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Institutions and the Economic Growth

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Abstract

This study shows the impact of different dimensions of institutional quality on economic performance is not the same across all four different stages of development. Using data by ICRG, the five dimensions of the institutional quality are studied: (i) Democracy, (ii) Rule of Law, (iii) Bureaucratic Quality, (iv) Government Stability, and (v) Control of Corruption. The four stages of development, high income, upper middle income, lower middle income and low-income countries are included. The empirical results show that not all institutional quality variables affect economic output in a linear fashion and the direction of the effect of institutional quality on output differs across various stages of development. The study also suggest that the institutional dynamics of low-income countries are significantly different than developed countries.

1. Introduction

The one pressing and highly debated issue in economic growth literature has perhaps been the question of why some countries are richer than others (Werlin (2003), Graham and Temple (2006), Estes R. J (2019) and Acemoglu and Robinson (2012)). This inquiry can be traced back to Adam Smith, in his book, *Wealth of Nations*, explained the nature and causes of wealth accumulation by different nations. Whilst, Solow and Swan in 1956 introduced analytical rigor to the theory of growth. Over time a number of growth theories have emerged explaining the long-run mechanics of economic growth and relevance of institutions (see for instance, Dollar & Kray (2004),

Grossman & Helpman (1991), Chang et al. (2009), Hall and Jones (1999) and McGuinness (2007)). The literature is limited when it comes to institutional quality based on development stage of the country except few studies, for instance, Nawaz, S et al. (2014) and Butkiewicz, J. L & Yanikkaya, H (2006). Indeed, as Chang (2011) highlights, the mainstream literature on the impact of institutional quality mostly uses an overall index of institutional quality and that such a practice may be flawed as it hides the multidimensional aspect of varied institutions. Not all types of institutions may have the same outcomes. This study distinguishes itself by using a larger sample of countries and studying the disaggregated impact of institutional quality variables while accounting for four different developmental stages across countries, low income, lower middle income, high middle income, and upper income countries.

The nexus between growth and institutions got attention during mid of 20th century, especially in economic literature. The work by Wolf (1955) presents an argument that well planned institutional innovations can stimulate economic agents to pursue growth-enhancing activities. Such innovations and stimulus can be provided by institutions through their planning of cost and benefits that directly affect investment behavior. Thus, Wolf (1955) major argument was incentivizing the behavior for better institutions to achieve higher level of growth.

Although quite insightful, Wolf (1955) is not as comprehensive as the theory given by North (1990) which has proven to be the most influential works in the field of institutional economics. North (1990) argues that the need for institutions arise as a result of positive transaction costs in an economy. That is, unlike the frictionless free market economy assumed in much of neo-classical economic theory, agents are constantly faced with transaction costs which characterize economic exchange. Essentially, the argument is built upon the assumption that economic agents are not as rational as economic theory allows them. In other words, economic theory assumes that all agents are perfectly informed and can make optimal decisions by considering all the relevant factors that can affect their rankings of certain alternatives. This assumption has been criticized because agents are not perfectly informed. North later address this in the transactional cost theory of exchange.

Acemoglu & Robinson (2012) highlight the importance of institutions in explaining the divergence between countries in terms of wealth as opposed to other factors such as religion, culture, geography, disease environments etc. They emphasize on inclusive political and economic institutions. The recent empirical studies show the relationship between institutional quality and economic growth (Assane & Grammy (2003); Kandil, M, 2009; Asghar et al., 2015; Kuncic, A, 2013; Murtaza, G & Farid, M.Z., (2016)) which suggest that institutional quality aids in economic development. Barro (1991) and Knack & Keefer (1995) attempted to take some form of institutional variable like rule of law and property rights into account in growth equations.

Mauro (1995) and Ehrlich & Lui (1999) established a link between corruption and economic growth. That is, Ehrlich and Lui (1999) propose very interesting result that corruption is a result of an increased level of government intervention. More government intervention gives rise to bureaucratic offices to execute and manage government policies. However, with the rise in the importance and the number of such bureaucracies, bureaucrats fall victim to rent-seeking activities in terms of bribes to carry out their tasks more swiftly and effectively and thereby take advantage of shadow prices which are not aligned with free-market prices. They subsequently study the impact of government share of GDP as a proxy for government intervention on real GDP per capita. They employ a fixed effects model on a panel data of 152 countries over the period of 1960 to 1992 and conclude that government size does have an adverse effect on economic output. The study established that corruption causes economic output to decrease accordingly which is consistent with Mauro's findings.

During the decade on 90's many studies (Kaufmann et al. (1999), Hall and Jones (1999), Mauro (1995), and Knack and Keefer (1995)) emerged to emphasize the quality of institutions, development of indices and their quality, the use of different dimensions of institutions in relation with economic growth and wellbeing of population. The empirical work that emerged in early 21st century even strengthened the and reenforced the earlier work. Easterly and Levine (2001) publish their paper which found strong evidence to support the claim that national policies have a significant impact on long-run growth. The indicators used to represent national policy were inflation rate, government expenditure, exports plus imports as a percentage of GDP, black market

exchange rate premium, along with financial intermediary credit to the private sector while utilizing the panel data of 73 countries for the period of 1960 to 1995.

