development. The paper further finds that government effectiveness and voice and accountability are growth enhancing while control over corruption and political stability are growth reducing. As for regulatory quality and rule of law, there is no evidence suggesting that their improvements foster economic growth. In general, the results are in support of the view that improvements in institution are associated with increased economic growth. This paper is organized as follows. Section 2 will present a brief background of the 36 countries' institutional quality and economic performance. Section 3 presents a review of literature regarding the linkage between institution and economic performance. Section 4 describes the research methodology and data sources. Discussion of results is presented in Section 5 while the conclusion and possible recommendations are in section 6.

2. Institutional Quality and Economic Performance of EU and 8 Potential Candidates

According to Heywood (2002: 16) an institution is defined as "*a well-established body with a formal role and status; more broadly, a set of rules that ensure regular and predictable behavior, the rule of the game*". As cited by Boschma, Capone and Cappelli (2014), North (1990) defines institution as "*the humanly devised constraints that structure political, economic and social interaction*". Institutions can either be formal or informal set of rules. However, the debate regarding which of the institutional indicators matter for economic growth in the long run is still controversial. For the purpose of this paper, the scope of institution is restricted to formal institutions in form of economic freedom index. Economic freedom index is a measure of a country's openness to global investment or trade and its interactions with the rest of the world (Miller and Kim (2017)). The index is further categorized into 4 pillars namely: rule of law (property rights, government integrity and judicial effectiveness), government size (government spending, tax burden and fiscal health), regulatory efficiency (business freedom, labor freedom, and monetary freedom) and market

openness which encompasses financial, investment and trade freedom. The four pillars carry equal weights and are all equally important in contributing to overall economic freedom.

The European Union bloc through the Copenhagen criteria, which was formulated in 1993, require prospective member states to have a certain level of institutional development before being accepted into the bloc (Hammermann and Schweickert (2005), Biraci, Llukani and Nano (2011)). Among these criteria, countries should fulfill series of political, economic and legal conditions that ensure guarantee of law and order, well-functioning market system and security of property rights. This condition is also in support of empirical evidence which states a positive relationship between quality of institution and economic performance (Edison (2003)). Furthermore, with Albania, Bosnia and Herzegovina, Georgia, Macedonia, Moldovia, Serbia, Turkey and Ukraine being potential and prospective members to the bloc they are obliged to fulfill this criterion.

In principle, a country's growth trajectory is usually shaped by the quality of its situation. Generally, countries that have high GDP per capita are those that have high economic freedom than those that are repressive in nature. However, exceptional cases may be found in countries like China where low institutions are associated with high growth rates. Although the index of economic freedom's main focus is centered on economic sphere, Miller and Kim (2017) emphasized that better economic conditions can provide a fertile ground for promotion of civil liberties and democracy.

In terms of institutional set up, most countries in Europe in general and European Union in particular perform well and they top on the global chart. On average EU 28 countries score above 60 with the exception of Bulgaria and Romania. Finland, Denmark, Luxembourg, Netherlands and Sweden top the group with over 95 score. Also, according to the 2017 economic freedom index results show that the world average economic index stood at 60.9. Regionally, Europe had the highest average index of 68 followed by Middle East and North Africa. Sub-Saharan Africa had the lowest average (55). However, this is not the case for EU potential candidates as they perform below average in both the economic freedom index and governance index. Particularly, Ukraine is the least performer with an average ranking of 29 (governance ranking) during the period under review. Most of the countries in EU had economic freedom score in the range of moderately free (12 and Turkey included) to mostly free (13) classification except for Croatia, Greece and Slovenia which were in the mostly unfree category. Moreover, it is notable that of the world's top 30 economies in 2017 ranking 13 are EU member states. In terms of institutional quality performance, Ireland displays the highest overall average institutional quality while Croatia and Romania show weak average institutional quality. Only 7 countries perform below the world average while the rest's (22) performance is above. According to statistics by the European Central Bank Economic Bulletin, (2017), in terms of economic performance measured by GDP, from 2009 up to 2016, EU has been experiencing significant growth rates. A detailed information showing GDP growth rate and institutional quality of the countries in the study is depicted in Table 1 and 2 in the appendix.

