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INSTITUTIONS AND GROWTH IN SAARC COUNTRIES

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Abstract

This paper investigates the influence of geography and institutions on economic development in SAARC countries. Corruption, poor government, political stability and worse rule of law are the vital problems of these countries. Better governance yields a foundation for investigating the long menu of institutional adjustment and right strategy, which are recently regarded as fundamental for economic development. Institution of these SAARC countries directly shapes the speed and standard of economic growth. Bad governance and frail institution design is persisted subject of SAARC countries. The aim of this paper is to establish the impact of geography and history on institution and economic growth in eight SAARC countries for the period 1996-2015 through panel data study. The outcome of the analysis demonstrates that in all these SAARC countries economic growth and institution has a tradeoff that is with better institution there is a better in growth in GDP per capita. Geography influence both institute and growth directly and indirectly via different mechanisms which in turn affect government policy making and on institution building.

Keywords: Institution, Growth, Economic development, SAARC, 2SLS

INTRODUCTION

In recent years, the growing number of interest among scholars and policymaker on institution and growth has been seen on cross-country measurement on institutional quality and good governance. Institution seems to play an important role in many factors specially in determining the effectiveness and the quality of government, and GDP growth rate. In this study, I examine what determines institution and how it's effecting the economic growth of the SAARC countries. In accordance with this many scholar also argued that there is a geographical effect and policy effect that determines economic growth. Specifically, I investigate the relationship the effect of

geographical endowments and policy factors with institution and economic growth only for SAARC countries.

SAARC is a regional cooperation, founded in 1985 by the original seven-members countries of Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka. Later Afghanistan joined this alliance. These seven states are dissimilar in land area, GDP, institution and population, even though they have resemblance in human and economic development. They also have the uncommon characteristics of having a prevalent boundary with one another associate states. Although all the countries of this region have abundant of natural resources and a huge potential for growth. However, these countries can't manage to do higher growth because of various problems they face and one of the reasons is the poor institution. A good and efficient institution is a requirement for sustainable development. My belief is, these countries can achieve higher institutional level they might be able to attain sustainable growth through this institution.

In this paper I would like to analyze the institution of these SAARC countries. Institutions are interpreted in (Chong & Calderón, 2000) as the norms attaching the component of community, form the action of economic parties and provide to economic production of nation. The economist gave an extensive explanation of institution asserting that they contain not only legal and political constitution but cultural as well in (Engerman & Sokoloff, 2002). Healthy institutions escort toward prominent economic development and bear a productive foundation for additional uniform spread of income. I will use various index to evaluate institutions such as stability of government, socioeconomic conditions, profile of investment, conflict, corruption, law and order, and bureaucracy quality. When we study the history of these countries we find that most of the countries were colonized by British Empire. The institution was adopted from the colonizer after their independence.

How does the institution of these countries look like? Whether historical origin plays a role in determining the institution of this region? How the geographical endowments are affecting the institution and growth of these countries? This paper attempts to investigate the institution building mechanism of the SAARC countries. Whether the colonial origin of these countries matters for development. Whether geography plays a role in building the institution of these countries.

This paper addresses the relationship between institution and economic growth. The vital issue of endogeneity can have tackled in this study. To control for simultaneity bias and reverse causation (endogeneity), within a panel data framework I use 2SLS with random effect on institution which can be explained by geographical endowments and relate it to GDP per

capita growth rates over the period of 1996-2015. Our results indicate a strong causation between the exogenous component of institution and economic development.

I would like to point out several limitations of our research. First, the determinants and consequences of institution is broadly defined. I do not use other indicators that capture specific dimensions. Second, most of the instruments used in the analysis is fixed in nature. It's hard to determine the time varying effect. Third, I only focus on institution while controlling for historical and cultural factors.

LITERATURE REVIEW

Numerous studies investigate the contribution of institution on economic growth, but few literature put emphasize on geographic endowments. Beck and Laeven (2006) using cross-section data and the Instrument Variable (IV) approach on 24 transition countries showed that, dependence on natural resources and the historical experience of these countries during socialism as a major determinants of institution building during transition period, and also institution is important in explaining the variation in economic development and growth across transition countries especially during the first decade of the transition. Easterly and Levine (2003) also using the same IV method on cross-section data and same measure of Institutions for 72 former colonies and showed that geographical endowments effects economic growth through their effect on institution.

Natural resources effects economic growth through their indirect effect of institution. Sala-i-Martin & Subramanian, (2008) from the Nigerian experience form 1965 showed that some natural resources such as oil and minerals in particular – apply a negative and nonlinear impact on growth through their damaging impact on institutional quality. For Nigeria misuse of natural resource and corruption from oil comparatively than Dutch disease has been guilty for its inferior long run economic behavior of the country. That is very true for many countries in the world. With an IV frame work for the cross-section data for different countries they showed that natural resource affect GDP through institutions. Sala-i-Martin & Subramanian, (2008) find that in hypothetical economics literature, three mechanisms of causation from rich natural resource to under growth have been recognised. First, abundance in natural resource spawn rents which induce to avaricious rent-seeking, whose unfavorable presentation is sensed via political economy and to expand corruption, which negatively influence long-run growth. I will mention this outcome as institutional influence of natural resources and our focus on this paper is based on this hypothesis. Second, possession of natural resource revel countries to volatility, especially in commodity prices, which could have a negative influence on growth through an expand in fertility. Third, possession of natural resource creates countries impressionable to Dutch Disease.

The colonial experience is an important indicator in understanding the country's institutions origins. Licht, Goldschmidt, & Schwartz, (2007) submit confirmation about the relations across national culture and social institutions. They functionalized culture with data on cultural dimensions for over 50 countries chosen from cross-cultural psychology and produce testable hypotheses about three fundamental social norms of governance: the rule of law, corruption, and accountability. Regressions demonstrate that quantitative calculation of national culture are solely noticeable predictive of governance, that economic inequality and British background add to predictive potential, but that growth and other component add a little.