Although Easterly and Levine gave a new pathway in terms of an econometric methodology, there was another development which bestowed upon the community, a valid instrument for institutional quality. Daron Acemoglu, Simon Johnson and James A. Robinson published their seminal paper in 2001 with the development of a sound argument for the case that settler mortality is a valid instrument for measuring institutional quality. They presented the historical facts which proved that countries that were colonized by Europe and had high mortality rates for European settlers, were countries with extractive institutions. Such institutions were characterized by ineffective policies for property protections and absence of checks and balances against government expropriation. This allowed the European colonizers to transfer resources from these countries to their own place of settlements where mortality conditions were much more favorable. However, the bad institutions of the colonized countries persisted even after the Europeans left and that, the authors explain, is the reason for the low-income level of such countries as compared to those with European settlers. Acemoglu et al. (2001) find that European settler mortality is one of the most robust instruments for institutional quality in 64 countries during 1995. A major contribution to the literature of institutions and economic growth came from Rodrik et al. in 2004 who argue that economic growth is essentially determined by three fundamental factors – geography, integration or trade and institutions. Acemoglu et al. (2001) provides strong evidence in favor of the argument that institutional quality is the most significant driver of growth for 74 countries. Rodrik et al.'s study is perhaps one of the most robust in terms of the application of Acemoglu et al.'s instrument of settler mortality. In fact, they even claim their superiority by stating that Acemoglu et al.'s central message, which is that colonial experience explains income levels, is not properly established because no direct test is carried out to establish this claim. Further, they state that countries which were never colonized by Europeans also have same distribution of income as those that were. The paper however accepts the results of Acemoglu et al (2001) on statistical grounds rather than on historical facts.

Infect a comparison of the data used by Mankiw et al. (1992), whose sample includes countries of almost the entire world for the period of 1960 – 1985, to establish the validity of the predictions of the Solow-Swan model, Rodrik et al.'s data stands to be a rather very small one. And so, the overarching significance of institutions may then be due to the omission of the more usual variables considered in growth equations. Regardless, Rodrik et al.'s study is mentioned since it is one of the many significant contributions to the literature of institutional economics and offers much insight into the nature of the relationship between growth and institutions.

Further, a more recent survey of the literature shows that there have come a number of different schools of economic thought that try to incorporate more realistic explanations of how institutions affect growth. Rather, the very notion of growth as given by the 'neo-classical' theory has been put to question. The roots of this can perhaps be traced back to Veblen (1898), in which he argued for an evolutionary perspective to explain economic phenomenon, in particular, institutional development. In fact, his argument defines the concept of evolutionary economics as a result of cultural growth due to economic interest along with a complementing role of institutions. economic phenomena, or those concerned with industry in relation to human well-being." Hamilton (1919) places the institutions at the center for the industry and human wellbeing.

However, as Hodgson & Stoelhorst (2014) mention the quest to find a coherent evolutionary and institutional theory was abandoned. Hodgson & Stoelhorst (2014), also mention that it was not until Williamson (1975), that institutional economics took a new turn. Coining the term *New Institutional Economics*, the study of institutions was brought back into mainstream. Indeed, in his review, Samuels (1977) says that Williamson (1975) is mainly concerned with the study of how transactional variables such as bounded rationality, uncertainty, opportunism, among other variables, affect the performance of organizations. Williamson work is an extension of ideas proposed by Coase (1937).

In contrast, Veblen's (1898) reference to evolution gave rise to another line of research that has now come to be known as evolutionary economics". Nelson & Winter (1982) was the primary work that brought evolutionary economics into the forefront. As per this line of thought, economic growth occurs due to innovations that are a result of search and selection processes. That is, firms

that are not performing well, will engage in search activities to find new ways of doing things. This search will give rise to certain innovations that will help improve productivity. Such innovations will go through a process of diffusion until the new ways of doing things becomes the new norm. Firms that fail to innovate or keep up with the new norms, die out. This process goes on incessantly and the innovations thus created help in economic growth by raising productivity. Schumpeter (1943) is quite assertive that smooth picture of perfect competition as being the most efficient may not be the actual driver of growth. Rather, it is the large firm, that invests in R&D to define new production possibilities that cause an economy to prosper.

Regardless, evolutionary theory by itself does not explain the role of institutions. But as highlighted by Nelson & Sampat (1999) that economists are in a broad agreement that institutions are an important in economic growth. Similarly, in stressing the role of new technologies in economic growth, Nelson & Nelson (2002), see new institutions as a form of new social technologies that define new ways of doing things, new laws, new markets etc. which essentially determine the physical technologies that are being used and those that are being developed.

The idea of national system of innovation is first proposed by Freeman (1987), argues that technical progress occurs because of interaction between institutional and organizational elements which together may be called systems of innovation (Edquist 1997). Since Freeman, there has been a surge of research studying the nature and characteristics of NSI's, the role of institutions in their development, and how they help in the understanding of technical change (Amable 2000, Witt 2006, Lundvall 2016)

Nelson & Rosenberg (1993) work is incremental, in which they define innovation to be the set of products and processes that are new to a firm and system as a set of institutions determine the innovative process. There are two strands of analysis when it comes to analyzing institutions in light of evolutionary theory. One of them is perhaps in a very nascent stage and is described by Witt (2013) in which he describes the need for an evolutionary analysis of institutions. That is, exactly how and why certain institutions evolve is an enquiry that evolutionary economics is very apt to answer. The second, as given by Edquist (1997), is how NSIs can be made evolutionary

through different institutional configurations. It is the latter strand of research that has seen more development than the former.

Further, institutions, by structuring interactions among different agents, help in learning and collaboration that leads to innovation. In addition, institutions help determine diversity through the use of incentives and regulations that cause agents to explore certain areas of research and decide whether to share or restrict information that is available to them.

Lastly, NSIs involve firms exploring a number of different research alternatives, from which, a certain alternative is selected based on certain criteria. Commonly, this criterion is based on the market potential of the area being explored. However, according to Dosi (1982), institutional factors play a major role in selection. For instance, military and space programs define which research areas are to be explored, and often times, funding by public agencies or research organizations is provided only for specific types of research.

Effectively, the theoretical literature suggests that institutions, by shaping interactions among different agents, by designing incentives and regulations, and sometimes by selecting certain “technological paradigms” (Dosi 1982), help in formulating NSIs that give rise to technical change that is evolutionary in nature, and thus help in economic development by defining new defining more productive ways of doing things.

