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RELATIONSHIP BETWEEN GOVERNMENT REVENUE GROWTH AND ECONOMIC GROWTH IN ETHIOPIA**BIRUK BIRHANU****LECTURER****DEPARTMENT OF ECONOMICS
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JIMMA****ABSTRACT**

The main aim of this study is to demystify the mystery surrounding the belief that, government revenue growth rates engineered through the government multiplier process. The relationship between government revenue growth and economic growth is investigated for Ethiopia during the period 1974/75-2013/14. Theoretically and empirically it has been shown that revenue affect the allocation of resources and often distort economic growth. While, analyzing the long run and short run relationship between government revenue growth and economic growth the study applied Johansen's cointegration test, vector autoregression, and vector error correction model. Government revenue growth in general and with its component affect economic growth in the long run. Furthermore, in the short run the finding showed that there is independence relationship and the speed of adjustment is slow; only 27% and 7% for the components and total tax revenue growth with economic growth models respectively. However, compared with post tax reform periods, the latter has high speed of adjustment; meaning the speed of disturbances corrected each year in the short run become fast. Based on the findings the study highlighted some major issues that policymakers should consider for effective revenue generation policy formulation and implementation in line with the dynamic nature of the Ethiopian economy.

KEYWORDS

Government revenue growth, economic growth, Ethiopia.

1. INTRODUCTION

 Government revenue is central to development and provides the funding they require to finance economic development and growth. Governments all over the world strives to create conducive environment that attract investments domestically as well as internationally. Among others, the means that helps to this kind of aspiration would be self-sufficient in revenue generation and financing whatever the economy requires by domestic means, so that managing inflationary tendencies become unforgettable task. The role of government revenue growth in influencing economic growth is not only the main concern of the economic policy makers, tax specialists and administrators but has long been of interest to academics. The government of Ethiopia exerts a great effort towards achieving economic prosperity in all aspects. For that matter, financing the development project by domestic means had given due attention. Hence, knowing the relationship between domestic sources and economic growth is mandatory. Since the nature of relationship between these two variables being positive, negative or neutral, the main reason for conducting the study is to ensure that; whether there is long run and short run relationship between the two variables, to avoid spurious regressions and also for policy making purposes where it is important for understanding whether the impact is a short run or long run.

2. LITERATURE REVIEW

The growth theory of the 1950s and 1960s typified by Solow and Swan (1956), was based on a production function that had capital and labour (with labour measured in man-hours) as the inputs into production. Constant returns to scale were assumed, as was diminishing marginal productivity of both inputs. Growth occurred in the model through the accumulation of capital without any exogenous changes but, there had to be a limit to this process. Moreover, models that both allow sustained growth and determine its level are said to have 'endogenous growth'. To achieve this requires circumventing the decreasing marginal product of capital in a way that is determined by choices made by the agents in the economy. There have emerged in the literature four basic methods by which this can be achieved. All of these approaches achieve the same end-that of sustained growth-but by different routes. Neoclassical growth models determine the long term rate of growth of a country by the labor supply and its technical progress (Tobin, 1955; Solow, 1956). This model, therefore, does not include any reference to the role of taxation on economic growth. In addition, it is still uncertain on how tax policy can promote economic growth and stability (Herfindahl, 1957). However, tax is believed to affect a country's economic growth and should be considered in any economic growth model (Futagami et al, 1993; Barro and Sala-i-Martin, 1992). Therefore, in the endogenous growth theory the impact of tax is dependent on how other factors such as human capital is affected by the tax (Tanzi and Zee, 1997; Saint-Paul, 1992) and is included in the discussion. Economists have always believed that there is a connection between fiscal policies and economic growth. This connection has been thought to originate from various channels such as the negative effect of distortive tax on the performance of the economy (Roshaiza Taha et al, 2011). Theory predicts that all taxes—with the exception of lump-sum taxes—create distortions, and such distortions could have negative consequences for growth. Similarly, tax structure varies around the globe with the prime motive of attaining maximum revenue with minimum distortion. Different countries have different