In the past few decades, economists have provide a substantial amount of investigation on legal origin recommending that the historical origin of a country's laws is highly parallel with a wide area of its legal rules and regulations, as well as with economic outcomes (La Porta, Rafael and Lopez-de-Silanes, Florencio and Shleifer, 2008). Daron Acemoglu, Johnson, and Robinson (2012) argued that, the mortality rate between the European settlers and the population density in the settled country determined their determination whether or not to settle in that colony.

Peev & Mueller (2012) investigate the interrelationships among democracy, economic freedoms, and economic growth. They examine 24 post-communist economies over the span 1990–2007 and observe that powerful democratic institutions are corresponding with considerable economic freedoms and substantial public sectors and public deficits. Powerful economic freedoms induce faster growth, but substantial public sectors and public deficits have negative consequence on growth. They pinpoint trade freedom, monetary freedom and freedom from corruption as the foremost signal of economic freedom for growth in transition countries over the period 1994–2007.

Fors & Olsson (2007)claimed separation from colonial command was a crucial phenomenon for both political and economic wisdom. They assert that recently independent countries frequently innate sub-optimal institutional disposition, which the new authority behaves to in very dissimilar manner. Their model forecast that revenue maximizing authority in control of an abundance of wealth rents and with insignificant attention in the current sector will rationally establish weak institutions of private property, a forecast which they assert is well in line with the occurrence of some developing nations. Although soveregenity from colonial command is the principal category of amend that we have in understanding, they assume that their model might also have relevance for comprehending the institutional alternative after other intermittent authority move such as the conversion from communism, or even the onset of colonization. Indeed, Beck & Laeven, (2006) found conformation that natural wealth have been a vital hindrance to institutional development in transition economies.

Knack & Azfar (2003) exhibit that empirical association among corruption and trade intensity – or country size, firmly associated to trade intensity – are delicate to sample compilation bias. Most convenient corruption measures deliver ratings only for those nations in which multinational investors have the considerable attention: these tend to incorporate almost all large countries, but between small countries only those that are well-lead. They observe that the association among corruption and trade intensity perish, using recent corruption measure with considerably expended country coverage. Similarly, the association among corruption and country size debilitate or perish using specimen below subject to selection bias.

Bulte, Damania, & Deacon (2005) examine the association among resource profusion and respective measure of human welfare. Accordance with the present literature on the association among resource profusion and economic development they observe that, given an initial income level, resource-profusion nations tend to bear lower levels of human development. While they observe only poor prove for a direct link among resources and welfare, there is an indirect association that function through institutional quality.There is also significant dissimilarity in the consequence that resources have on various determinant of institutional quality.

Muhammad et al. (2016) analyzed impact of governance and institutions on education and poverty alleviation for six SAARC countries for the period of 1996-2012. A cross sectional panel data frame work was used to achieve this mission. The OLS technique, fixed and random effect technique, Arellano Bond and principal component analysis was used for both poverty and education. The results indicate institutions influence both poverty and education directly and indirectly through number of mechanisms which in turn influence government policies concerning poverty reduction and education quality. However, poor regime and frail institutional building also persisted the issue for developing countries. Similarly, the negative sign of institution demonstrate development and shows decrease in poverty and increase in education. Government has a very essential duty in decreasing poverty and improving education. Natural endowments of these SAAR countries cause GDP growth through better institution.

DESCRIPTIVE STATISTICS

I collected the data from these 8 countries from 1996 to 2015 to use in your regression analysis. I used panel data framework with random effect model for our research. The reason for using the random effect model is explained in the methodology section. A pooled OLS estimation is also used for this analysis. The data and sources used for this analysis are described in detail in the appendix A. Here I focus a few main variables. GDP per capita growth rate is collected from the World Bank's World Development Indicators.

Succeeding Easterly and Levine (2003) and Sala-i-Martin & Subramanian, (2008), the institutional quality is calculated from World Government Indicator (WGI) by Kaufmann, Kraay, & Mastruzzi, (2011). It is a compound measure of a number of segments that apprehend the preservation provided to property rights furthermore the power of the rule of law. World Government Indicator (WGI) is the composite of six dimensions of government as Voice and Accountability, Political Stability and Absence of Violence/Terrorism, Government Effectiveness, Regulatory Quality, Rule of Law and Control of Corruption. The measurement of World Government Indicator (WGI) is based on point estimates and the value lies between -2.5 to 2.5, with higher scores, correspond to superior governance and institution. However, there is a limitation to use these variables in a single regression as they are strongly correlated with each other, which raises the possibility of multicollinearity. Hence, the effort has been made by the various authors to take the mean of the simple averages of these indicators. In this paper, I follow the footsteps of (Al-Marhubi, 2004; Bjørnskov, 2006; Easterly, 2002; Easterly & Levine, 2003) and take the average of these six dimensions as an institution. I used the legal origin and religion as control variables for this analysis.

Table 1 and 2 shows the correlation matrix and summary statistics of the data. The description of the variables and their definition can be found in Appendix.

Table 1. Correlation Matrix

	GDP per capita	Control of Corruption	Government Effectiveness	Political Stability	Rule of Law	Regulatory Quality	Regulatory Quality	Institution	Area	Latitude	Landlocked	Settler Mortality
GDP per capita	1											
Control of Corruption	0.5999	1										
Government Effectiveness	0.5786	0.8925	1									
Political Stability	0.3261	0.627	0.6989	1								
Rule of Law	0.5592	0.9332	0.8855	0.6332	1							
Regulatory Quality	0.6485	0.9183	0.9075	0.5479	0.9128	1						
Voice and Accountability	0.3524	0.7763	0.8122	0.6446	0.8269	0.7235	1					
Institution	0.5573	0.9418	0.9547	0.7758	0.9548	0.9159	0.8852	1				
Area	-0.273	-0.1443	-0.0278	-0.222	-0.0579	-0.1728	0.156	-0.0843	1			
Latitude	-0.621	-0.828	-0.6855	-0.5909	-0.8239	-0.783	-0.5769	-0.787	0.5135	1		
Landlocked	-0.5159	-0.7455	-0.836	-0.637	-0.7882	-0.7992	-0.6976	-0.8297	0.1659	0.5599	1	
Settler Mortality	-0.2659	-0.3898	-0.5455	-0.1391	-0.4355	-0.4967	-0.3494	-0.4287	-0.4485	-0.0357	0.6616	1