3. Literature

The notion that good institutions are important determinants of a country's economic performance is not new. The relationship between the quality of institutions and GDP growth rate has been theoretically well established, repeatedly studied and empirically tested by several authors (North (1990), Olson, Sarna and Swamy (2000) and Pedersen (2010)). Since the early 1990s precisely, it has been widely believed by several economists that good institutions influences a country's ability to progress economically. There is overwhelming literature on the important role played by the quality of institution in stimulating economic development. Tamilina and Tamilina (2014) emphasize that most literature on the nexus between economic and formal institutions asserts that good formal institutions provide a conducive environment that promotes rapid economic growth. Previous work by Scully (1988), Knack and Keefer (1995), Aron (2000), Henisz (2000), Glaeser et al., (2004) and Djankov, McLiesh and Ramalho (2006) point to the fact that good institutions enhance economic growth. Acemoglu, Johnson and Robinson (2005), and Robinson and Acemoglu (2012) underlined that better institutional quality creates a favorable environment for economic growth. Farole, Rodríguez-Pose and Storper (2011) highlighted that poor institutions have a detrimental effect on economic growth since rent seeking behaviors may deter potential sources of growth in the form of better provision of public goods and attraction of high skills and technology. Similarly, Vijayaraghavan and Ward (2001) express that institutional capacity can have an effect on the performance of the economy through resource reallocation. Misallocation of resources can result in inefficient investment which in turn can thwart economic growth.

Examining a panel of 108 countries for the period 1970-2008, Afonso and Jalles (2011) find that the quality of institutions plays a consistent and statistically significant role in stimulating real gross domestic product. Specifically, they establish that a 1 unit improvement in the quality of institutions results in a 0.22 units rise in per capita GDP holding other things constant. Likewise, Le (2009) concludes that institutions foster economic growth. Using a panel threshold regression model, Belarbi, Sami and Souam (2016) find that improvements in the quality of institutions enable economic performance of resource dependent countries. This transmission mechanism of institutions stimulating economic growth is sometimes not clear hence may lead to resource curse. Also, employing two stage least square and system GMM respectively, Fang and Zhao (2009) and Lu, Png and Tao (2013) find that improvement in institutions were very positive and statistically significant in explaining differences in economic growth across Chinese regions.

Also, Fifeková and Vondrová (2016) establish that transition EU countries and former Soviet Republics experienced low economic growth rates attributed to inefficient use of governance. Based on the surveyed sample, their analysis indicated a positive relationship between the quality of institution and economic performance. In the same line within the context of developing countries, Aron (2000) finds a positive relationship between the quality of institution and economic performance. She also points out the possibility of a simultaneous effect of the quality of institutions on economic growth and investment. Here the quality of institutions may act as a catalyst to economic growth through attracting

investment therefore, if undermined, long-term economic growth may not be achieved (Dawson (1998)).

Knack and Keefer (1995) also assert that better institutions converge to steady economic growth. Their investigations indicated that institutions that protect property rights are very cardinal in promoting economic growth. However, they hint for the promotion of institutions that protect property rights since they matter most for economic growth. Analyzing the relationship between the institutional framework and economic development of 115 market economies for the period 1960 – 1980, Scully (1988)'s results also concur with Knack and Keefer (1995). He establishes that economies that subscribe to security property rights, rule of law and market driven economic structure tend to experience between 1.5 - 3 times more growth rate than countries that do not. Djankov, McLiesh and Ramalho (2006) also conclude that countries with better regulations realize a 2.3 percentage point increase in their annual growth rates.

Similar to the objectives of this paper, Nawaz, Iqbal and Khan (2014) and Nawaz (2015) conclude that institutional quality impact economic growth differently for countries that are at different phases of economic development. Also analyzing a sample of 181 countries for the period 1950-2009, Valeriani and Peluso (2011) find institutions to be positively related to economic growth for both developed and developing countries.

Within the context of EU, Masuch, Moshammer and Pierluigi (2016) find that a unit improvement in institutional delivery has an expected effect of increasing per capita GDP of 27 EU member states by 1.1%. Results by Popov (2011) who analyzes a set of 53 countries also suggest that industries in countries where there are strong institutions tend to realize higher average growth rates than those in countries where weak institutions prevail. Interestingly, a recent paper by Sondermann (2016) also suggests that countries with strong institutions grow resilience towards economic shocks. Berggren, Bergh and Bjørnskov (2013) find better institutions to be growth enhancing for 35 European countries. Nevertheless, it is interesting to note that Boschma, Capone and Cappelli (2014) also emphasize the need for continual improvements in the quality of institutions since they do not only spur economic growth but also enhance product diversification.

Although the bulk of the literature informs us that well-defined and well-functioning institutions such as rule of law, secured property rights matter for economic growth, however, according to Rodrik (2006) and Williamson (2009) in some instances this is not the case. Based on cross national literature, Rodrik (2006: 979) could not find a strong causal link between institutional reform and economic growth. He further argues that there was little evidence that high institutional quality plays a significant role in promoting economic growth. Empirical evidence shows that countries like China and India experienced high growth rates without institutional reforms but they rather targeted other binding constraints. Naim (2000) also argues that institutional weakness comprise a malady of issues that need to be addressed in order to spur economic growth.