2. Data

The study exploits a panel dataset consisting of 121 countries for a 33-year period from 1984 to 2016. Data for real GDP and capital stock has been taken from the Penn World Table, while data for institutional quality has all been taken from the International Country Risk Guide (ICRG). ICRG measures institutional quality based on risk scores. The minimum score can be equal to zero while the maximum can go up to 12. Table 2 shows the summary statistics for each institutional variable. The scores go from low to high and so, a lower score implies lower institutional quality while a higher score implies higher institutional quality. The next section provides the definitions of each of these variables in detail.

Literature on economic growth suggests that the control variables which can be included are human capital, trade share, government expenditure and inflation. Penn World Table for information on human capital. Data for all other variables have been taken from the World Bank's World Development Indicators.

The following institutional variables are taken from ICRG:

Democratic Accountability

As per ICRG, democratic accountability measures “*how responsive government is to its people, on the basis that the less responsive it is, the more likely it is that the government will fall, peacefully in a democratic society, but possibly violently in a non-democratic one*”. It is based on the type of governance prevailing in a particular country. The types of governance have been categorized into four groups. The first is an *Alternating Democracy*, characterized by a proper democratic system involving governments that have not served more than two consecutive terms, free and fair elections etc. The second is a *Dominated Democracy*, which differs from an alternating democracy only based on if a government served more than two successive terms. Then there is the *De Facto One-Party State*, which, among other things, is characterized by the dominance of any government. The fourth is called the *De Jure One-Party State* where it is a constitutional requirement to only have one government party and lastly, there is *Autarchy*, which occurs when the country is being led by a single group or person.

Bureaucratic Quality

The ICRG defines bureaucratic quality as “*The institutional strength and quality, which acts as a shock absorber that tends to minimize revisions of policy when governments change. Therefore, high points are given to countries where the bureaucracy has the strength and expertise to govern without drastic changes in policy or interruptions in government services.*” This implies higher points on bureaucratic quality indicates high institutional quality.

Rule of Law

The indicator for Rule of Law is a composite measure computed using two variables. First is investment profile as a collection of factors which assess the risk to investment. The factors include the risk of expropriation, profit repatriation and payment delays. Ratings are assigned to each of

these subcomponents and then added up to compute an overall risk rating for investment profile. Higher points indicate lower risk of expropriation, repatriation and payment delays etc. and therefore high level of institutional quality. Second is law and order, thus two separate dimensions measured jointly. ICRG defines law as the “*strength and impartiality of the legal system*”, while order is defined as “*popular observance of the law*”. ICRG states that even if a nation has a high quality in terms of its judicial system, it might be the case that it suffers from high crime rate. Therefore, an overall rating for both law and order presents a better picture of a nation’s state of law and order. Also, higher points for law and order imply high institutional quality. North (1990) and Acemoglu et al. (2005) regard property rights as one of the most significant factors of institutional quality. Without property rights, investment is deterred to a great extent as there are no proper demarcations of ownership. As Acemoglu et al. (2005) state, “*There must be enforcement of property rights for a broad cross-section of society so that all individuals have an incentive to invest, innovate and take part in economic activity*”. Law and Order does not measure the extent of such property rights. Rather, it only considers whether existing laws are being obeyed and if the judicial system is independent of political pressures. Investment profile, however, includes the risk of expropriation and this has been used by Knack and Keefer (1995) as a proxy for property rights. Therefore, using law and order alone may not give meaningful results.

Government Stability

Government stability is measured in terms of the “*government’s ability to carry out its declared program(s), and its ability to stay in office*”. A high rating on this component implies high institutional quality. A high level of government stability may also have a positive impact on growth because it would result in a stable political system, which would reduce uncertainty and hence motivate investments.

Control of Corruption

A high level of corruption is clearly indicative of low institutional quality or low control of corruption. The form of corruption that the ICRG ratings measure is the one in terms of financial corruption, which in turn, is “*in the form of demands for special payments and bribes connected with import and export licenses, exchange controls, tax assessments, police protection, or loans*”. As per ICRG, such corruption reduces investment and “*distorts the economic and financial environment*”.

Table 1: Definition of the variables

Definition	Variable
GPD per capita	<i>gdpcapita</i>
Physical Capital Stock per capita	<i>capstockcapita</i>
Human Capital	<i>hc</i>
Democratic Accountability	<i>democacct</i>
Control of Corruption	<i>corrupt</i>
Rule of Law	<i>rol</i>
Bureaucratic Quality	<i>bureauquality</i>
Government Stability	<i>govtstability</i>
Government Expenditure	<i>govtexp</i>
Consumer price index	<i>cpi</i>
Trade Share	<i>tradeshare</i>

As was mentioned in the introduction, descriptive statistics for the variables at different income stages form one of the primary motivations to conduct this study. Accordingly, Table 2 shows the descriptive statistics of all the variables for the overall sample along with the sample for upper income, upper middle, lower middle- and low-income countries. World Banks Atlas Method¹ has been used for classification of countries based on income level. As per this method, low-income countries are those which have GNI per capita equal to or less than \$1,035, lower middle income countries are those having GNI per capita between \$1,036 and \$4,045, upper middle income countries are those that have GNI per capita between \$4,046 and \$12,535 while high income countries are those having GNI per capita of \$12,356 or more.¹

Table 2: Summary Statistics

Variable	Obs	Mean	Std.Dev.	Min	Max
Overall Sample					
gdpcapitalog	3910	8.94	1.229	5.408	11.941
capstockcapitalog	3910	9.93	1.579	5.319	13.179

¹ The GNI per capita in turn, is computed using the *atlas* method. According to this, an atlas conversion factor is computed to convert the GNI of a country in local currency to USD. The atlas conversion factor is the average of current annual exchange rate of a country e_t , and its exchange rates of the past two years e_{t-1} and e_{t-2} . Exchange rates for the past two years are adjusted for inflation.