Table 2. Summery Statistics

Variable	Observations	Mean	Std. Dev.	Min	Max
GDP per capita	160	6.770211	0.883494	4.78665	8.940561
Control of Corruption	160	-0.53138	0.67929	-1.91377	1.726126
Government Effectiveness	160	-0.42245	0.646405	-2.3246	0.910111
Political Stability	160	-0.96906	1.15486	-2.41208	1.54616
Rule of Law	160	-0.46296	0.66604	-1.95573	0.527357
Regulatory Quality	160	-0.59577	0.603305	-2.1862	1.0018
Voice and Accountability	160	-0.57967	0.559701	-2.03917	0.450179
Institution	160	-0.59355	0.605466	-2.12372	0.557199
Area	160	11.60181	2.610954	5.703783	14.90515
Latitude	160	0.239514	0.113929	0.035	0.366667
Landlocked	160	0.375	0.485643	0	1
Settler Mortality	100	4.109812	0.326847	3.61065	4.5401

METHODOLOGY

Endogeneity

To control the endogeneity issues, a number of the author have turned to instrumental variables (IV) approach as a cure. This method has gained more prestige. Another strand in the institution and growth literature solicit to improve upon basic cross-country regressions by employing panel methods (Sala-i-Martin & Subramanian, 2008). Institutional quality is common be endogenous and also subject to computation error. Using simple OLS estimation, in that case, will, therefore, be inaccurate. According to that and in following with recent literature, I will adopt an instrumental variable (IV) estimation strategy, using the instruments recently established in the literature. (Glaeser, La Porta, Lopez-de-Silanes, & Shleifer, 2004)have attacked this explanation of the evidence. However, they argue that economic and political institutions are endogenous and that the key exogenous determinants of economic growth are a country's reserve of human and social capital. To check for endogeneity, I use the Hausman test. The test rejects the null hypothesis and I conclude that 2SLS is required for our regression analysis.

Two-Stage Least Square

When selecting a compatible estimation strategy for our study, there are issues need to be paid attention. First, GDP per capita may influence corruption. Thus, there is a possible two-way causality which needs to be tackled in our analysis which is shown in the equation 1 and 2. According to the Hausman test of endogeneity, corruption is correlated with the error term of the main equation. Thus, ordinary least squares (OLS) estimates are inconsistent because it cannot tackle the reverse causation and the correlation with the error term of the main equation. Therefore, I need to use a model which can tackle this

endogeneity problem. Table 1 shows a strong positive correlation between the institution and GDP per capita however correlation does not mean causality and there is reverse causality between these variables. Economic growth can cause a better institution. Beck and Laeven (2006) consider the endogenous relationship between the institution and economic growth and used IV estimation to solve for the endogeneity. To solve the issue of endogeneity between corruption and GDP per capita I use IV regression more specifically 2SLS (Tow Stage Least Squares). Since I have one endogenous variable and more than two instruments the IV regression suitable for this analysis is the 2SLS. Moreover, our data also suffer from heteroscedasticity therefore with the help of the procedure I can control it. 2SLS also easily caters for non-linear and interactions effects and I would like to prove that the correlation between these geographic endowments and the GDP per capita growth is indirect and casual. Our approach is similar to the one used by (Beck & Laeven, 2006; Easterly, William and Levine, 2003). More specifically, I use IV correlated to GDP per capita via corruption but no reverse causation between them to GDP per capita.

To consider the possible issue of endogeneity between the institution and GDP per capita in the later section, I use the 2SLS estimation according to the following structure.

$$Second\ Stage: GDP_{it} = \delta_0 + \delta_1 INS_{it} + \delta_2 CONTL_{it} + \psi_{it} \quad (1)$$

$$First\ Stage: INS_{it} = \gamma_0 + \gamma_1 ENDOW_{it} + \gamma_2 CONTL_{it} + \nu_{it} \quad (2)$$

Where, GDP_{it} is the GDP per capita for the country "i" at a time "t".INS_{it} is the institution score of the country.$ENDOW_{it}$ is the geographic endowment variables such as logarithm of the area, the logarithm of latitude, landlocked and settler's mortality. $CONTL_{it}$ is the set of included exogenous variable, this means that these variables will be included in the second-stage of the regression namely; legal origin and religion. In some of these regressions, the $CONTL_{it}$ variable will be omitted. ν_{it} and ψ_{it} are the error terms of the first and the second-stage regressions respectively.

The instruments used in our analysis are the logarithm of the area, the logarithm of latitude, landlocked and settler's mortality. Not only does the selection of instruments satisfy the relevance and exclusion criteria, but also those are not reversely correlated with the common factors causing both the institution and GDP per capita. See also Section 5 of the main results for the details of the construction and qualification of these IVs. One of the drawbacks of the 2SLS is that it needs to logically work through the structure of the model to specify individual equations for all the relationships for the 2SLS estimator. Since in the next sections I will use the various combinations of variables to specify the causal relationship between the dependent,

endogenous and the exogenous variables with the control variables this problem is handled properly. Moreover, the 2SLS estimator depends upon the choice of reference variables and the variables used in our analysis is widely used in the institution literature when it comes to the question of IV regression which is extensively seen in the work of (Beck, Thorsten, Asli Demirgüç-Kunt, 2003; Beck, Demirgüç-Kunt, & Levine, 2003; Rodrik, Subramanian, & Trebbi, 2004; Thorsten, Beck, Demirguc-kunt, & Levine, 2005). Lastly, 2SLS is efficient in small sample size and in our sample, the number of observation is not too big and only around 160.

