Determinants of Economic Growth in Post-1994 South Africa

By

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Abstract: This study investigates the determinants of economic growth in South Africa for the period 1995-2017. This study uses the Autoregressive Distributed Lag (ARDL). Two models are estimated. The results of the first model indicate that there is a long-run run relationship between economic growth and independent variables, while for the second model there is no long-run relationship. The results of the study suggests that FDI has positive and significant long-run relationship with economic growth. Moreover, the study finds a negative relationship between exports and growth. Institutional variables have positive, although insignificant relationship with economic growth. Portfolio investment has negative, but insignificant relationship with economic growth.

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1. Introduction

For many years, economic growth theorists have attempted to explain what factors determine the level of economic growth. Although there is a wide variety of growth theories, there is little consensus as to what factors are more important in promoting or hindering economic growth (Chirwa & Odhlambo 2016). Earlier theories such as the classical, neoclassical and endogenous growth theories have attempted to explain how economies can grow. While classical and neoclassical growth theories put much emphasis on resources, the endogenous growth theories of Lucas (1988), Romer (1990), Barro (1990), Aghion and Howitt (1992) put emphasis on factors such as investment in human capital, innovation through research and development as main drivers of growth. These theories however, have still not fully explain the causes of economic growth.

The failure of classical, neoclassical and endogenous growth theories to explain why other countries fail to revive their economies, have put these theories into question (Wanjuu & le Roux, 2017; Ocran, 2019). The new institutional economics of growth has been recently dominating the literature. The new institutional economics revived Marx and Engels' (1948) view that institutions are important for economic growth (Tang, Hu & Li ND: 1). As mentioned by Combarnousand Rougier (ND:1), the fundamental questions that the new institutional economics is attempting to answer are: how are current institutions in developed countries formed? How do these institutions affect economic performance and explain divergence? Why have so many countries been unable to create rules and norms to promote economic growth and social progress? How can the survival of inefficient institutions be explained? The new institutional economics envisages an environment whereby institutions are seen as efficient and stable entities. Those institutions are a set of norms and rules that promote economic growth through enforcing property rights, formal contracts and business rules. The new institutional economists' view is that, institutions provide incentives to economic participants to invest in certain assets and acquire certain skills Combarnousand Rougier (ND:1)

Another strand of literature is the coordination failure approach, associated with Rosestein-Rodan's (1943) work. The coordination failure approach postulate that, when the markets are left to function on their own, there tends to be disequilibria, which requires some form of intervention (Ferris & Gawande 2003; Ocran 2019). Ocran (2019) further states that, for industrialisation to take place in least developed countries there is a need for external sources to inject capital to rejuvenate poor economies. Combarnousand Rougier (ND:1), indicates that to overcome coordination failure, government need to intervene in the markets.

For almost a decade, South Africa's economic trajectory has not been favourable. According to the World Bank, as at 2017 the main drivers of South Africa's economy were agriculture and mining. However, the terms of trade in commodity exporting countries are vulnerable and tend to be volatile (Deaton, 1999; Shah, Ul haq & Farooq, 2015). South Africa's economy performed well during the commodity boom era just before the 2008 Global Financial Crisis. Because of high commodity prices in 2007, the annual growth rate reached a peak of 5.4 per cent. However, these growth outcomes were short-lived. When the commodity boom came to an end in 2014, the economy grew by a mere 1.5 per cent per annum. At the beginning of 2018, the economy entered into a technical recession after two consecutive quarters of negative growth were recorded (Statistic South Africa 2018:2). In the first quarter of 2019, the economy recorded a negative growth rate of 3.2 (Statistic South Africa 2019). The economy is still characterised by high unemployment, with the unemployment rate of 29 per cent in the second quarter of 2019. In 2016, half of the population was still living in poverty, while income inequality remains high (Statistics South Africa 2019). The current growth trajectory is not adequate to accommodate the increasing rate of population. This pattern of slow domestic growth however, is not consistent with the global economic performance. Fedderke (2018) indicates that South Africa lags behind as compared to other emerging economies, as well as high and middle income, and this due to structural factors.

In the midst of these low growth outcomes, South Africa's political and social institutions continue to stumble. Uncertainties in the political environment have affected economic growth negatively. The recent review of the Constitution to make it easy to expropriate land without compensation has had adverse effects on agricultural investment (Fedderke 2018). Moreover, this proposition to expropriate land without compensation has raised questions on how property rights will be affected.