Rodrik (2006) further stresses that economic growth can be realized if good policy mix is designed through a policy diagnostic approach which identifies constraints and proffer possible solutions. In view of the above, Williamson (2009) also suggests that different countries have to follow different paths of development hence institutions should not be

transplanted and copy-pasted as tools to enhance economic growth. Furthermore, Boettke, Coyne and Leeson (2008) also underscore that indigenous agents plays a cardinal role for the success of institutions. Lastly, Angeles (2010) fails to ascertain the claim that countries with higher institutional quality experience faster growth rates than those with weaker institutions. In line with Bruinshoofd (2016)'s argument, the quality of institution should be viewed as an enabler not determinant of economic performance since other variables like investment and human capital have to be taken into account.

Although the generality of empirical literature confirms that there is a relationship between the quality of institutions and economic performance results from these studies are not uniform across time, countries and institutional pointers. Mixed results are found depending on the number of explanatory variables included in the model, model applied and sample size.

4. Methodology and Data

The methodology applied in this paper is inspired from studies by Valeriani and Peluso (2011), Nawaz, Iqbal and Khan (2014) and Nawaz (2015). Following their studies, a fixed effects approach is used to examine the impact of institutional quality on economic growth on 36 countries as well as according to their levels of economic development. The period of analysis is 1996-2014 for a panel of 36 countries. Institution variable does not have data for 1997, 1999 and 2001 and these years are excluded from the analysis. The countries are further divided into high income and low income (upper and low middle also included) countries based on World Bank classification. A detailed list of the countries used in this research is in Table 10 in the appendix. Equations showing the relationship connecting economic growth and other variables are as specified.

$$GVApc_{it} = \alpha + \alpha_0 + \alpha_1 GVApc_{it-1} + \alpha_2 GFCF_{it} + \alpha_3 EXP_{it} + \alpha_4 NTT_{it} + \alpha_5 INS_{it} + \alpha_6 INF_{it} + \mu_{it} \quad \textbf{(1)}$$

$$GVApc_{it} = \beta + \beta_0 + \beta_1 GVApc_{it-1} + \beta_2 GFCF_{it} + \beta_3 EXP_{it} + \beta_4 NTT_{it} + \beta_5 INSD_{it} + \beta_6 INF_{it} + \mu_{it} \quad \textbf{(2)}$$

$GVApc_{it}$ - is a country's gross value added per capita at factor current United States dollars over time. It is a measurement of economic performance. Gross value added is divided by population and then by 1000 to moderate its size.

$GVApc_{it-1}$- is the lag of gross value added per capita. Previous value added can influence present gross value added. Its coefficient can take any sign, can be negative if there is conditional divergence and positive indicating conditional convergence (Islam (1995) and Slesman, Baharumshah and Ra'ees (2015)).

$GFCF_{it}$ - Gross fixed capita formation as a percentage of GDP. It is a measure of a country's investment share in the economy (Efendic, Pugh and Adnett (2009), Valeriani and Peluso (2011), Nawaz, Iqbal and Khan (2014) and OECD (2017)).

INF_{it}- Consumer price annual inflation rate. The higher the inflation rate the lower the growth.

EXP_{it}- General government final consumption expenditure as a percentage of GDP. It is a proxy for government size. An increase in government spending is associated with low economic growth.

NTT_{it} - It is net barter terms of trade index, which is the price ratio of exports to imports with 2000 as a base year. It is a measurement of the degree of openness of a country to the rest of the world. Trade theory suggests that highly opened economies are usually associated with high levels of economic growth rates.

INS_{it} - Governance score. This is an indicator of institutional quality. Countries with better institutional quality have high economic growth rates. The index is an aggregate ranking of six dimensions of governance namely, control of corruption, government effectiveness, political stability and absence of violence or terrorism, regulatory quality, rule of law and voice and accountability. It ranges from 0 -100 with a value closer to 100 denoting good institutional quality while closer to zero implying poor institutional quality.

$INSD_{it}$ - is a multiplicative dummy variable of the development dummy and institutional variable. World Bank classifies countries as high income, middle (upper and lower) income and low income. The dataset contains high income and middle income countries and a 1 is coded if the country is high income and a 0 otherwise. In this case developing countries are the reference group.

μ_{it} - is the error term which measures the white noise error. The α s and β s represent set of coefficients to be estimated. $\alpha_1, \alpha_2, \alpha_4, \alpha_5, \beta_1, \beta_2, \beta_4$ and β_5 are expected to have positive signs while $\alpha_3, \alpha_6, \beta_3$ and β_6 will have negative signs.