Fixed vs Random effect

The Fixed Effect or the LSDV Model allows for heterogeneity or individuality among the countries by allowing to have its own intercept value. The term Fixed Effect is due to the fact that although the intercept may vary across different countries, the intercept does not vary over time, that is it's time invariant. Since our data on settler's mortality and other variables are time-invariant Fixed Effects Model is not suitable for your analysis. By time-invariant values, I mean that the value of the variable does not change across time.

In Random Effect Model all the countries have a common mean value for the intercept. Random effects models will estimate the effects of time-invariant variables, but the estimates may be biased because I am not controlling for omitted variables.

Since the Fixed Effects Model produces omitted variable bias and I believe that these variables are correlated with the explanatory variables that are in the model. The Random Effects Model is best. It will produce unbiased estimates of the coefficients. More likely, however, is that omitted variables will produce at least some bias in the estimates.

I use the Hausman Test to check which model (Fixed or Random Effect Model) is the suitable one. Hausman Test has the null hypothesis that the Random Effect Model is appropriate. And the alternate hypothesis is that the Fixed Effect Model is appropriate. Which means that, if I get statistically significant P-value I will use Fixed Effect Model, otherwise Random Effect Model. In our analysis, the Hausman test failed to reject the null hypothesis and thus I use the Random Effect Model for the analysis.

Breusch and Pagan LM test has the null hypothesis is that the pooled model is appropriate. And the alternate hypothesis is the Random Effect Model is appropriate. Our test has rejected the null hypothesis and I conclude that the random effect model is the appropriate one.

REGRESSION RESULTS

At first, I use a linear regression model for panel data. I will use a simple Pooled OLS on our panel data. Our focus is to show the relationship between the GDP per capita, various measures of institutions and the endowments. In this case, I omit the problem of heteroskedasticity or autocorrelation. Specifically, I will use the logarithm of GDP per capita as the dependent variable and for independent variable each of the institution measurement variable and endowment variable at a time.

$$GDP_{it} = \alpha_0 + \alpha_1 INS_{it} + \alpha_2 ENDOW_{it} + \varepsilon_{it} \qquad 3$$

$Where, GDP_{it}$ is the GDP per capita for the country "i" at a time "t".$ENDOW_{it}$ is the endowment variables included in our model. The $ENDOW_{it}$ variables are a total country area, latitude, landlocked and settler's mortality. INS_{it} is the institution variables included in our model. I use the different measures of the institution at a time and then with the composite institution variable.ε_{it} is the error term.

Table 3 represents the Pooled OLS regression of the geographic endowments and institution variables to the logarithm of GDP per capita. The data presents the linear regression of the logarithm of GDP per capita on the various endowments indicators such as total area, latitude, landlocked and settler's mortality. I take one institution variable at a time and then run with the composite institution variables. For example, in regression 1 in Table 3, I only use control of corruption and endowments to the logarithm of GDP per capita. In regression 2, I substitute control of corruption with government effectiveness. I take one measure of the institution at a time in each regression and then at the last two equations I substitute it with the composite institution variable. Note that as I include the settler's mortality in the last regression the sample size becomes smaller.

The Pooled OLS regression of the logarithm of total area and landlocked is significant at 10% in all the regressions except for regression 8. Latitude is significant at 10% in all the regression and settler's mortality is significant at 1% in the last regression. All the measures of the institution are significant at 1% in each regression except for the regression 5, 6 and 8. Small country area, far away from the equator and open access to sea countries tend to have more logarithm of GDP per. When I include Settlers mortality in the regression institution become insignificant and the coefficient becomes unambiguous. Since our goal is to show the relation between the institution, endowments and the GDP per capita I will not consider this insignificance.

The R^2 is around 50% in all the regressions and the value of the adjusted-R^2 is also the close. When I include settler's mortality the value of the r-squares becomes smaller. All the variables explain a 50% variation of GDP per capita.

Table 4 provides evidence how the endowments explain institution. I use the same strategy as before only using different measures of the institution as the dependent variable. The strategy is to use one institution variable at a time, then as a set. I use the Pooled OLS in the form of equation 4.

$$INS_{it} = \beta_0 + \beta_1 ENDOW_{it} + \upsilon_{it} \qquad 4$$

Where, INS_{it} is the institution for the country "i" at a time "t". Institutions are voice and accountability, government effectiveness, rule of law, regulatory quality, the absence of corruption, and political stability. $ENDOW_{it}$ is the endowment variables included in the model. The $ENDOW_{it}$ variables are a country area, latitude, landlocked and settler's mortality. υ_{it} is the error term.

The OLS regression explains that the latitude is significant at 1% with all the institution measurement. The sign of latitude in negative in all the regressions. Which is consistent with the theory and indicates that the northern countries have better institutions. However, for other variables such as the area and landlocked the coefficients are significant in some regressions but their sign is unambiguous. When I include settle's mortality in the last regression all the variables are significant at 1% level and their sign is consistent with the hypothesis. Regression 8 in table 4 states that a country which is near the equator and has access to the sea had better disease environment and thus have better institutions.