The research questions raised by the discussion above are; what are the determinants of economic growth in post-1994 South Africa? What are the binding constraints behind low economic growth rates in South Africa? What role does institutions play in promoting or inhibiting economic growth?

To answer the aforementioned research questions this study intends to make two contributions to the body of literature. First, this paper intends to contribute to the body of literature by identifying the main determinants of economic growth in post-1994 South Africa, also taking into consideration the effects of institution on economic growth. Second, this study aims to contribute to the body of literature, by providing insight to policymakers as to which factors to focus on to in order stimulate growth.

The rest of the paper is organised as follows. Section two provides a brief overview of economic growth trends in post-1994 South Africa. Section three provides literature review. The research methodology adopted and description of data are outlined in section four. The main findings and discussion are provided in section five and conclusion in section six.

2. Overview of Economic Performance in Post-1994 South Africa.

Table 1 below shows the trends in macroeconomic variables since 1994. The performance is linked to different macroeconomic frameworks that have been introduced since 1994. First, the Reconstruction Development Programme (RDP) was the ANC's turnaround strategy. The RDP aimed to stimulate economic growth through increased government expenditure. As a results of increased government expenditure during this period, the average growth rate was 3.5 per cent, however unemployment remained relatively high at 25 percent. On the other hand, population increased at a significant rate at an average of 2.01 percent.

The Growth, Employment and Redistribution (GEAR) was introduced as a macroeconomic stabilising strategy. Although the strategy was successful in stabilising the economy, unemployment remained high at the rate of 26 percent. During the GEAR tenure, economic growth grew at an average rate of 3.2 percent, a slight decline as compared to the RDP tenure. Growth rate remained moderate at an average of 3 percent and continued throughout to AsgiSA. During the AsgiSA period, unemployment was relatively low at 23 per cent. This period was characterised by high commodity prices, which favoured South Africa's economy. The end of the commodity boom however, affected the growth rates significantly, with real GDP decreasing to an average of 1.35 for the period 2013-2018. Moreover, the recent proposal to amend the constitution to quicken the land reform process has resulted in policy uncertainties, and this is manifested in growth outcomes.

Table 1: Trends in Macroeconomic Variables Since 1994.

Macroeconomic framework	Period	Average growth rate	Average unemployment rate	Average Population Growth
RDP	1994-1996	3.5	25	2.01
GEAR	1996-2005	3.2	26	1.36
AsgiSA	2006-2010	3.14	23	1.30
NDP	2013-2018	1.35	26	1.34

3. Literature Review

Empirical literature indicates that there is no consensus on what factors are important in determining economic growth in developing and developed countries. Earlier empirical studies conducted by Dollar (1992), Fischer (1992), investigate the macroeconomic determinants of growth in developing countries. These studies find comparable results, as they confirm that capital investment and FDI have positive and significant impact on economic growth. Most and Vann de Berg (1996) add the rate of population growth when investigating the determinants of economic growth, and find that population growth has negative and significant impact on economic growth. Using a panel 100 developed and developing countries, Barro (1999) investigates factors contributing to economic growth for the period 1960-1995, and finds factors such as democracy, trade openness have positive and significant impact on economic growth. Moreover, Barro (1999) finds that government consumption expenditure, fertility rate and inflation have negative impact on economic growth.

Mbulawa (2015), investigate the long-run determinants of economic growth in Zimbabwe, the results of the study indicate that trade openness have positive impact on economic growth. Moreover, the author finds that inflation and FDI have negative impact on economic growth. Although foreign direct investment is expected to have positive impact on economic growth, Mbulawa (2015) argues that FDI is beneficial to countries with proper property rights laws. A study conducted by Mansaray (2017) explores the macroeconomic determinants of economic growth in post-war Sierra Leone for the period 2002-2013. The author establishes whether there is a long-run or short-run relationship between growth factors and total output. Using the error correction model, the variables included in the model are Real GDP as a dependent variable, and FDI, Gross Capital formation, exchange rate, inflation, trade openness, human capital and interest rate are explanatory variables. The results of the study indicate that FDI, gross capital formation have positive and significant impact on economic growth, while inflation has a negative impact on economic growth.