hc	3691	2.356	.703	1.02	3.809
democacct	3780	3.873	1.62	0	6
rol	3766	6.197	1.92	.25	10
bureauquality	3780	2.176	1.158	0	4
govtstability	3780	7.576	2.048	1	12
corrupt	3780	2.971	1.329	0	6
govtexplog	3561	2.674	.424	-.093	4.334
tradesharequalitylog	3637	4.161	.661	-3.863	6.081
D.cpilog	3372	.115	.295	-.929	4.775

Upper Income

gdpcapitalog	1410	10.175	.567	8.693	11.941
capstockcapitalog	1410	11.411	.736	9.192	13.179
hc	1377	2.959	.467	1.761	3.809
democacct	1348	4.877	1.549	0	6
rol	1334	7.706	1.609	1.833	10
bureauquality	1348	3.223	.869	0	4
govtstability	1348	8.004	1.754	2	11.5
corrupt	1348	4.009	1.287	2	6
govtexplog	1314	2.918	.264	1.907	4.334
tradesharequalitylog	1313	4.383	.573	2.773	6.081
D.cpilog	1332	.068	.221	-.05	2.773

Upper Middle Income

gdpcapitalog	1126	8.965	.528	7.007	10.158
capstockcapitalog	1126	9.982	.771	6.811	11.62
hc	1006	2.355	.452	1.288	3.388
democacct	1080	3.715	1.271	0	6
rol	1079	5.711	1.474	1.056	9
bureauquality	1079	1.867	.761	0	4
govtstability	1079	7.467	1.994	1.083	12
corrupt	1079	2.559	.982	0	6
govtexplog	1083	2.595	.37	.685	3.579
tradesharequalitylog	1085	4.108	.671	-3.863	5.395
D.cpilog	921	.185	.413	-.176	4.328

Lower Middle Income

gdpcapitalog	817	8.016	.597	6.016	9.385
capstockcapitalog	817	8.811	1.126	5.319	11.084
hc	817	1.903	.46	1.079	3.264
democacct	807	3.182	1.39	0	6
rol	807	5.18	1.484	.667	8.333
bureauquality	807	1.639	.8	0	3
govtstability	807	7.309	2.167	1	11.25
corrupt	807	2.255	.879	0	5
govtexplog	722	2.431	.531	-.093	3.772
tradesharequalitylog	776	3.954	.8	-1.787	5.219
D.cpilog	712	.129	.288	-.929	4.775

Low Income

gdpcapitalog	557	7.116	.501	5.408	8.634
capstockcapitalog	557	7.716	.877	5.661	9.926
hc	491	1.419	.309	1.02	2.55
democacct	545	2.726	1.284	0	5.5
rol	546	4.973	1.586	.25	9
bureauquality	546	.994	.789	0	3
govtstability	546	7.126	2.425	1	11.583
corrupt	546	2.278	.935	0	4
govtexplog	442	2.541	.375	1.265	4.298
tradesharequalitylog	463	4.006	.367	3.137	5.741
D.cpilog	407	.092	.109	-.326	.606

The summary statistics in Table 2 shows that average institutional quality differs across different income levels. For instance, if one looks at the averages for democratic accountability, the overall mean is 3.87, while it is 4.88, 3.72, 3.18 and 2.73 for upper, upper middle, lower middle and lower income countries respectively.

Similarly, the averages for all other control variables also differ as one moves along the different stages of income. For physical capital, the overall average is 9.93 with a standard deviation of 1.58. However, the mean is 11.41 with a standard deviation of 0.736 in upper income countries, 9.98 with a standard deviation of 0.771 in upper middle-income countries, 8.81 with standard deviation of 1.13 for lower middle income countries and 7.72 with a standard deviation of 0.877 for low income countries. There is an argument that the income category itself may play a role in determining the impact of institutional quality on economic output. Surely, increasing democracy in a low-income country may not cause output to change by the same amount as it would change in a high-income country. Indeed, a high-income country has a well-developed infrastructure which may facilitate the growth-enhancing effects of democracy. In a low-income country, on the other hand, ethnic tensions, racial discriminations, and other such factors may prevent democracy from promoting growth. As such, the income category to which a country belongs is recommended to be included as an explanatory variable to accurately study the impact of institutional quality on economic output.

3. Methodology, Results and Discussion

The following specification is used for the analysis.²³

$$\log gdp\text{capita}_{it} = \beta_0 + \beta_1 \log \text{capstockcapita}_{it} + \beta_2 hc_{it} + \beta_3 x_{it} + \beta_4 \log \text{govtexp}_{it} + \beta_5 \log \text{tradeshare}_{it} + \beta_6 \Delta \log \text{cpi}_{it} + \beta_7 D_1 x_{it} + \beta_8 D_2 x_{it} + \beta_9 D_3 x_{it} + c_i + u_{it}$$

where x_{it} is the institutional dimension in question which is endogenous and possibly correlated with u_{it} , c_i is the country-specific constant, D_1 is the dummy variable for lower-middle income countries, D_2 is the dummy for upper-middle income countries while D_3 is the dummy variable for high-income countries. The controls include human capital, government expenditure, trade share and consumer price index (CPI) are the control variables.

The specification was chosen to be in levels rather in growth terms because institutional quality takes time to grow. As such, taking the growth form greatly compromises its variability and may therefore not turn out to be significant in determining growth. Further, variables which have been transformed to the logarithmic form are done to ensure that all the variables have a similar numerical scale. This will be clear in the next chapter.