philosophies about taxation and have different methods for collection; in the same manner countries have different uses of their revenue which affect the growth differently and as a result their growth rates are different. (Atkinson, 1995; Castles and Dawrick, 1990; Agell et al, 1997), all argued that the different uses of total government revenue expenditure affect growth differently and a similar argument applies to the way the revenue should be raised. Over the last few decades, most countries have increased taxation quite dramatically while others are following suit, pertinent to their revenue generation aspiration efforts. Some have incorporated value added tax like Zimbabwe in 2004 and some are on the pipeline to do so (Dzingirai Canicio and Tambudzai Zachary, 2014).

Karayan et al, (2002) stated that, throughout the world, governments are first and foremost financed through taxation. The main reason of tax existence at everywhere is due to their characteristics as they are paid for the government to some extent but not the total price in many ways, both directly and indirectly. The study conducted by Oboh et al, (2012) indicates that the concept of taxation has been a concern of global significance because it affects every economy irrespective of national differences.

While defining the concept of taxation within the context of Africa; (Adedeji and Oboh, 2012) show it as old as mankind. In the early periods, governments of different countries impose the tax system to cover the expensive costs of the daily administration system, for defense and maintaining law and order in the country. In this contemporary periods however, the government gives much emphasis for the general welfare development in the country (McGee, 2008). In the modern civilization periods, tax becomes an essential part of all economic activities of both developed and developing countries (Parameswaran, 2005).

These findings imply that in our contemporary era of large government, high taxes lead to lower economic growth. When taxes go up, the growth in the income of taxpayers should decline. In fact, several decades of studies by economists confirm the proposition that the higher the level of taxation, the lower the rate of economic growth, holding non-tax factors constant. This reversed earlier conventional wisdom, such of that of distinguished public finance expert John F. Due, who, speaking about industrial location of firms, opined that studies "suggest very strongly that the tax effects cannot be of major importance" (Due 1961). By the later 1970s, however, research was reaching different conclusions, in part because the negative effects of taxes grew as the tax burden itself grew larger (Richard, 2001).

The tests on the relationship between the tax revenue growth and economic growth have been extensively performed especially in developed countries. The results show that economic development was the strongest determinant of tax growth. For instance, Easterly et al, (1994) has shown how the distortion in tax structure affects the growth rate. Similarly, Kneller et al, (1999) found evidence on how tax can negatively affect the growth rate. In contrast, it was found that a rise in income tax could lead to an increase in economic growth if the time preference is endogenously determined (Chang et al, 1999). It was further assumed that the government collects income tax revenue and transforms it into a productive public expenditure that has an effect on the economic growth. Most studies have examined how tax may encourage or discourage the long term economic growth rate (Padovano and Galli, 2002; Koch et al, 2005; Lee and Gordon, 2005).

Most of the prior studies have found a positive relationship between tax and economic growth, but (Reed, 2008) has found a negative relationship between these two variables in US Compare to previous studies conducted in various part of the globe, this study has its own strength. Most recent (Gordon and Li, 2009; and Kuismanen and Kamppi, 2010) again emphasize on the significant effect of fiscal policy on the economic activity.

The findings of the few studies that analyzed the link between growth and tax structures rather than tax levels provide somewhat more conclusive answers than the studies that have focused on the level of taxation. In a related study, Gemell et al, (2006) use annual data and account for short-run dynamics in a similar way as done in this paper, and confirm the findings of (Kneller et al., 1999). In line with this, Widmalm, (2001) examines economic growth between 1965 and 1990 in a cross-section of 23 OECD countries, and finds that the proportion of tax revenues raised from taxing personal incomes is negatively correlated with growth. She also documents a tendency for consumption taxes to be growth-enhancing. Using disaggregate data, (Schwellnus and Arnold, 2008; and Vartia, 2008) document a negative effect of corporate taxes on the productivity of firms and industries, based on a large data sets of firms and industries across OECD countries.