A study conducted by Ulku, (2004), uses panel data for 20 OECD countries to investigate whether innovation through Research and Development (R&D) has positive and significant impact on economic growth. The results are consistent with the endogenous growth theory and indicate a positive and significant impact on total output. These results are also confirmed by a study conducted by Sokolov-Mladenović, Cvetanović and Mladenović (2016). The study shows that expenditure on R&D has a positive impact on economic growth. Another study conducted by Masoud (2013), examines the neoclassical growth theory in a number of developing and developed countries. The study finds that for developing countries, one of the important factors contributing to economic growth is improving the quality of labour, rather than the quantity of labour. To do this, Masoud (2013) advocates improving the quality education and health services.

A qualitative study conducted by Chirwa & Odhlambo (2016) explores the macroeconomic determinants of growth in a number of developing and developed countries. The results of the study indicate that in developing countries the key macroeconomic determinants of economic growth include foreign aid, foreign direct investment, fiscal policy, investment, trade, human capital development, demographics, monetary policy, natural resources, reforms and geographic, regional, political and financial factors. For developed countries, Chirwa & Odhlambo (2016) find that economic growth is driven by factors including physical capital, fiscal policy, human capital, trade, demographics, monetary policy and financial and technological factors.

Bonga-Bonga and Ahiakpor (2015) investigates the determinants of economic growth in Ghana. The main drivers of economic growth in Ghana are; rate of labour force, population density, inflation, total agriculture production and current account balance. Mongale and Monkwe (2015) brings the argument closer and investigates the important factors contributing to economic growth in South Africa. The study uses the vector error correction model to test for any long-run relationships and impulse response function to explain the responses to shocks among the variables. The variables included in the model are real GDP as a dependent variable, with imports, infrastructure investment and exports as independent variable. The results of the study indicate that exports, imports and investment in infrastructure have a long-run relationship with growth, although positive or negative. Although the study may have yielded viable results, the inclusion of fewer variables may arrive in biased conclusion.

A study conducted by Zouhaier and Kefi (2012) studies the effect of institional factors on economic growth in a panel of 37 developed and developing countries. Using the data from 1975-2000, the results of the study indicates that civil liberties and political rights do not have a direct relationship with economic growth for both developed and developing countries. Further,

Zouhaier and Kefi (2012) suggest that political institutions will have indirect effect on growth, through investment and human capital. A study conducted by Lehne, Mo and Plekhanov (2014) studies how institutions affect economic performance. The results of the study support the theoretical assertion that institutions matter for economic growth. The results of the study also indicate that democracy and a country's history matter for economic growth.

Khemakhem and Abida (2016) investigates the causal relationship between foreign direct investment, economic freedom and economic growth in a panel of four North African countries. Using Generalised Methods of Moments (GMM), the study finds that economic freedom plays an important role in attracting foreign direct investment. For this reason, the authors argue that quality domestic institutions are essential for growth.

Empirical literature indicates that there is no consensus on which factors are important for growth. With mixed findings on what determinants of economic growth in different countries, the literature on this subject in South Africa is sparse. The current study takes advantage of this literature gap and include many economic variables, taking into consideration the structural factors affecting economic growth. Chirwa and Odhlambo (2016) indicates that selecting as many variables as possible may achieve better results. This study employs the autoregressive distributed lag (ARDL) model to determine the factors influencing economic growth in South Africa.

4. Empirical Methodology, Data Description and Sources

This section outlines the research methodology applied. The section presents the description and sources of data. Further, the econometric model used in this study is outlined.

Sources and Description of Data

This study investigates the determinants of economic growth in South Africa for the period 1994-2017. The study uses time series annual data. Two models are estimated. The dependant variable in both model is real GDP (RGDP). The independent variables included in the models are, portfolio investment (PINV), human capital (HUCT), exports (EXPT), trade openness (TROP), foreign direct investment (FDIN). In addition to these macroeconomic variables, institutional variables included in the model are Corruption Perception Index (CPIN) and Business freedom Index (BSFD). The data for all macroeconomic variables is obtained from South African Reserve Bank, while data for institutions is obtained from Transparency International and The Heritage Foundation respectively. Annual data from 1994-2017 is used. The macroeconomic variables are measured in millions of Rands.