Table 3. Pooled Regression

Variables / Regression	**(1) Pooled**	**(2) Pooled**	**(3) Pooled**	**(4) Pooled**	**(5) Pooled**	**(6) Pooled**	**(7) Pooled**	**(8) Pooled**
Control of Corruption	0.32*** (0.0750)							
Government Effectiveness		0.30*** (0.0810)						
Political Stability			0.18*** (0.0539)					
Rule of Law				0.24*** (0.0879)				
Regulatory Quality					-0.08 (0.1204)			
Voice and Accountability						0.09 (0.1077)		
Institution							0.30*** (0.0960)	-0.17 (0.3486)
Settlers Mortality								-1.21*** (0.3722)
Area	-0.13***	-0.13***	-0.09***	-0.15***	-0.14***	-0.15***	-0.13***	-0.09

	(0.0273)	(0.0278)	(0.0314)	(0.0286)	(0.0288)	(0.0316)	(0.0281)	(0.0841)
Latitude	-1.54*	-1.87**	-2.34***	-1.34	-2.84***	-2.20**	-1.61*	-5.26***
	(0.8085)	(0.8057)	(0.7946)	(0.9138)	(0.9277)	(0.9098)	(0.8504)	(1.4295)
Landlocked	-0.48***	-0.30**	-0.34**	-0.36**	-0.31**	-0.29**	-0.34**	0.37
	(0.1403)	(0.1357)	(0.1377)	(0.1405)	(0.1425)	(0.1418)	(0.1382)	(0.4534)
F-Stat	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Observations	160	160	160	160	160	160	160	100
R^2	0.604	0.593	0.586	0.577	0.558	0.559	0.583	0.498
Adjusted-R^2	0.59	0.58	0.57	0.57	0.55	0.55	0.57	0.47

Table 3...

Dependent variable is the logarithm of GDP per capita. This is the pooled OLS regressions model. The sample size is of 160 observations. The standard error in parenthesis and *, ** and *** indicates significance at 10%, 5% and 1% respectively. Institution is the average of six principal component indicators: voice and accountability, government effectiveness, rule of law, regulatory quality, absence of corruption, and political stability. I take all the indicators one at a time and then together as the institution variable. The constant term is omitted in the table. Area is the logarithm of sum of all land and water areas delimited by international boundaries and/or coastlines is the logarithm of the county size or area. Latitude is the absolute value of each county's latitude. landlocked is the dummy whether the country has coastal access. Settlers Mortality is the log of the mortality rate faced by European settlers at the time of colonization.

When I include settler's mortality in regression 8 the value of R^2 is very high at 94%. On the other hand, the adjusted-R^2 is also high at 93%. The higher value of the r-squares states the validity of the model and the hypothesis.

Table 4. Pooled OLS Model for the Institution

Variable / Regression	**(1)** **Control of Corruption**	**(2)** **Government Effectiveness**	**(3)** **Political Stability**	**(4)** **Rule of Law**	**(5)** **Regulatory Quality**	**(6)** **Voice and Accountability**	**(7)** **Institution**	**(8)** **Institution**
Area	-0.02	-0.03	-0.27***	0.05**	-0.00	0.12***	-0.02	0.18***
	(0.0291)	(0.0273)	(0.0414)	(0.0256)	(0.0191)	(0.0214)	(0.0233)	(0.0165)
Latitude	-3.12***	-2.26***	-1.16	-5.02***	-3.63***	-3.71***	-3.15***	-3.43***
	(0.8268)	(0.7756)	(1.1761)	(0.7289)	(0.5441)	(0.6078)	(0.6628)	(0.2304)
Landlocked	0.56***	-0.00	0.26	0.28**	-0.14	-0.10	0.14	-0.97***
	(0.1430)	(0.1341)	(0.2034)	(0.1261)	(0.0941)	(0.1051)	(0.1146)	(0.0892)
Settlers Mortality								0.35***
								(0.1035)
Observations	160	160	160	160	160	160	160	100
R^2	0.23	0.25	0.46	0.38	0.58	0.39	0.38	0.94

Adjusted R^2	0.22	0.24	0.45	0.37	0.57	0.38	0.37	0.93
F test Prob >F	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Dependent variable is the different measures of institution such as Control of Corruption, Government Effectiveness, political stability, rule of law, regulatory quality and voice and accountability. Institution is the average of six principal component indicators: Control of Corruption, Government Effectiveness, political stability, rule of law, regulatory quality and voice and accountability. This is the pooled OLS regressions model. The sample size is of 160 observations. The standard error in parenthesis and *, ** and *** indicates significance at 10%, 5% and 1% respectively. I take all the indicators one at a time and then together as the institution variable. The constant term is omitted in the table. Area is the logarithm of sum of all land and water areas delimited by international boundaries and/or coastlines is the logarithm of the county size or area. Latitude is the absolute value of each county's latitude. Landlocked is the dummy whether the country has coastal access. Settlers Mortality is the log of the mortality rate faced by European settlers at the time of colonization.

Table 5. Two Stage Least Squares (2SLS)

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	2SLS RE	2SLS RE	2SLS RE	2SLS RE	2SLS RE	2SLS RE
Institution	1.75***	2.58***	1.69***	1.24***	0.73**	-0.02
	(0.2888)	(0.6906)	(0.2733)	(0.2746)	(0.2920)	(0.3954)
First Stage						
Area	-0.04*	-0.04	-0.02	0.06***	0.18***	0.11***
	(0.0229)	(0 .0275)	(0.0264)	(0.0244)	(0.0512)	(0.0177)
Latitude	-2.55***	-1.49*	-3.15***	-4.96***	-3.43***	-6.01***
	(0.5253)	(0 .7897)	(0.7511)	(0.7598)	(0.7154)	(0.7083)
Landlocked			0.14	0.66***	-0.97***	-0.48***
			(0.1299)	(0.0977)	(0.2768)	(0 .0879)
Settlers Mortality					0.35	-0.13**
					(0.3215)	(0.0567)
Legal Origin		2.46**		0.69		-0.61
		(1.0128)		(0.4346)		(0.4611)
Religion		0.03		0.05		0.13***
		(0.0684)		(0.0367)		(0.0459)
First stage Prob	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Observations	160	160	160	160	100	100
Number of Country	8	8	8	8	5	5
Adjusted R-squared						
Within	0.08	0.08	0.08	0.08	0.00	0.00
Between	0.58	0.58	0.58	0.64	0.69	0.97
Overall	0.32	0.27	0.32	0.33	0.31	0.48
Over identification	0.5067	0.9208	0.1562	0.0000	0.4122	0.3073

Dependent variable is the logarithm of GDP per capita. In these panel regressions Two-Stage Least Squares with random effect, (2SLS) estimation is being used. The sample size is of 8 countries. Standard error in parenthesis and *, ** and *** indicates significance at 10%, 5% and 1% respectively. The constant term is omitted in the table. The endogenous variable is the Institution. The instrument variables those have been excluded from the second stage regression are as following total area, latitude, landlocked and settler's mortality. Total area is the logarithm of sum of all land and water areas delimited by international boundaries and/or coastlines is the logarithm of the county size or area. Latitude is the absolute value of each county's latitude. Landlocked is the country that does not have coastal area. Settlers Mortality is the log of the mortality rate faced by European settlers at the time of colonization. The exogenous control variables that are included in the second stage of the regression are as following; Legal Origin legal traditions into give different categories such as British common law, French civil law, German civil law, Scandinavian law, and socialist law. Religion: Catholic: Catholics as percentage of population in 1980. Hansen J. Statistics is the test for over identification restrictions where the, Null hypothesis: instruments are valid.