The other aim is to examine the impact of disintegrated institutional variables on economic growth. To do this six institutional variables namely control of corruption, government effectiveness, political stability and absence of violence or terrorism, regulatory quality, rule of law and voice and accountability are substituted for the composite index institution in equation 1.

$$GVApc_{it} = \lambda + \lambda_0 + \lambda_1 GVApc_{it-1} + \lambda_2 GFCF_{it} + \lambda_3 EXP_{it} + \lambda_4 NTT_{it} + \lambda_5 CC_{it} + \lambda_6 GE_{it} + \lambda_7 PS_{it} + \lambda_8 RQ_{it} + \lambda_9 VA_{it} + \lambda_{10} INF_{it} + \mu_{it} \quad \textbf{(3)}$$

Data for gross value added, population, gross fixed capital formation as a percentage of GDP, annual inflation rate, general government final consumption expenditure as a percentage of GDP, net barter terms of trade as a percentage of GDP were retrieved from the World Bank's World Development Indicators (WDI) website[3] and Factfish.com[4] for those countries which have missing data. Factfish compiles data which it sources from the WB. Institutional variable dataset was downloaded from the WB's World Governance Index website[5] while that of economic freedom index was from Heritage organization's website[6]. .

The sample of countries are not randomly selected hence it is appropriate to use fixed effects model to run the regression. Fixed effects takes into account of unobserved heterogeneity and time varying effects (Wooldridge (2001)). Another possibility is to use lagged dependent variable model to estimate the equation, but the lagged variable (exogenous variable) is strongly correlated with the unobserved effects (Nickell (1981: 1418) and Wooldridge (2001)). Similarly, there is possibility of reverse causality between

[3] http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators
[4] http://www.factfish.com/catalog
[5] https://data.worldbank.org/data-catalog/worldwide-governance-indicators
[6] http://www.heritage.org/index/explore.

institution and economic growth (Dawson (2003) and Valeriani and Peluso (2011)) and also the time dimension is smaller than the number of panels in the data. In this case there are 36 countries compared to 16 year period. Additionally, an instrument can be used to solve endogeneity issues but the problem is that the instrument for institution within the context of developed countries like those in the EU, can be invalid resulting in less precise estimates (Vieira, MacDonald and Damasceno (2012)). Settler mortality has been used in the context of developing countries in many studies as an instrument (Acemoglu, Johnson and Robinson (2005)).

One best way to deal with the shortcomings of both fixed effects and lagged dependent variable approaches in handling endogeneity and reverse causality is to use system generalized methods of moments (Arellano and Bover (1995) and Blundell and Bond (1998)). Under this model the lagged variable is treated as endogenous variable while the rest of the variables are treated as exogenous Elhorst (2010). According to Roodman (2009b) in a system GMM, exogenous variables are automatically treated as instruments. Below is the equation of the system GMM. The system GMM model is an autoregressive panel model of the form;

$$y_{it} = \alpha y_{i,t-1} + \beta' X_{it} + \eta_i + \nu_{it}$$

(4) where $\mu_{it} \equiv \eta_i + \nu_{it}$ is the error term containing the unobserved individual effects. In order to effectively evaluate the link between the independent variable and dependent variables of which the lagged variable of the independent variable is included, first condition of the autoregressive that is AR(1) of the equation is considered. The decomposition is:

$$y_{it} = \alpha y_{i,t-1} + \eta_i + \nu_{it} \quad \textbf{(5)}$$

For building an insight equation 4 is enough, readers can consult other literature to get explicit derivations of the moment restrictions. Validity of system GMM results depend on the satisfaction of two assumptions namely absence of autoregression in first order (AR(1)) and the over-identification restriction. In this regard a highly significant p-value of the AR(1) and a small p-value of the Hansen test are desirable since they respectively signify the absence of first order serial correlation and validity of instruments. According to Roodman (2009a and 2009b) a Hansen p-value above 0.10 but not greater than 0.25 is a good benchmark for validity of instruments. He warned that a p-value close to 0.25 and above should be viewed with great concern since it shows the weakening of system GMM model due to instrument proliferation. Precisely, two-step GMM is applied since according to Windmeijer (2005), it has more efficiency gains than one-step. To circumvent the problem of instrument proliferation resulting from internally generated instruments, the number of lags are set to 4. Also options to collapse and orthogonalize variables when running the system GMM model is invoked.

5. Discussion of results

Table 3 provides a preliminary synopsis of the association among the variables used in running the regression model. It can be noted that correlations among most of the variables expressed at 5% level are as expected save for few. However, government expenditure and institutional quality are highly correlated suggesting possible multicollinearity between them. Two separate regressions that consider the institutional quality for all countries in the

sample and another one that only accounts for institutional quality in developed countries by considering the level of development by income size according to World Bank classification are analyzed.