Model Specification

The econometric model used in this study is the Autoregressive Distributed lag (ARDL) model. Although there are econometric models which can be used to determine the long-run relationships such as Johansen and Engle-Granger cointegration tests, these tests are not compatible for small sample, due to their power to reject the null hypothesis when it is wrong. Moreover, to use these cointegration tests, all variables should be integrated of the same order. For these reasons, the ARDL model is preferred over the Johansen and Engle-Granger cointegration model as it is well suited for small samples (Ahmad & Wajid 2013). Moreover, ARDL allows one to work with variables that not integrated of the same order. As long as the variables are integrated of order 0, I (0) or order 1, I (1). However, the model may disintegrate if the order of integration surpasses I(1). The following model is estimated:

$$lnY_t = \alpha_0 + \alpha_1 lnPINV_t + \alpha_2 lnHUCT_t + \alpha_3 lnEXPT_t + \alpha_4 lnTROP_t + \alpha_5 lnBSFD_t + \alpha_6 lnCIPN_t + \varepsilon_t \qquad (1)$$

$$lnY_t = \alpha_0 + \alpha_1 lnFDIN_t + \alpha_2 lnHUCT_t + \alpha_3 lnEXPT_t + \alpha_4 lnTROP_t + \alpha_5 lnBSFD_t + \alpha_6 lnCIPN_t + \varepsilon_t \qquad (2)$$

Where lnY is the natural log of real GDP. The description and sources of all other variables is outlined on the section above. ε_t is white noise random errors which is assumed to have 0 mean, constant variance and no serial correlation. All variables are converted to natural logarithm to linearise the exponential variation in the data.

The ARDL model

The ARDL model is carried out in two steps. First, it is tested if there exists a long-run relationship between the variables. The F-statistic is used to check the existence of long-run relationship between the variables. If the calculated F-statistic is higher than the upper bound of critical values, the null hypothesis that the variables are not cointegrated is rejected, implying that there exists a long-run between the variable. On the hand, if the calculated F-statistic is lower than the lower bound, the null hypothesis that the variables are not cointegrated cannot be rejected, and therefore only short-run relationship between the variables exists (Narayan & Smyth, 2004). To test for long-run relationship between the variables, the following ARDL equation is estimated:

$$lnY_t = \alpha_0 + \sum_{j=1}^{K} \alpha_1 ln\,Y_{t-j} + \sum_{j=0}^{K} \alpha_2 ln\,PINV_{t-j} + \sum_{j=0}^{K} \alpha_3 ln\,EXPT_{t-j} + \sum_{j=0}^{K} \alpha_4 ln\,HUCT_{t-j}$$
$$+ \sum_{j=0}^{K} \alpha_5 ln\,TROP_{t-j} + \sum_{j=0}^{K} \alpha_6 ln\,CPIN_{t-j} + \sum_{j=0}^{K} \alpha_7 ln\,BSFD_{t-j} + \varepsilon_t$$

The same will be done for the second model. If the first step confirms that the exists a long-run relationship between the variables, the second step involves estimation of parameters of the long-run relationship. This step involves the estimation of short-run dynamic error correction models (ECM), which is given by:

$$\Delta ln Y_t = + \sum_{j=1}^{K} \alpha_1 \Delta ln\, Y_{t-j} + \sum_{j=0}^{K} \alpha_2 \Delta ln\, PINV_{t-j} + \sum_{j=0}^{K} \alpha_3 \Delta ln\, EXPT_{t-j} + \sum_{j=0}^{K} \alpha_4 \Delta ln\, CONS_{t-j}$$

$$+ \sum_{j=0}^{K} \alpha_5 \Delta ln\, TROP_{t-j} + \sum_{j=0}^{K} \alpha_7 \Delta ln\, FDIN_{t-j} + \sum_{j=0}^{K} \alpha_8 \Delta ln\, CPIN_{t-j}$$

$$+ \sum_{j=0}^{K} \alpha_9 \Delta ln\, PRIX_{t-j} + \theta ECM_{t-1} + \varepsilon_t$$

Once the ECM has been estimated, Pesaran and Pesaran (1997) suggest conducting a sensitivity analysis, which involves Cumulative Sum (CUSUM) and Cumulative Sum of Squares (CUSUMSQ) tests, as well as testing if there is no serial correlation.