Thus, for each dimension of institutional quality, our approach estimates five different equations:

$$\log gdp\text{capita}_{it} = \beta_0 + \beta_1 \log \text{capstockcapita}_{it} + \beta_2 hc_{it} + \beta_3 \text{democacct}_{it} + \beta_4 \log \text{govtexp}_{it} + \beta_5 \log \text{tradeshare}_{it} + \beta_6 \Delta \log \text{cpi}_{it} + \beta_7 D_1 \text{democacct}_{it} + \beta_8 D_2 \text{democacct}_{it} + \beta_9 D_3 \text{democacct}_{it} + c_i + u_{it} \quad (1)$$

$$\log gdp\text{capita}_{it} = \beta_0 + \beta_1 \log \text{capstockcapita}_{it} + \beta_2 hc_{it} + \beta_3 \text{rol}_{it} + \beta_4 \log \text{govtexp}_{it} + \beta_5 \log \text{tradeshare}_{it} + \beta_6 \Delta \log \text{cpi}_{it} + \beta_7 D_1 \text{rol}_{it} + \beta_8 D_2 \text{rol}_{it} + \beta_9 D_3 \text{rol}_{it} + c_i + u_{it} \quad (2)$$

$$\log gdp\text{capita}_{it} = \beta_0 + \beta_1 \log \text{capstockcapita}_{it} + \beta_2 hc_{it} + \beta_3 \text{bureauquality}_{it} + \beta_4 \log \text{govtexp}_{it} + \beta_5 \log \text{tradeshare}_{it} + \beta_6 \Delta \log \text{cpi}_{it} + \beta_7 D_1 \text{bureauquality}_{it} + \beta_8 D_2 \text{bureauquality}_{it} + \beta_9 D_3 \text{bureauquality}_{it} + c_i + u_{it} \quad (3)$$

$$\log gdp\text{capita}_{it} = \beta_0 + \beta_1 \log \text{capstockcapita}_{it} + \beta_2 hc_{it} + \beta_3 \text{govtstability}_{it} + \beta_4 \log \text{govtexp}_{it} + \beta_5 \log \text{tradeshare}_{it} + \beta_6 \Delta \log \text{cpi}_{it} + \beta_7 D_1 \text{govtstability}_{it} + \beta_8 D_2 \text{govtstability}_{it} + \beta_9 D_3 \text{govtstability}_{it} + c_i + u_{it} \quad (4)$$

² IPS test for $gdp\text{capitalog}$ and for all the institutional variables. It is to be noted that the AIC criterion has been used to select lag length. The results for all the tests show that the p-value is less than 0.05 which means that the null hypothesis can be rejected based on the available evidence, thus confirm the validity of results.

³ Fixed effect models are used with the support of Hausman test.

$$\begin{aligned} \log gdp_{capita_{it}} = & \beta_0 + \beta_1 \log capstock_{capita_{it}} + \beta_2 hc_{it} + \beta_3 corrupt_{it} + \\ & \beta_4 \log govtexp_{it} + \beta_5 \log tradeshare_{it} + \beta_6 \Delta \log cpi_{it} + \beta_7 D_1 corrupt_{it} + \beta_8 D_2 corrupt_{it} + \\ & \beta_9 D_3 corrupt_{it} + c_i + u_{it} \end{aligned} \quad (5)$$

As per the regression Table 3 show the democracy is significant for all income levels, having a positive impact on economic output for lower middle, upper middle- and upper-income countries while having a significantly negative impact on low-income countries.

The results suggest that a 1-unit increase in democracy causes output to rise by 3.26%, 4.26% and 6.81% in lower middle, upper middle- and upper-income countries respectively, whereas a 1 unit rise in democracy causes output to decline by 2.45% in low-income countries. However, democracy may not always guarantee growth since the democratic system is made of large interest groups and may not always lead to an efficient political system, is not implausible as such. In fact, North (1990) posits that it is misleading to assert that democracy leads to efficient political markets in the same way as free markets lead to efficient economic outcomes due to high competition. He states that in private markets, the role of competition is assumed to be quite strong because of information exchange and arbitrage. However, such strong competitive forces only exist in theory, and it is rare at best to see markets performing so efficiently and so it is implausible to assume that such effects, which can hardly be found in the so-called competitive markets, play a role in the political markets. North then concludes that although democracy will reduce transaction costs to some extent, it will however, increase the size of political transactions that take place because in a democracy, there are more parties involved in the system and agency costs are likely to increase as a result. Such sentiments are also echoed by Robert J. Barro in the book ‘2013 Index of Economic Freedom in Chapter 3. He clearly states that the arrival of democracy accompanies with it government programs that focus on transferring wealth from rich to poor. Although this may reduce social unrest by stopping the poor from partaking in criminal activities in order to make ends meet, it may also have a reverse effect where agents begin to be discouraged to work in productive activities and rather live on welfare payments by the state. This is indeed an interesting point and is something which can be observed in the developed world.

In contrast, a more recent view on democracy is given by Acemoglu et al. (2019) who put the relationship of democracy with economic growth to some highly rigorous statistical tests and find that democracy does cause growth. They also empirically test the channels through which democracy may cause growth. In particular, they find that democracies, through increasing the likelihood of growth enhancing economic reforms, tax revenues, school enrollment at primary and secondary level and decreasing child mortality boost economic growth. They also give a similar view as given by Barro of the beneficial effects of democracy by stating that democracy reduces social unrest.

With regards to the negative impact of democracy in low-income countries, it may imply that low-income countries may not have the necessary resources and systems in place, which would allow the beneficial effect of democracy to follow through. For instance, it is plausible to say that such countries lack the expertise to devise economic policies which are growth enhancing even though they are free to do so in a democracy. Or it may be that education and health infrastructure is not as developed in these countries as in the upper income countries to allow democracy to enable growth enhancing effects through these channels. Indeed, a country which enjoys democracy may not be able to avail its benefits if it still suffers from low literacy, a poor health system, ineffective tax laws etc. Indeed, democracy can be quite harmful in nations where the literacy rate is low. Having a democracy in an environment where the general populace is not educated or informed enough to decide which political party will work for the benefit of society, can prove to be quite harmful as it may lead to corrupt political officials being elected. Also, Acemoglu & Robinson (2006) as cited in Acemoglu et al (2019) suggest that a high level of human capital may reduce conflicts in a democratic society. Overall, it may be concluded that democracy does matter for economic performance. However, it will only work to promote growth when nations have a significant level of human capital, otherwise, democracy may cause instability which will only act to thwart growth.