Table 3: Correlation Matrix for Variables

	GVApcit	GVApcit_1	GFCFit	EXPit	NTTit	INSit	INFit
GVApcit	1						
GVApcit_1	0.9201*	1					
	0.0000						
GFCFit	-0.1832*	-0.2313*	1				
	0.0000	0.0000					
EXPit	0.6129*	0.5763*	-0.1225*	1			
	0.0000	0.0000	0.0032				
NTTit	-0.2020*	-0.1739*	0.0003	-0.0017	1		
	0.0000	0.0000	0.9935	0.9671			
INSit	0.7154*	0.6542*	-0.0616	0.7185*	-0.1270*	1	
	0.0000	0.0000	0.1398	0.0000	0.0023		
INFit	-0.2696*	-0.1302*	-0.1276*	-0.3135	-0.1354*	-0.3811*	1
	0.0000	0.0018	0.0022	0.0000	0.0011	0.0000	

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Regression results from the fixed effects model on the relationship between gross value added per capita, quality of institution and other control variables are reported in Table 4. Stata 12 statistical package is used to run the regression model. Signs of the coefficients of the lagged value of gross value added, investment and expenditure are as expected. However, institutional variable, inflation and terms of trade have unanticipated signs. From these results one is tempted to conclude that improvements in institution and terms of trade are growth reducing which is against findings from previous studies. This is because there is high multicollinearity among the lagged value of gross value added, institution and government expenditure. According to Wooldridge (2001:624), severe multicollinearity can lead to imprecise results. Multicollinearity can also make the signs of coefficients change making them difficult to interpret. Another reason is that there is reverse causality between economic growth and institutions.

Table 4: Regression Results for Fixed Effects

VARIABLES	1	2
GVApcit_1	0.322***	0.327***
	(0.0193)	(0.0195)
GFCFit	0.343***	0.307***
	(0.0489)	(0.0493)
EXPit	-0.0272	-0.0139
	(0.0473)	(0.0486)
NTTit	-0.0722***	-0.0931***
	(0.0266)	(0.0265)
INSit	-0.144***	
	(0.0365)	
INFit	0.0234	0.0373*
	(0.0195)	(0.0195)
YEAR	0.782***	0.746***
	(0.0379)	(0.0379)
INSDit		-0.0107
		(0.0868)
Constant	-1,546***	-1,481***
	(75.77)	(77.23)
Observations	575	575
R-squared	0.726	0.718
Number of PID	36	36

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

A system GMM can leverage the above weaknesses which the fixed effects model failed to handle. Results of the regression are in Table 5 with column 1 presenting equation 1 and column 2 is for equation 2. Column 1 shows the overall impact of institution with other control variables while column 2 presents the complementary effect of institution and the stage of development of the countries in the sample. All the coefficients of parameter estimates are now as expected prior running the regressions. From column 1, all the coefficients are statistically significant at 1% while that of investment is significant at 5% level. Results reveal that a 10 units increase in previous growth, investment, terms of trade and institution index has a likely effect of stimulating economic growth by 10, 0.2, 0.3 and 1.3 units while increase in government expenditure and inflation reduce growth by 1.8 and 0.6 in that order. There is overwhelming evidence that improvements in institution by all countries in the sample contributes to economic growth. These results are in line with findings from Afonso and Jalles (2011), Popov (2011), Berggren, Bergh and Bjørnskov (2013) and Masuch, Moshammer and Pierluigi (2016). Turning on to column 2, it can be noted that all the variables convey the anticipated results. Although in overall terms improvements in institutional quality has a positive impact on economic growth, however, there is a significant difference in the contribution of institution on economic performance between developed and less developed countries. It is evident that the impact of institutional improvements on economic performance varies across countries by their level of development. Furthermore, it can be noted that the contribution to economic performance of institutional quality improvements is higher in developed countries than in less developed countries. Specifically, holding other variables constant, improvements in the quality of institutions by developed countries enhances the performance their economies by 0.0674 more units than what less developed countries can realize if they are to improve their

institutions by the same magnitude. This is generally the case because institutions in developed countries are more effective than in developing countries. Also majority of the countries with low institutional quality are those that are non-members to the bloc. Improving their institutional environment may enhance their chances of being considered into the membership since institution is one of the key criteria for acceptance of candidates.

Table 5: Regression Results for Two-step System GMM

VARIABLES	1	2
GVApcit_1	1.028***	1.028***
	(0.0111)	(0.0106)
GFCFit	0.0229**	0.0993***
	(0.0101)	(0.0130)
EXPit	-0.181***	-0.194***
	(0.0209)	(0.0191)
NTTit	0.0317***	0.0647***
	(0.0107)	(0.0158)
INSit	0.133***	
	(0.0153)	
INFit	-0.0564***	-0.119***
	(0.0120)	(0.0195)
YEAR	-0.192***	-0.108***
	(0.0148)	(0.0163)
INSDit		0.0674***
		(0.00930)
Constant	378.5***	212.1***
	(29.74)	(33.14)
Observations	575	575
Number of PID	36	36
AR(1)	0.005	0.005
Hansen Test	0.183	0.176
No. of Instruments	32	32