5. Main Findings and Discussion

Although ARDL does not compel one to test the variables for unit root, it is desirable to conduct the unit root test. ARDL model can be carried on variables that are integrated of different order, I(0) and I(1). However, if ARDL is modelled using variables integrated of higher order such as I(2), the model may disintegrate. To confirm is there are no variables integrated of higher order, the ADF and PP unit root tests are conducted. Both tests confirm that variables are I(0) and I(1), Implying that they are suitable for ARDL model.

Table 2: Unit Root Test Results

Augmented Dickey Fuller Test (ADF unit root test)			Phillips-Perron Test (PP unit root test)		
Variables	Level	1st difference	Level	1st difference
RGDP	-1.667 (0.4332)	-2.812(0.0736)*	-1.482)(0.5232)	-2.870(0.0658)*
EXPT	-1.816(0.3633)	-4.522(0.0020)***	-2.287(0.1844)	-4.770(0.0012)***
TROP	-2.337(0.1699)	-4.559 (0.0019)***	-2.769(0.1577)	-4.877(0.0009)***
FDIN	-2.0277(0.2737)	-5.1269 (0.0005)***	-2.218(0.2056)	-5.1188(0.0005)***
HUCT	-9.986(0.2899)	-6.564(0.0000)***	-1.814(0.3642)	-656(0.0000)***
CPIN	-2.142(0.2311)	9.266 (0.0000)***	-1.932(0.3122)	-8.519(0.0000)***
BSFD	-1.095(0.6986)	-3.919(0.0075)***	-1.095(0.6986)	-3.919(0.0075)***
PINV	-4.427(0.0115)**	-3.231 (0.0632)*	-2.921(0.1750)	-3.35(0.00842)***

Notes: * denote rejection of the null hypothesis at 10% level of significance; **, rejection at 5% level of significance; ***1% level of significance.
Critical values (CV) are obtained from Mackinnon (1996) one-sided p-value as determined by Eviews 9.5.
The bandwidth is the Newey-West bandwidth.
Rejection Rule: reject H_0 if t-statistic is less than critical values.

In this study, two models were estimated. In the first model the variables included are real GDP as a dependant variable, while the independent variables are included are exports, trade openness, foreign direct investment, government expenditure on human capital and the two institutions variable, namely business freedom and corruption perception index. The second model, with real GDP still the dependant variable, foreign direct investment is replaced with portfolio investment to determine which investment is robust for economic growth. The summary of estimation of these 2 variables is provided in tables 3, 4 and 5.

It is important to determine the optimum lag length when using the ARDL model. The optimum lag length for both models is selected based on the Akaike information Criterion, Schwarz Information Criterion and Hannan-Quinn Information Criterion. All criterion selected 1 as the optimal lag length for both models. The results for lag length selection are presented in table 3 below.

Table 3: VAR Lag Order Selection Criterion

Criterion	Model 1	Model 2

	K=1	K2	K=1	K2
LogL	66.39744	66.62563	64.23	64.42
AIC	-5.939744*	-5.862563	-5.723270*	-5.642127
SC	-5.591238*	-5.464271	-5.374763*	-5.243834
HQ	-5.871712*	-5.784812	-5.655238*	-5.564376

* indicates lag order selected by the different criterion:

 AIC: Akaike information criterion

 SC: Schwarz information criterion

 HQ: Hannan-Quinn information criterion

Once the optimal lag length has been determined, the ARDL equations can be estimated to check the existence of long-run relationship between the variables. The summary of estimation for these models are presented in table 4 below, with their respective results of diagnostic tests. The diagnostic tests confirm that that both models have no serial correlation, heteroscedasticity, and variables are normally distributed. To check for stability of the models, the Ramsey RESET (RR) test was performed and confirms that both models are stable.