The results suggest that a 1 unit rise in Rule of Law causes economic output to rise by 1.71%, 2.92% and 6.90% for lower middle, upper middle- and upper-income countries respectively with all the coefficients being significant at the 5% and 1% levels. These results are not at all surprising given the extensive significance literature places on property rights (North 1990; Acemoglu et al.

2005; Barro 2013). Acemoglu et al. (2005) states that well-defined property rights are one of the most important factors in determining economic outcomes because absence of such property rights discourage people to “*invest in physical or human capital or adopt more efficient technologies*”. They show that there is a significant and positive relationship between GDP per capita and risk of expropriation as measured from ICRG data. Similarly, Barro 2013 finds a positive and significant relationship between the Law and Order measure of ICRG and economic growth. However, he does state that the explanatory power is not as much as it should be, the reason for which he tells lies in the imperfect measurement of Law and Order by ICRG. This study, however, mitigates this problem to some extent by taking the average of Investment Profile and Law and Order with higher emphasis placed on Investment Profile which includes risk of expropriation and is therefore much closer a proxy for property rights. The surprising result however is that for low-income countries, rule of law is negatively related to economic performance according to both regressions. Further, Chang (2011) claim that developing countries are usually reliant on the developed world for investments and hence, need to define laws that encourage foreign agents to invest in low income nations. He gives the example of landlord property rights that have proven to be harmful for economic development and highlights the fact that excessively protecting shareholders can reduce real investment by “*putting short-term pressures on the managers*”. It can therefore be concluded that rule of law in low-income countries are mostly driven by foreign investors who forcibly manipulate the governments of these countries to follow policies that serve their self-interest rather than the interest of the host country’s populace. This therefore possibly explains the negative impact of rule of law on real GPD per capita.

However, according to Table 3, bureaucratic quality is hardly a significant factor in determining economic performance. It only comes out to be somewhat significant at the 10% level for low income and upper income countries with a 1-unit rise in bureaucratic quality causing economic performance to rise by 2.86% and 3.7% respectively. Nevertheless, such growth enhancing effects of effective bureaucratic quality do not turn out to be a significant determinant of real GDP per capita for low income and lower middle-income countries seem to play only a minor to no role. Evans and Rauch (1999) state that the beneficial effects of bureaucracies can emerge if they follow the so-called Weberian structure. The Weberian theory of bureaucracy posits that effective bureaucracies are one the most integral features of a successful capitalist system. However, as

Evans and Rauch (1999) indicate, it will only be so if it has the characteristics of an efficient structure as proposed by Max Weber. Two of the most important and measurable features of efficient bureaucracies studied by Evans and Rauch (1999) are the presence of a meritocratic system of recruitment and a predictable career path which gives bureaucrats to work for long-term goals. In a meritocratic system, recruitment will require some minimal standards of education and competence which in turn can help improve the overall bureaucratic system and giving a well-defined career path will help bureaucrats focus on long-term goals. Perhaps the insignificance of effective bureaucracies is due to the possibility that the bureaucratic system is not characterized by such features and hence does not contribute to growth. Nevertheless, one may argue that even if the Weberian bureaucratic structure highlighted above is present, it may not be the reason for economic growth. For instance, in a very recent study, Cornell et al (2020) state that the effect of Weberian bureaucratic structure on growth is “vastly overestimated” in the literature and that the impact is at best, modest and is mostly apparent after World War II. They base these conclusions after conducting various panel data estimations on data used by Evans and Rauch (1999) along with the Varieties of Democracy (V-Dem) dataset.

If this is so the case, then a natural conclusion arises that the Weberian structure does not account for the positive and significant impact of bureaucratic quality on economic growth. Does this mean that the Weberian structure is all but ineffective? This may be answered by considering one of the arguments given by Cornell et al (2020) which says that the Weberian bureaucratic structure has more to do with the impartial implementation of policies rather than determining the effectiveness of policies. As such, even if countries have the Weberian bureaucratic structure, it is possible that such countries have policies in place which are not growth-enhancing. The bureaucracies in such countries may well be implementing policies with all the rigor and impartiality, but such policies may not be conducive to growth. This argument falls much in line with the argument given above which alludes to the definition of bureaucratic quality given by ICRG. ICRG regards a nation to have high bureaucratic quality if its bureaucracy is able to implement policies without any political pressures and thus avoid policy revisions. Therefore, it can be concluded that even if one assumes countries to have Weberian bureaucratic structure, it would still not be enough to promote growth as countries may be plagued by incompetent politicians and legislators, who may be blindly following policies which are not so effective after all. Hence, Weberian structure on its own, simply ensures policies are implemented without any hindrance.

Lastly, as Barro (2013) highlights, bureaucratic efficiency may be a double-edged sword. Although it has benefits, it may however be harmful, if higher bureaucratic quality involves bureaucrats intervening in activities where they are not even needed. This can indeed hamper growth. And so, the net effect of bureaucracy may turn out to be insignificant in the developing world eventually.

The government stability is significant and positive not only for upper middle- and upper-income countries, but also for lower middle-income countries. As per Table 3, a 1 unit rise in government stability causes economic output to rise by 1.04%, 3.19% and 6.06% in lower middle, upper middle- and upper-income countries respectively. Stability is indeed required for investments as stability creates certainty and thus reduces the risk associated with unstable environments where policies might change abruptly that may, in turn, discourage investments (Feng, 1997). Such instability can therefore lead to a fall in investments and eventually growth. Mancu Olson's theory says that prolonged periods of stability may lead to collusions and organizations which in turn, can slow down "*a society's capacity to adopt new technologies*" and also deter reallocation of resources to more productive uses. Although Olson does not suggest perpetual instability, his theory rather implies that instability can be beneficial in the short-run in so far as it discourages or breaks such collusions and once this is achieved, additional instability will hurt growth. So it seems there is an optimal level of instability which fosters economic welfare. Indeed, it is stated that countries who experience short periods of instability followed by stability will tend to have the highest of growth rates. Further, as per ICRG, government stability implies the government's ability to stay in office and presence of popular support. Brining these two aspects together, it is not hard to see that in low-income countries, which are usually characterized by broken political party systems, dictatorships, and military regimes, stability might be more a result of forceful repression of the general populace than a clean democratic process. Collusions may exist among various political parties who may be pursuing self-interested goals while artificially keeping the economy stable in order to gain popular support. This effect may even be more pronounced due to low literacy rates in low-income countries as this would mean that they do not properly appreciate or are unaware of the true motives behind the government's actions. This prevents the general citizens from removing the veil of deceit that their governments put on. Therefore, higher levels of stability in such nations might be indicative of a more complex and extractive political structure.