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Having analyzed the effect of the composite index of institutional quality on economic progress, the focus is now to quantify the impact of disaggregated institutional variables. Zhuang, de Dios and Martin (2010) argue that different institutional components exert different impact on economic performance for countries at various levels of development. Results of this analysis are in Table 6. Column 1 is regression results from the fixed effects model and column 2 is from the two-steps system GMM. Only column 2 results are explained. All the coefficients of control variables are statistically significant and have predictable signs. As for the variables of interest, government effectiveness and voice and accountability are positive and statistically significant. Surprisingly, control of corruption and political stability are negative and highly significant. These variations in the coefficients of disintegrated institutions entail that institutions in their various forms influence economic performance differently. Concerning regulatory quality and rule of law there is no evidence of them influencing economic performance. In summary, there is awesome evidence from the results which further reveal that potential gains in economic growth can be realized from improvements in government effectiveness and voice and accountability. Nonetheless, this does not imply that other institutional sub pillars should be exclusively neglected since every institutional component is equally important in achieving overall governance index hence

economic growth. Negative coefficients of other institutional components may suggest that economic growth require a long term stable institutional environment (Zouhaier and Karim (2012)). Also they might be some certain individuals that are affected by institutional improvements resulting in low economic performance.

Table 6: Fixed Effects and Two-step System GMM Regression Results

VARIABLES	FEM	SYS-GMM
GVApcit_1	0.314***	0.977***
	(0.0193)	(0.0159)
GFCFitGDP	0.280***	0.106***
	(0.0517)	(0.0375)
EXPit	-0.0403	-0.101***
	(0.0481)	(0.0240)
NTTit	-0.0638**	0.0246***
	(0.0272)	(0.00855)
CCit	0.0426	-0.0635***
	(0.0394)	(0.0208)
GEit	-0.174***	0.143***
	(0.0445)	(0.0317)
PSit	-0.0315	-0.0378***
	(0.0227)	(0.00863)
RQit	-0.0312	0.000550
	(0.0409)	(0.0229)
RLit	0.00782	-0.0279
	(0.0520)	(0.0314)
VAit	0.0729*	0.113***
	(0.0438)	(0.0305)
INFit	0.0255	-0.127***
	(0.0195)	(0.0329)
YEAR	0.792***	-0.125***
	(0.0418)	(0.0305)
Constant	-1,566***	240.9***
	(83.84)	(61.98)
Observations	576	575
R-squared	0.735	
Number of PID	36	36
AR(1)		0.005
Hansen Test		0.161
No. of Instruments		35

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

5.1 Sensitivity Test

Due to insignificant and conflict results from the fixed effects model, diagnostic tests are carried out using the system GMM approach and economic freedom index as a measure of institution. The system GMM uses the lagged values of the dependent variable as an additional independent variable which is used to test for convergence in the long run. Sensitivity tests based on the AR(1) from the two-step system GMM results show that the model as well as its instruments are valid. AR(1) is also a test for the presence of first order serial autocorrelation and in this case presence of serial autocorrelation is strongly rejected. The Hansen test for instrument validity is within the required range (0.10 – 0.25) as stated by Roodman (2009a and 2009b). Also the number of instruments are reasonably less than the number of countries in the panel (Elbahnasawy and Ellis (2016)). Further analysis using economic freedom index (Table 7) also converges to the same conclusion that institutions

really matter for growth of economies. Examining a sample of 119 countries from 1975-1989, Ali and Crain (2001) reach the same conclusion regarding the effect of economic freedom on economic growth. Inclusion of time fixed entities is also tested and the conclusion is to include them since Prob>F = 0.0000 (Baltagi (2008)). Also, tests for the presence of heteroskedasticity are performed and consequently there is no homoskedasticity in the distribution of variances of error terms since Prob>Chi2 = 0.0000 is small enough to reject the presence of homoskedasticity (Torres-Reyna (2007)). For tests of time effects and heteroskedasticity, see Tables 8 and 9 respectively in appendix. In view of the above, it is therefore imperative to use system GMM so as to tackle the above issues.

Table 7: Regression Results for Two-step System GMM

VARIABLES	1	2
GVApcit_1	1.071***	1.069***
	(0.0173)	(0.0205)
GFCFit	0.0221	0.0231
	(0.0183)	(0.0203)
EXPit	-0.212***	-0.316***
	(0.0194)	(0.0286)
NTTit	0.0389**	0.0686***
	(0.0186)	(0.0186)
EFIit	0.237***	
	(0.0257)	
INFit	-0.211***	-0.114***
	(0.0243)	(0.0307)
YEAR	-0.307***	-0.168***
	(0.0217)	(0.0247)
EFDit		0.104***
		(0.0179)
Constant	602.4***	336.0***
	(43.71)	(49.78)
Observations	575	575
Number of PID	36	36
AR(1)	0.003	0.004
Hansen Test	0.153	0.109
No. of Instruments	32	32