In so far, the regressions managed to explain that the endowments effect both the economic development and institutions. Since there is a two-way causality between the GDP per capita and institution. Obviously, there is endogeneity problem that's why IV regression is called for. I use the heteroskedasticity consistent Two Stage Least Squares technique (2SLS) with random effect. The IV (Instrumental Variable) technique is used for the analysis is the Two Stage Least-Squares (2SLS) in the following expression:

$$SecondStage : GDP_{it} = \delta_0 + \delta_1 INS_{it} + \delta_2 CONTL_{it} + \Psi_{it} \ldots\ldots\ldots\ldots\ldots 4$$

$$FirstStage : INS_{it} = \gamma_0 + \gamma_1 ENDOW_{it} + \gamma_2 CONTL_{it} + v_{it} \ldots\ldots\ldots\ldots\ldots 5$$

Where, $CONTL_{it}$ is the set of included exogenous variable for country "i" time "t", this means that these variables will be included in the second-stage of the regression namely; legal origin and religion. In some of these regressions the *CONTLit* variable will be omitted. *vit* and *Ψit* is the error terms of the first and the second-stage regressions respectively. The endowments will be excluded from the second-stage regression moreover, they are considered as the excluded exogenous variables and in this model as they are used as instrumental variables to extract the exogenous component of the institution. In this model the number of this instruments variable varies is form 2 to maximum 4.

Now let us consider a scenario where the $ENDOW_{it}$ variables are excluded from the model, this means the regression is addressing the following question: is it the component of the institution that is being explained by the exogenous endowments explain cross-country time variations in the logarithm of GDP per capita? This means if the value of δ is statistically

significant, then it will suggest that those endowments does influence economic development through institution, which will in turn be consistent with the institutional hypothesis.

I have potential over identification if the number of instruments exceeds the number of endogenous variable. In our analysis the number of instruments is 4 and 1 endogenous variable. Let's still consider the scenario there is no $CONTL_{it}$ variables included in the model, using the Over Identifying Restrictions (OIR) test an important question is asked: does the endowments explaining the economic development is beyond the ability of endowments to explain in changes in institution? More accurately, the OIR test has the null hypothesis that instrumental variables do not explain v_{it}. For us it's it means that the endowments fail to explain the average logarithm of GDP per capita beyond the ability of endowments to explain institution. Which simply means that it can't explain GDP per capita without the help of institution. The OIR test produces a Lagrange multiplier test statistic which has the null hypothesis and have a Chi-squared (m) distribution, here m is the number of OIR under study. m = number of OIR is equals to the number of excluded exogenous variables minus the number of endogenous variables included as regressor in the second-stage of the regression process.

In the scenario where $CONTL_{it}$ variable is included in the model, i.e. in the second-stage where the non-endowment instrumental variables are included, the OIR test becomes a general specification test of the validity of the instruments that included in the model. If the OIR test does not reject the hypothesis that the instruments could be excluded from the second-stage regression that will prove the point. These regressions with $CONTL_{it}$ is used to access the robustness of the findings when I control for other potential exogenous variables that determinants the economic development.

In table 5 the results of the two-stage least-squares regression results is plotted with the first-stage F-test, P-value, and other test values. In the first-stage F-test has the null hypothesis that the instrumental variables do not explain any cross-country variation in institution. Furthermore, if the OIR test of Hansen J statistics is valid for all the instrument I can say that the instrument does manage to explain the cross-country variation in economic development beyond their ability to explain institution. Table 5 represents the results using the institution. Although the conformation of the findings of each of the indicators of institution discussed before.

There are three pairs of regression for each of the random effect model in our analysis and each pair of regression is divided into two steps. The first pair of regression (1 and 2) uses total area and latitude as instrumental variables. Because the total area managed to explain the development of the most of the countries I use it with all the equations and try to find the correlation. In the odd number of equations, no control variables were included. The even

equations include the $CONTL_{it}$ variables, i.e. legal origins and religion are included as exogenous variables. The OIR test in the second step examines the validity of the instruments, i.e. the instrumental variables explain economic development beyond their ability to account for cross-country variations in the institution. All the variables included in the models are natural. They affect GDP as well as institution. Since in reality it is impossible to find any instrument variable that is uncorrelated with the dependent variable our logic is that these endowments affect GDP through institution.

Our test results show that the exogenous component of the institution significantly managed to explain growth in GDP in both of the models, which in turn is consistence with the institution hypothesis. The institution at 1% level of significant enters in all of the first four regressions given in the Table 5 and proved to be statistically significant. The coefficients of the institution are positive in all these four regressions. When I control for legal origin and religion the results also proved to be robust. However, when I include the settler's mortality in the regression the institution become insignificant in regression 6. Moreover, the instruments use in the model are proved to be valid ones: they are highly correlated with the institution as illustrated by the P-value of the first-stage F-test. When I include the control variables the result does not changes for institution. However, in most of the equations the control variables are not statistically significant.

