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CHAPTER THREE: METHODOLOGY AND DATA

For this essay, the researcher has followed an appropriate and suitable methodology in order to extract data for the research and to analyse the data for the purpose of finding out the nexus between institutional quality and infrastructure investment in the Sub Saharan African region. In order to fulfil the aim and objectives of the essay this essay has extracted real time data from World Bank website for the time period of 1996-2016. The description of the variables and control variables which are used for this essay are mentioned in the following section.

3.1 Research Philosophy

Research philosophy is considered to be a set of beliefs or ideas which helps the researcher to gain a direction to conduct the data collection in an efficient manner. Moreover the researcher Philosophy also helps the researcher in terms of how the collected data can be analysed in order to gain useful insights about the data. There are different kinds of research philosophies which are used by researchers for their researches however the most common ones are positivism and interpretivism. Positivism refers to the research philosophy or paradigm according to which there is a scientific reasoning and logic behind the data of the research. As it supports the logical reasoning hence positivism is mostly used in quantitative researches which involve numbers and numeric values. On the other hand, interpretivism is a research paradigm basically opposes and negates the concept of logical reasoning of positivism. Interpretivism is an approach in which different elements of the research are evaluated on the basis of their quality and content.

As for this research, the researcher has analysed the data based on numeric figures and values which are obtained from different data bases hence the philosophy behind this research is positivism. With the help of numeric data the researcher has provided a logical

reasoning behind the nexus between institutional quality and financing of infrastructure development in Sub-Saharan African Region.

3.2 Sample Size

The sample size selected for this study has been 40 countries in Sub Saharan Africa. Moreover, the countries selected have been the same as previous in the first part of this study regarding infrastructure development and growth. The countries have been selected as per the availability of data for all the variables in study and related to the time period of data available. Most of the past researches which have been carried out in relation to the Sub Saharan African region include some of these 40 countries. The rationale behind selecting 40 countries from the Sub Saharan African region is that it efficiently represents the entire SSA region. The time period selected for the study is from 1996 to 2016 which entails the latest data of past 20 years in order to reflect upon the current information of infrastructure gap and development in Sub-Saharan African region. However, due to limitation of non-availability of data, data prior to 1996 has not been included in the study.

3.3 Data Description

The data which has been analysed in this study is composite of total 9 main variables. Among the main variables, the dependent variable is considered to be the infrastructure development and financing which is based upon sub-variables including electricity production (total kilowatt hours), water and sanitation (measured by improved water sources that is available to the percentage of population and easily accessible), roadways (the length of roads network measured in kilometres) and ICT (ICT service exports expressed in the terms of balance of payments at current USD). The other variable of institutional quality is the main independent variable or regressor which has been made of certain sub-variables which includes control of corruption, government effectiveness, political instability and absence of violence/terrorism, rule of law, regulatory quality and voice and accountability

which make up the variable of institutional quality. The institutional quality variables have been adopted from the study of Kauffman, Kraay and Mastruzzi (2009) which have used the same variables for institutional quality indicators for the world. Other variables included in this context that are part of 9 main variables are macroeconomic indicators of GDP per capita, savings, Foreign Direct Investment (FDI), inflation, exchange rate, real interest rate and grants. The inclusion of macroeconomic indicators reflects the macroeconomic policy of the country and its effect on infrastructure development.

The above mentioned variables and control variables are selected for this research in order to depict the nexus among institutional quality and infrastructure investment in the Sub Saharan African region.

3.4 Data Analysis

The data analysis is one of the most important parts of research because it helps in determining the methods employed for generating the results for the study. As this study is aimed at examining the effect of institutional quality on infrastructure development and financing within the SSA region, various analysis methods have been applied through econometrics software because of it being a panel data. The specific techniques include descriptive analysis, correlation analysis, fixed effects regression, Pooled (Ordinary Least Square) OLS regression and generalised methods of moments (GMM) technique for estimating the effect of institutional quality on infrastructure development and financing. Pooled OLS is carried out with respect to fixed effects and random effects. The software used for this purpose is Econometric Views (E-Views) version 8. The next chapter builds upon the results of study through the analysis techniques specified above.

3.5 Regression Equation

In order to depict the nexus among institutional quality and infrastructure development in the Sub Saharan African Region, this research has made use of different statistical techniques in order to come up with efficient and accurate results. Following is the regression equation for this research:

$$\Delta \text{Infrastructure Investment}_{i,t} = a + \beta_1 \text{Institutional Quality}_{i,t} + \beta_2 \text{GDP per Capita}_{i,t} + \beta_3 \text{Savings}_{i,t} + \beta_4 \text{FDI}_{i,t} + \beta_5 \text{Inflation}_{i,t} + \beta_6 \text{Exchange Rate}_{i,t} + \beta_7 \text{Real Interest Rate}_{i,t} + \beta_8 \text{Grants}_{i,t} + \varepsilon_{i,t}$$

The above equation shows that infrastructure investment in Sub Saharan African region is the dependent variable whereas; Institutional quality is the independent variable. B represents the slope of the line and “a” is the intercept when the value of Institutional Quality is 0. GDP per capita, Savings, Foreign Direct Investment (FDI), Inflation, Exchange rate, Real Interest rates, and grants are the control variables which are used for this study.

In the equation above the subscripts i and t shows the cross sectional indices and time period indices respectively. “ε” refers to the error term of the equation which shows that the model does not fully represent the actual relationship between independent and dependent variables.

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