To check for long run correlation, the bounds test was performed, obtaining the F-statistic to test the joint hypothesis that all gradient coefficients of lagged variable are equal to zero. The results indicate that for the first equation, which incorporates FDI, there is a long-run relationship between the variables, indicated by the calculated F-statistic higher than the I1 critical bound value. Further, the bounds test suggests that for the second model, there is no long run relationship between the variables as the value of F-statistic of 1.5 is lower that the I0 bound. Since the calculated F-statistic value is lower that the I0 bound critical values, we cannot reject the null hypothesis of no cointegration

Table 4: Diagnostic Tests and Bounds Tests

Diagnostic test	**Model 1**		**Model 2**	
LM serial correlation test	0.56(0.48)		2.04 (0.18)	
Normality test	0.43(0.80)		1.7187 (0.42)	
RR stability test	0.22 (0.88)		0.008(0.92)	
Heteroskedasticity	0.98(0.48)		0.802(0.62)	
Bounds Test				
Critical Bound Value	I0 Bound	I1 Bound	I0 Bound	I1 Bound
	1.99	2.94	2.26	3.35
F-statistic	3.066846		1.555027	

The next step is to estimate the long-run and short-run equations. The equations are estimated using the Ordinary Least Square method, with the selected lag length. Table 5 below summarises the results for long-run equation as well as short-run equation. Model 1 results indicate that

exports are negatively related with economic growth; however, the relationship is not significant. The variable which has positive correlation with economic growth and is statistically significant is trade openness. This results supports the findings by Shah *et al.* (2015) who find that commodity exporting countries exports raw material rather than value added products. Moreover, using government expenditure on tertiary education as a proxy for human capital, the results shows that the two variables are negatively correlated, which is not consistent with the endogenous growth theory. However, the relationship is not significant. Corruption perception index has positive impact on economic growth, although not significant. This implies that as correction perception index improves, economic growth is stimulated. Foreign direct investment has positive and significant relationship with economic growth. The error correction term of the model has a negative coefficient, as usually expected, however not significant. This implies that, if there if there is deviation from equilibrium, the economy does not adjust back to equilibrium within one year. The results for model 2, which excludes FDI, and incorporates portfolio investment still confirms that exports are negatively associated with economic growth. This model does not show any sign of long-run relationship between the variables. Portfolio investments are short-run in nature and may be reversed easily as compared to FDI. The portfolio investment has negative relationship with economic growth, however not significant.

Table 5: Long-run and Short-run equations estimates Results

Dependant Variable: RGDP		
Variable	**Model 1**	**Model 2**
Constant	0.010737 (0.2746)	0.115270 (0.0688)***
EXPT	-0.357413 (0.0669)***	-0.267082 (0.1591)
TROP	0.004819 (0.1819)	0.002289 (0.4961)
FDIN	0.030170 (0.0351)**	-
HUCT	-0.016721 (0.7210)	-0.092799 (0.0431)**
BSFD	-0.000118 (0.88)	-0.000548 (0.55)
CPIN	0.001192 (0.2371)	0.001435 (0.1886)
PINV	-	-0.006641 (0.5578)
ECM(-1)	-0.131710 (0.2954)	-
R^2	0.528673	0.613271

Notes: *, ** and *** denote 1%, 5% and 10% level of significance, respectively.

Stability results for both models, checked by the Cumulative Sum (CUSUM) and Cumulative Sum of Squares (CUSUMSQ) are presented in Appendix A. The plot show that CUSUM and CUSUMQ statistic for both models are within the critical bounds of 5 percent level of significance.

Model 2 CUSUMQ results however shows a slight existence of structural break. The models however, are reliable as confirmed by the stability tests.

6. Conclusion and Policy Recommendations

This study investigated the determinants of economic growth in South Africa for the period 1996-2019. Using the ARDL and annual time series data, this study suggests that variables that are correlated with economic growth in the long run are FDI and exports. FDI has a positive relationship on growth while exports have negative relationship with growth. Other variables that have long run relationship with economic growth are not statistically significant. The short-run equation indicates that portfolio does not have any long-run relationship with economic growth. Portfolio investment has negative impact on economic growth, as opposed to FDI which has positive impact. The institutional factors are found to have positive relationship with growth, although not significant.

The results of this study has some policy implications. Since FDI plays a crucial role in promoting economic growth, it can be recommended that factors supporting FDI are enhanced. On the other hand, it is crucial exports are diversified to include products with value added.