The results obtained from the Table 5 explain that endowments do not explain economic development beyond the ability of endowments to explain institution. More exactly, when the regression only considers the endowment variables are Total area, Latitude, landlocked and settler's mortality, the data never reject the hypothesis that endowments only explain the logarithm of GDP per capita through their ability to explain institution, which is similar with (Easterly and Levine, 2003). The hypothesis used in this research basically focus on the impact of endowment and institution on productivity and efficiency. Finally, Table 5 provides enough evidence that institution hypothesis but no proof of endowment hypothesis. These historical endowments managed to explain institution which in turn helps to explain economic development, i.e. GDP per capita differences in cross-country. The data used on this paper fails to reject the hypothesis that endowments only explain cross-county differences in the level of economic development through the ability of endowments to explain institution.

Robustness Test

In this section I check the robustness of our result by examining the effect of macroeconomic and fiscal policies such as inflation, trade and broad money on economic development. I check this in two steps, in the first step I treat the three policy variables as exogenous in our

regressions. Even though this procedure may be biased but this will help us to understand the statistical relationship between the economic policies and the development. Moreover, it will help us to understand the two-way causal relationship between the economic policy and development. Secondly, I treat those economic policies as endogenous within our model by using the instrumental variables that have been used before in our analysis to control for potential simultaneity bias. With the help of these two procedures we can conclude whether economic policy can explain the difference of development among nations.

When I treat economic policy as exogenous variable in our model it does not help us to explain economic development after accounting for the impact of the institution on economic development. Then I include the policy variables as endogenous and try to see whether these policy variables have any effect on economic development. Comparing the result with table which did not include those policy variables the result is unchanged. From this we can conclude that even though when I control for policy variables the endowments managed to explain the cross-country differences in SAARC economies development through their effect on institution. Moreover, in all the regressions the data never managed to reject the OIR-test which is given by the Hansen J statistics.

CONCLUSION

The aim of this paper is to establish the impact of geography and culture on institution and economic growth in eight SAARC countries for the period 1996-2015. A cross sectional panel data framework is used to attain this mission. The Pooled OLS model, random effect model, Hansen J statistic was used for both this analysis.

The outcome of the analysis demonstrates that in all these SAARC countries economic growth and institution has a tradeoff, that is with better institution there is a better in growth in GDP per capita. Moreover, the negative sign of the latitude demonstrates that among the SAARC countries those who are more to the south have better institution. Geography influence both institute and growth directly and indirectly via different mechanisms which in turn affect government policy making and on institution building. Natural resource can be a course or blessing but it affects the long run growth through institution. Our findings for these SAARC countries are same as of Sala-i-Martin & Subramanian, (2008).

Still, bad governance and frail institution design is persisted subject of SAARC countries. Positive sign of the coefficient of institution specify refinement in them and demonstrate increase in economic development. Sala-i-Martin & Subramanian, (2008) inherent resource is significant and negatively signed, indicating that natural resources are injurious to institutional quality. The final illustration that arrives to surface is that natural resources have a negative

influence on growth via their influence on institutions and that once institutions are controlled for they have no more influence on economic growth. Of all the institution measurement control of corruption, government effectiveness, political stability and rule of law plays a vital role in determining the growth of this region. Geography affects the institution of this region and which in turn affect the speed of economic development. Institutions of these SAARC countries directly shape the speed and standard of economic growth. The consequence of institution whether it is political, social, cultural or administrative on economic growth is widespread, so there is a greater need to refine the shape of institution by refining government policies.

The intuition of the SAARC countries should deliver some rudimentary assist for the effectiveness in refining economic growth. Although this paper is limited to SAARC countries, to diminish the poverty and inequality government should take measurement to refine the shape of institution and it is achievable through improved and suitable policies. Sala-i-Martin & Subramanian, (2008) propose a solution for addressing this resource curse which involves directly distributing the oil revenues to the public. Even with all the difficulties of institution and inefficiency that will no doubt plague its actual implementation, the proposal will, at the least, be vastly superior to the status quo.

The poor of experience of these countries with substantial natural resources may be overcome by comparative analysis and exchanging the experiences of resource management of other rich countries. Since the two stages least square (2SLS) is not the optimal solution for endogeneity, future empirical study should move focus on the two-way causation between the institution and economic growth through another model. At the same time, detailed country specific study should be carried out as some is not true for all.

REFERENCES

Acemoglu, D., & Johnson, S. (2007). Disease and development: the effect of life expectancy on economic growth. Journal of Political Economy, 115(6), 925–985.

Acemoglu, D., Johnson, S., & Robinson, J. A. (2000). The colonial origins of comparative development: An empirical investigation.

Acemoglu, D., Johnson, S., & Robinson, J. A. (2012). The colonial origins of comparative development: An empirical investigation: Reply. American Economic Review.

Al-Marhubi, F. (2004). The Determinants of Governance: A Cross-Country Analysis. Contemporary Economic Policy, 22(3), 394–406. https://doi.org/10.1093/cep/byh029

Beck, Thorsten, Asli Demirgüç-Kunt, and R. L. (2003). Law and finance: why does legal origin matter? Journal of Comparative Economics, 31(4), 653–675.

Beck, T., Demirgüç-Kunt, A., & Levine, R. (2003). Law, endowments, and finance. Journal of Financial Economics, 70(2), 137–181.

Beck, T., & Laeven, L. (2006). Institution building and growth in transition economies. Journal of Economic Growth, 11(2), 157–186.

Bjørnskov, C. (2006). The multiple facets of social capital. European Journal of Political Economy, 22(1), 22–40. https://doi.org/10.1016/J.EJPOLECO.2005.05.006

Bulte, E. H., Damania, R., & Deacon, R. T. (2005). Resource intensity, institutions, and development. World Development, 33(7), 1029–1044. https://doi.org/10.1016/J.WORLDDEV.2005.04.004

Chong, A., & Calderón, C. (2000). Institutional quality and poverty measures in a cross-section of countries. Economics of Governance, 1(2), 123–135. https://doi.org/10.1007/pl00021678

Easterly, William and Levine, R. (2003). Tropics, germs, and crops: How endowments influence economic development. Journal of Monetary Economics.