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

6. Conclusion and Policy Recommendations

This paper examines the important role played by institutional quality in determining economic performance of 28 European Union member states and 8 potential candidates to the EU for the period 1996 – 2014. Using the fixed effects approach, the paper provides a synopsis of the extent to which institutional quality in these countries impact the performance of their economies. However, because of endogeneity problems between institution and economic growth as well as the lagged variable of growth, system GMM approach is used to model the relationship between them. The theoretical model states that better institutions are growth enhancing. Empirical results from this paper support the theoretical model that institutional quality does promote economic performance. Several important conclusions are drawn from this study. Firstly, the role of overall institutional quality which is a composite index of the simple average of control over corruption,

government effectiveness, political stability and absence of violence, rule of law, regulatory quality and voice and accountability, is positive and highly significant in explaining changes in gross value added per capita of all countries and disintegrated economies. However, the contribution of institutions to economic growth is not uniform across countries that are at different levels of development. The study unpacks that improvements in the quality of institutions by high income countries contribute more to economic performance than by low income ones.

In view of the above, this paper establishes that better institutions in the form of good governance promote economic growth of both high income and middle income countries. However, instead of increasing investment, terms of trade and reducing expenditure and keeping their inflation levels at minimal, middle income countries should also thrive to continuously improve the quality of their institutions in order to stimulate the growth of their economies. As for non-European Union member states institutional improvements enhance their chances of being considered for membership. In conclusion the impact of institutions on economic growth varies across countries and it depends on their stage of development. Also, institutional components that are insignificant should not to be disregarded and considered irrelevant in explaining economic performance, instead, they complement to the positive role played by overall index since the index is a composite weight of various pillars which carry equal weight. For those that are negative more can be probed further to find if there are no certain groups or individuals in the society who are not affected by institutional reforms.

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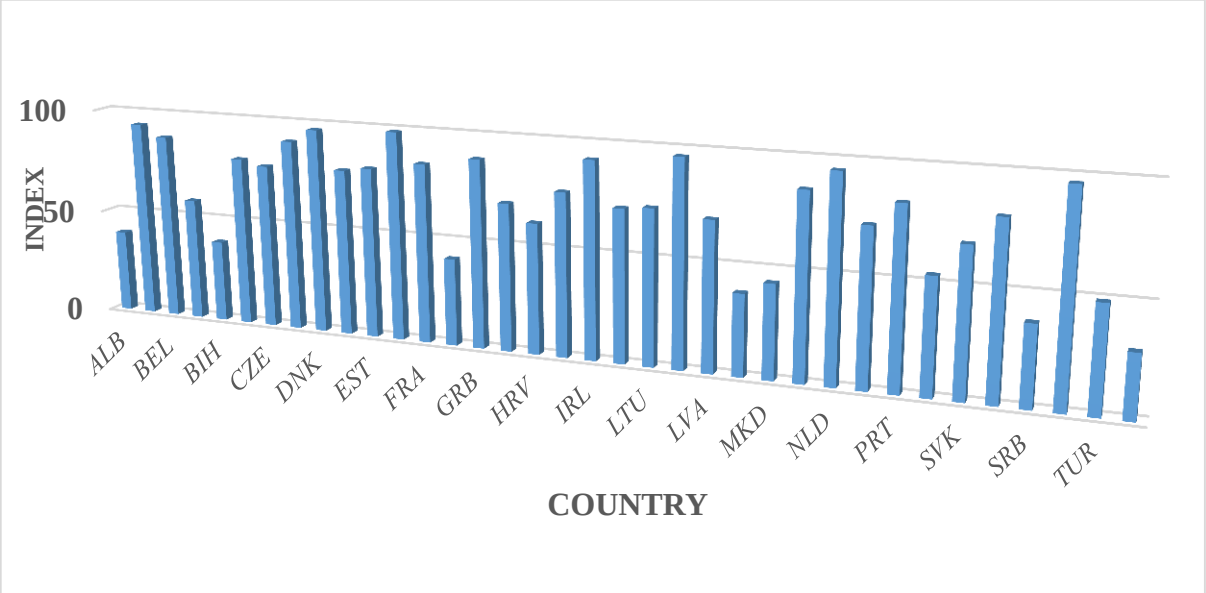
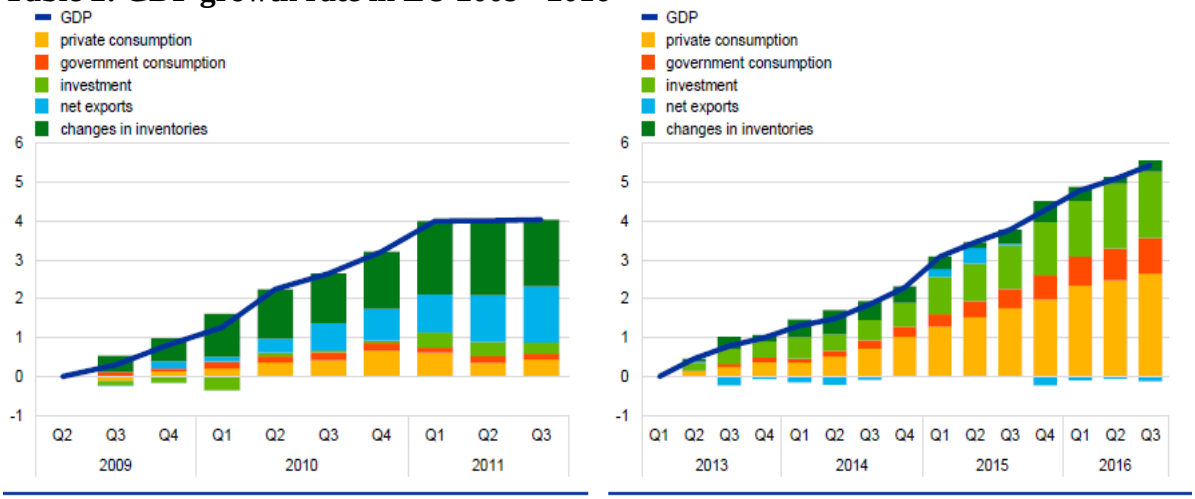
Appendix