Keefer and Knack (1998) also argue that stability may not produce the desired results if the countries are characterized by poor property rights. It is no surprise then, they argue, that countries like Ghana or those in Latin America, despite having macroeconomic stability, have not experienced significant levels of growth.

Lastly, control of corruption is not a significant determinant for lower middle income countries, although the sign of the coefficient is still negative. Regarding the negative impact of control of corruption on real GDP per capita, it is perhaps not so surprising when one refers to some more literature. For instance, Leff (1964) suggests that corruption may be desirable if there are a lot of legal restrictions which hamper growth enhancing activities. Essentially, corruption in the form of bribes to bureaucrats may act as an incentive to get things done more efficiently. This point is also elaborated by Shleifer & Vishny (1993) who say that the way in which corruption can promote growth is by enabling entrepreneurs to overcome restrictions. Bardhan (1997) also makes a similar argument stating that, *“in the context of pervasive and cumbersome regulations in developing countries, corruption may actually improve efficiency and help growth”*. Barro (2013)’s arguments regarding corruption are consistent with the above as well. Although he fails to find a significant relationship between corruption and economic growth, he argues that such a result may be indicative of the fact that corruption may be preferable to *“honest enforcement of bad rules”*. If rules are such that prevent the pursuit of meaningful economic activities, then it is better to circumvent these laws for the greater good.

Therefore, the negative impact on lower middle, upper middle- and upper-income countries may mean that rules put in place to control corruption, are nothing more than a hindrance to growth due to overly cumbersome regulations. However, a question may still remain as to why such effects are not present in low-income countries. Control of corruption, as per the arguments above, will hurt growth if it results in overly cumbersome regulations. In low-income countries, on the other hand, it is possible that controls help growth because in such countries, institutional checks may already be deficient. In fact, bureaucracies may themselves be heavily involved in rent-seeking activities due to the absence of proper checks and balances. As such, developing a proper system which monitors and penalizes such activities will help a country grow in the initial stages of development. Nevertheless, adding anything above and beyond this may prove to be harmful as it

may demotivate prospective entrepreneurs to establish their businesses in countries with regulations that reduce the ease of doing business and may also result in a reallocation of productive resources such that more attention is paid to the development of elaborate and costly controls than to the development of human and physical capital. The results suggest that there is a certain level of controls on corruption beyond which additional controls will only thwart growth. As to what exactly this level might be being perhaps an endeavor to be carried out in future research.

4. Conclusion and Implications for Policy

From the discussion above, not all institutional quality variables affect real GDP per capita in the same manner across all income groups. It is also apparent that upper income countries seem to benefit from higher levels of all institutional quality variables except for control of corruption. Furthermore, higher institutional quality as per the definitions of ICRG does not affect economic performance positively in low-income countries.

These findings are much in support of the strong views given by Chang (2011) who clearly states that *“today’s dominant discourse on institutions and development fails to recognize that the relationship is not linear, differs across societies, and changes over time even in the same society”*. He also says if some “dose” of institutions promotes growth, it may harm growth if provided in a greater dose. This is much in line with the finding that institutions built for the control of corruption may harm output if their growth continues unchecked. As such, Chang (2011) opposes the idea that developing countries should simply adopt the Global Standard Institutions (GSIs) forced on by World Bank and the International Monetary Fund (IMF). Such institutions work well for developed countries. However, for developing countries, as the empirical evidence shows, institutions with the same set of features as those in the developed world may prove to be harmful or insignificant altogether.

At this point, it is also interesting to note, as Chang (2011) highlights, that most measures of institutional quality come from the developed world involving organizations such as the World Bank. Even the ICRG data is compiled by the PRS Group which is based in the United States of America. As such, these organizations naturally come to think that higher institutional quality corresponds to the standards they have set and as such, the developing world, falling short of these

defined standards, is considered to suffer from low institutional quality. It is therefore not of much surprise that the impact of institutional quality on economic output with such data, sometimes gives the opposite results for the low-income countries.

The dominant literature seems to be of the view that the higher the quality of institutions, the higher the growth in output, no matter at what stage of development a country adopting these institutions might be. In fact, the literature also assumes that all types of institutions in ever greater doses benefit growth. This study seems to stand at odds with this school of thought. Rather, if one looks at the results of this study more closely, subtler patterns materialize. To start with, it seems that there needs to be some “fine-tuning” with regards to the “doses” of institutional quality that a country should get depending on its development stage. This can be explained as follows.

Countries that fall right at the bottom of the development yardstick, should allocate their resources to physical and human capital accumulation as a precursor to the development of institutions. They should however devote resources to the development of institutions that control of corruption only by creating organizations whose sole purpose is to keep strong checks and balances in order to avoid rent-seeking activities. This can be in the form of developing a system of rewards and punishments that encourages growth enhancing behaviors while heavily penalizing corrupt activities. Such efforts should encourage local investments so that dependency on foreign nations for investments is reduced. As far as democracy is concerned, low-income countries should first work on creating a proper educational facility and only then focus on building a democratic system.