Easterly, W. (2002). The cartel of good intentions: The problem of bureaucracy in foreign aid. The Journal of Policy Reform, 5(4), 223–250. https://doi.org/10.1080/1384128032000096823

Easterly, W., & Levine, R. (2003a). Tropics, germs, and crops: how endowments influence economic development. Journal of Monetary Economics, 50(1), 3–39. https://doi.org/10.1016/S0304-3932(02)00200-3

Easterly, W., & Levine, R. (2003b). Tropics, germs, and crops: how endowments influence economic development. Journal of Monetary Economics, 50(1), 3–39.

Engerman, S. L., & Sokoloff, K. L. (2002). Factor endowments, inequality, and paths of development among new world economics.

Fors, H. C., & Olsson, O. (2007). Endogenous institutional change after independence. European Economic Review, 51(8), 1896–1921.

Glaeser, E. L., La Porta, R., Lopez-de-Silanes, F., & Shleifer, A. (2004). Do institutions cause growth? Journal of Economic Growth, 9(3), 271–303.

Kaufmann, D., Kraay, A., & Mastruzzi, M. (2011). The worldwide governance indicators: methodology and analytical issues. Hague Journal on the Rule of Law, 3(2), 220–246.

Knack, S., & Azfar, O. (2003). Trade intensity, country size and corruption. Economics of Governance, 4(1), 1–18. https://doi.org/10.1007/s101010200051

La Porta, Rafael and Lopez-de-Silanes, Florencio and Shleifer, A. (2008). The economic consequences of legal origins. Journal of Economic Literature, 46(2), 285–332.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. (1999). The quality of government. Journal of Law, Economics, and Organization, 15(1), 222–279.

Licht, A. N., Goldschmidt, C., & Schwartz, S. H. (2007). Culture rules: The foundations of the rule of law and other norms of governance. Journal of Comparative Economics, 35(4), 659–688.

Muhammad, H., Siddique, A., Shehzadi, I., Shaheen, A., Manzoor, R., & Manzoor, M. R. (2016). The impact of governance and institutions on education and poverty alleviation: a panel study of SAARC economies. UTC Sci.Int.(Lahore), 1328(2), 461431–461435. Retrieved from https://mpra.ub.uni-muenchen.de/71248/

Peev, E., & Mueller, D. C. (2012). Democracy, economic freedom and growth in transition economies. Kyklos, 65(3), 371–407.

Rodrik, D., Subramanian, A., & Trebbi, F. (2004). Institutions rule: the primacy of institutions over geography and integration in economic development. Journal of Economic Growth, 9(2), 131–165.

Sala-i-Martin, X., & Subramanian, A. (2008). Addressing the natural resource curse: An illustration from Nigeria. In Economic Policy Options for a Prosperous Nigeria (pp. 61–92). Springer.

Thorsten, C.-C. E., Beck, T., Demirguc-kunt, A., & Levine, R. (2005). SMEs, Growth, and Poverty. In Journal of economic growth.

APPENDIX

Variable description

Variable Name	Type	Description	Source
GDP per capita	Dependent	GDP per capita is gross domestic product divided by midyear population in logarithmic term calculated in current US dollars.	WB (2016)
Control of Corruption	Endogenous Dependent	Control of Corruption - Estimate: "Control of Corruption" measures perceptions of corruption, conventionally defined as the exercise of public power for private gain.	Kaufmann, Kraay, & Mastruzzi, (2011)
Government Effectiveness	Endogenous Dependent	Government Effectiveness - Estimate: "Government Effectiveness" combines into a single grouping response on the quality of public service provision, the quality of the bureaucracy, the competence of civil servants, the independence of the civil service from political pressures, and the credibility of the government's commitment to policies.	Kaufmann, Kraay, & Mastruzzi, (2011)
Political Stability	Endogenous Dependent	Political Stability - Estimate: "Political Stability" combines several indicators which measure perceptions of the likelihood that the government in power will be destabilized or overthrown by possibly unconstitutional and/or violent means, including domestic violence and terrorism.	Kaufmann, Kraay, & Mastruzzi, (2011)
Rule of Law	Endogenous Dependent	Rule of Law - Estimate: “Rule of Law” includes several indicators which measure the extent to which agents have confidence in and abide by the rules of society.	Kaufmann, Kraay, & Mastruzzi, (2011)
Regulatory Quality	Endogenous Dependent	Regulatory Quality - Estimate: "Regulatory Quality" includes measures of the incidence of market unfriendly policies such as price controls or inadequate bank supervision, as well as perceptions of the burdens imposed by excessive regulation in areas such as foreign trade and business development.	Kaufmann, Kraay, & Mastruzzi, (2011)
Voice and Accountability	Endogenous Dependent	Voice and Accountability - Estimate: "Voice and Accountability" includes a number of indicators measuring various aspects of the political process, civil liberties and political rights.	Kaufmann, Kraay, & Mastruzzi, (2011)
Institution	Endogenous Dependent	Institutional Development is the average of six principal component indicators: voice and accountability, government effectiveness, rule of law, regulatory quality, absence of corruption, and political stability.	Own Calculation
Settler Mortality	Instrument	Data used in the article The Colonial Origins of Comparative Development: An Empirical Investigation. Log of the mortality rate faced by European settlers at the time of colonization.	Acemoglu, Johnson, & Robinson, (2000)
Area	Instrument	Land area is a country's total area, excluding area under inland water bodies, national claims to continental shelf, and exclusive economic zones. In most cases the definition of inland water bodies includes major rivers and lakes. The data is converted in natural logarithmic form.	WB (2016)
Latitude	Instrument	Latitude is the absolute value of the latitude of the country.	La Porta, Lopez-de-Silanes, Shleifer, & Vishny, (1999)
Landlocked	Instrument	Landlocked is simply a dummy value that takes one the value 0 if the country has coastal territory on the world's oceans, and 1 in otherwise.	CIA (2016)