Table 1: Average Institutional index (1996-2014)



Source: Author's Calculation of Data from WGI.

Table 2: GDP growth rate in EU 2009 - 2016



Source: Eurostat and ECB calculations.

Table 8: Test for Relevance of Time Fixed Effects

```
. xtreg GVApcit GVApcit_1 GFCFit EXPit NTTit INSit INFit YEAR*, fe

Fixed-effects (within) regression               Number of obs      =       575
Group variable: PID                             Number of groups   =        36

R-sq:  within  = 0.7260                         Obs per group: min =        15
       between = 0.4825                                        avg =      16.0
       overall = 0.3468                                        max =        16

                                                F(7,532)           =    201.34
corr(u_i, Xb)  = 0.2806                         Prob > F           =    0.0000
```

GVApcit	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
GVApcit_1	.3221969	.0193062	16.69	0.000	.2842711	.3601226
GFCFitGDP	.3430948	.0489304	7.01	0.000	.2469743	.4392153
EXPit	-.0272495	.0473149	-0.58	0.565	-.1201964	.0656974
NTTit	-.0722031	.0266052	-2.71	0.007	-.1244673	-.0199389
INSit	-.1441618	.036475	-3.95	0.000	-.2158144	-.0725091
INFit	.0233715	.019491	1.20	0.231	-.0149172	.0616602
YEAR	.7822737	.0378792	20.65	0.000	.7078625	.8566849
_cons	-1545.917	75.76879	-20.40	0.000	-1694.76	-1397.074
sigma_u	14.913137					
sigma_e	3.6145676					
rho	.94451404	(fraction of variance due to u_i)				

```
F test that all u_i=0:     F(35, 532) =    30.87             Prob > F = 0.0000

. testparm YEAR

 ( 1)  YEAR = 0

       F(  1,   532) =  426.50
            Prob > F =    0.0000
```

Table 9: Test for Heteroskedasticity

```
. xtreg GVApcit GVApcit_1 GFCFit EXPit NTTit INSit INFit YEAR*, fe

Fixed-effects (within) regression               Number of obs      =       575
Group variable: PID                             Number of groups   =        36

R-sq:  within  = 0.7260                         Obs per group: min =        15
       between = 0.4825                                        avg =      16.0
       overall = 0.3468                                        max =        16

                                                F(7,532)           =    201.34
corr(u_i, Xb)  = 0.2806                         Prob > F           =    0.0000
```

GVApcit	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
GVApcit_1	.3221969	.0193062	16.69	0.000	.2842711	.3601226
GFCFitGDP	.3430948	.0489304	7.01	0.000	.2469743	.4392153
EXPit	-.0272495	.0473149	-0.58	0.565	-.1201964	.0656974
NTTit	-.0722031	.0266052	-2.71	0.007	-.1244673	-.0199389
INSit	-.1441618	.036475	-3.95	0.000	-.2158144	-.0725091
INFit	.0233715	.019491	1.20	0.231	-.0149172	.0616602
YEAR	.7822737	.0378792	20.65	0.000	.7078625	.8566849
_cons	-1545.917	75.76879	-20.40	0.000	-1694.76	-1397.074
sigma_u	14.913137					
sigma_e	3.6145676					
rho	.94451404	(fraction of variance due to u_i)				

```
F test that all u_i=0:     F(35, 532) =    30.87             Prob > F = 0.0000

. xttest3

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (36)  =    1404.78
Prob>chi2 =      0.0000
```

Table 10: List of Countries

High Income	Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Malta, Netherlands, Portugal, Slovenia, Spain, Sweden and United Kingdom.
Middle Income	Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Georgia, Hungary, Latvia, Lithuania, Macedonia, Moldova, Poland, Romania, Serbia, Slovakia, Turkey and Ukraine.