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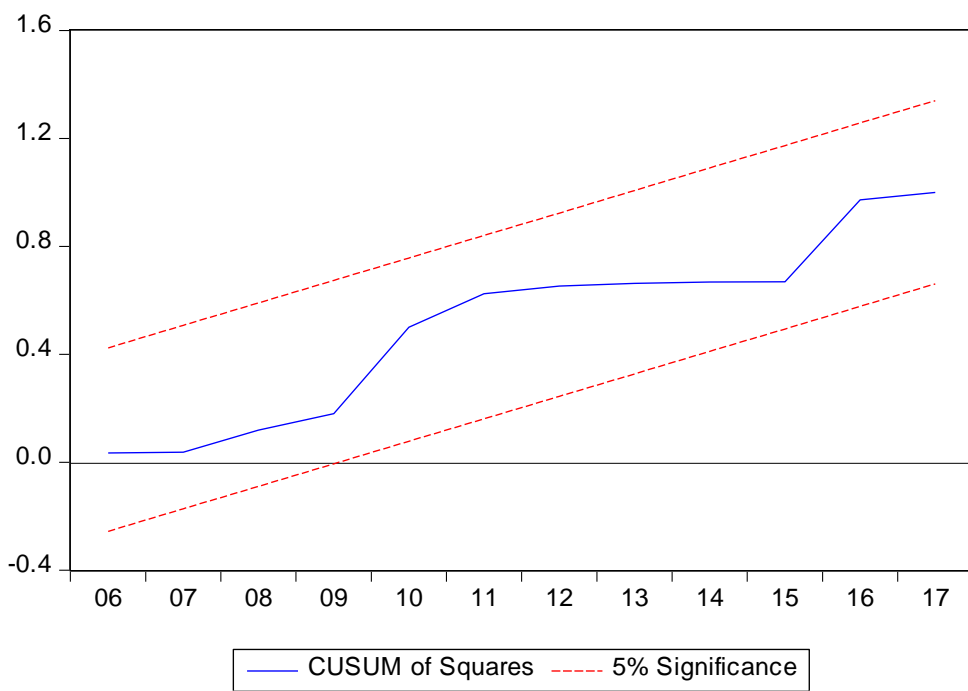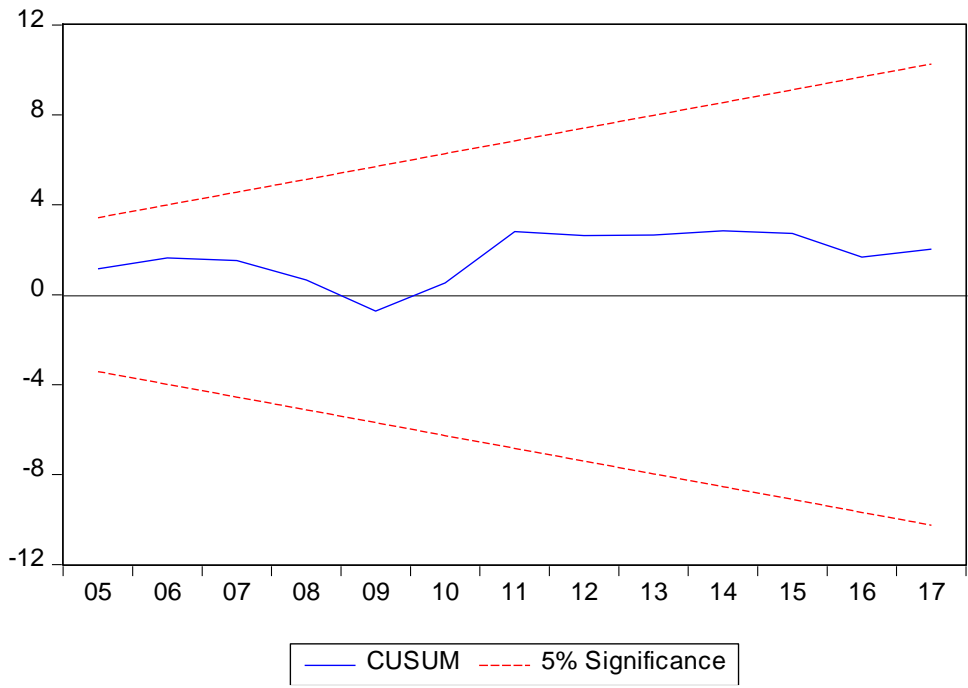
Appendix A.

Figure 1.A. Plot of CUSUM and CUSUMQ, Model 1

Figure 1.B. Plot of CUSUM and CUSUMQ, Model 2