Countries in the lower middle-income stage, should not only focus on capital accumulation, but also focus more on developing property rights, justice systems, democratic institutions, and ensuring stability by avoiding rampant government or policy changes. As such, at this stage, governments should start establishing impartial judicial systems such that the trust of the citizens is not compromised. This will ensure that stability prevails and will allow democracy to work by letting different parties to engage in meaningful ways without having to resort to unnecessary conflicts.

Countries in the upper middle-income stage, on the other hand, should not work on increasing controls on corruption as that may lead to a fall in economic performance. Indeed, developing sound property rights laws and a fair democratic system are more effective than building costlier

controls to monitor an ever-increasing incidence of corruption at this stage. As such, a reallocation of resources might be needed so that resources are taken out of institutions that were there only to control corruption to institutions who are responsible for developing property rights. In addition, such countries should devise policies that further enhance the democratic system, stability and rule of law.

Countries belonging to the upper income group, should keep diverting their resources from institutions built for controlling corruption to institutions that promote democracy, rule of law, stability and bureaucratic quality.

In light of the literature on NSIs, however, the above policy implications may be too simplistic and over-arching. At a more granular level, public policy should aim at creating an institutional configuration that helps in the process of innovation. This is something that is easier said than done. The very fact that the same institutional factors affect economic growth differently as shown by the results of this study, implies that different systems will work in different ways to produce new technologies. As to what exactly that ideal mix be for a specific country is perhaps a question that should be studied on its own for each country separately.

Research done by scholars such as Acemoglu is perhaps limited in the sense that it does not shed light on the exact channels through which institutions help in economic development. History indeed has a role in explaining the current state of institutions, but that is not enough from a policy perspective. Surely, colonization may not be the only impact on the state of institutions. As Witt (2013), institutions themselves evolve and as per Veblen (1898) the institutions opt different shapes based on human behaviors and habits in a society. This implies that institutions are a complex phenomenon that come to being through either trial and error or through design (Edquist 1997).

Institutions that are designed may perhaps be explained to some extent by historical events such as those suggested by Acemoglu. However, institutions that evolve out of human actions rather than by human design may be much harder to explain through simple econometric analysis. As such, institutional dimensions of democracy, bureaucracy, corruption, stability and rule of law can have both evolutionary elements and elements that are deliberately designed. Further, when

speaking of institutional change, elements that have been designed may also change as a response to accommodate technological changes that are a consequence of innovations.

Considering the dimensions studied here, it is evident that simply increasing rule of law or the level of democracy may not be enough to build a sound system of innovation. What is needed is what sort of elements should a democracy or the law or constitution of a country possess that best facilitates the human engineering talent in producing innovations. Indeed, increasing rule of law may mean improving patent regulations in one country to incentivize firm-specific R&D, while it may mean creating new copyright laws or accounting regulations to consider the intangible nature of certain technologies.

This means that a deeper understanding of the culture and traditions, incentive structures, communication channels and barriers to the accumulation of knowledge is needed to bring about the right variants of democracy, bureaucracy, rules of law and controls that bring fundamental stability but still leave room for potential institutional changes that can support sustenance and development of new technologies.

In conclusion, it is vital that in order to understand and develop a sound theory of economic change, research from different areas of Economics, should be brought under one roof. This view is perhaps more aptly explained by Pelikan (2010) that institutional economics, evolutionary economics, together with behavioral economics appear to be the most promising fields whose union can indeed provide remarkable insights into how economies change and grow based on human nature and socio-economic structures. It is only then that we can give more coherence and characterize more precisely the broad institutional dimensions studied in this paper and thus be able to direct policy designs more concretely.

Table 3

VARIABLES	(1)	(2)	(3)	(4)	(5)
	gdpcapitalog	gdpcapitalog	gdpcapitalog	gdpcapitalog	gdpcapitalog
capstockcapitalog	0.432*** (0.00944)	0.420*** (0.00905)	0.435*** (0.00943)	0.447*** (0.00905)	0.442*** (0.00937)
hc	0.223*** (0.0269)	0.182*** (0.0252)	0.219*** (0.0268)	0.212*** (0.0255)	0.216*** (0.0268)
govtexplog	0.0646*** (0.0169)	0.0739*** (0.0162)	0.0661*** (0.0169)	0.0707*** (0.0169)	0.0616*** (0.0169)
tradesharelog	0.0123 (0.00972)	0.00639 (0.00935)	0.0117 (0.00954)	0.0168* (0.00950)	0.0118 (0.00944)
D.cpilog	-0.0304 (0.0198)	-0.0315 (0.0195)	-0.0318 (0.0198)	-0.0448** (0.0196)	-0.0333* (0.0191)
democacct	-0.0245*** (0.00830)				
democacct*lowermiddle	0.0326*** (0.0108)				
democacct*uppermiddle	0.0426*** (0.0108)				
democacct*upper	0.0681*** (0.0110)				
rol	-0.00855 (0.00669)				
rol*lowermiddle	0.0171** (0.00838)				
rol*uppermiddle	0.0292*** (0.00832)				
rol*upper	0.0690*** (0.00761)				
bureauquality	0.0286*				

					(0.0160)
bureauquality*lowermiddle					-0.0195 (0.0198)
bureauquality*uppermiddle					0.0186 (0.0201)
bureauquality*upper					0.0370* (0.0203)
govtstability					-0.0300*** (0.00397)
govtstability*lowermiddle					0.0104** (0.00514)
govtstability*uppermiddle					0.0319*** (0.00529)
govtstability*upper					0.0606*** (0.00527)
corrupt					0.0680*** (0.0124)
corrupt*lowermiddle					-0.00738 (0.0155)
corrupt*uppermiddle					-0.0859*** (0.0148)
corrupt*upper					-0.0972*** (0.0149)
Constant	3.833*** (0.0737)	3.935*** (0.0721)	3.790*** (0.0745)	3.730*** (0.0730)	3.849*** (0.0783)
Observations	3,522	3,522	3,522	3,522	3,522
Number of id	107	107	107	107	107

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

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