From the tax reform side, as countries consider their tax systems identifying the growth implications of different tax instruments is useful for policy design, regardless of whether or not a change to the overall level of taxes is envisaged. Tax reform is the process of changing the existing tax system or the status quo to a new level of tax system so that the tax system can serve the main objective of financing government expenditure and meet other objectives. The general objective of tax reforms is similar among different countries, particularly among developing countries. A number of studies show that in developing countries tax systems are used to serve multiple objectives which include mobilization of resources to finance government expenditure; promoting saving and investment; encouraging the use of labor intensive techniques mostly the small and medium scale enterprises, whereby bringing about greater equity in distribution of income. (Islam, 2001; Roa, 2000).

The Ethiopian Government has been introducing tax policy reforms with a view to improving tax revenues collection because the fiscal deficit has necessitated tax reforms in the Tax and Customs Administrations since 1992. As pointed out by Demrew (2004), the country faced severe macroeconomic imbalances such as falling export earnings, worsening balance of payments, and mounting debts and declining economic growth, the country undertook various policy measures following a major economic shift from central planning to market oriented system.

The government has attempted to rationalize the tax structure, broaden the tax base, and improve equity, fairness, consistency, in the administration and the tax laws so as to increase revenues performance. As part of this reform program, the government has undertaken different tax policy measures through designing and implementation of six projects under tax policy and administration package. On the policy side, rate schedules have been rationalized and the numbers of rate slabs have been substantially reduced.

Moreover, Value Added Tax (VAT) has been introduced as a replacement of conventional sales tax in 2003 and foreign trade tariffs brought down from the maximum of 230 percent to a maximum of 35 percent by the reforms. Customs reforms and modernization was one of the major integral parts of Ethiopian tax reforms carried out over the last two couple of decades related to customs tariff of import and export trades to meet government revenues targets, facilitate the flows of legitimate goods and passengers eventually to register fastest and sustainable economic growth by putting in place conducive business environment for Foreign Direct Investment (FDI) and local investors to increase the competitiveness of the country's export on the international trade.

3. SIGNIFICANCE OF THE STUDY

The government of Ethiopia exerts a great effort towards achieving economic prosperity in all aspects. For that matter, financing the development projects by domestic means had given due attention. Hence, knowing the relationship between domestic sources and economic growth is mandatory. Thus, this research more than analyzing the current development on the issue, it attempts to fill the existing knowledge gap first, by empirically examining the impact of tax reform on the growth trajectory of the country. So that the Ministry of Finance and Economic Development, Ethiopian Revenue Authority, and the National Planning Commission will get valuable perspectives on how to design and implement responsive revenue-growth policies.

4. STATEMENT OF THE PROBLEM

Available evidence indicates that efforts have been made to analyze causality between tax revenue and economic growth in different countries. For instance, Dzingirai and Tambudzai (2014) investigate the short-run and long-run effects of economic growth on government tax revenue growth for Zimbabwe, during the period of 1980-2012. The result does not support the supply-side hypothesis which emphasizes the effect of tax towards economic growth in favor of Baro's theoretical assertion that changes in tax revenue does not change the long term growth trajectory, that is, the economy will be in a steady-state.

On the other hand, the empirical Study of Chigbu, et al (2011) on the causality between economic growth and taxation in Nigeria reveals that taxation as an instrument of fiscal policy affects the economic growth and taxation granger cause economic growth of Nigeria. On the basis of the econometric result, the study concluded that taxation is a very important instrument of fiscal policy that contributes to economic growth of a country.

The situation reveals the surge in government revenue, especially tax revenue and economic growth remains debatable issue on the side of fiscal policymakers because, studies conducted in different countries reached at different conclusions on the same issue. Hence, exerting an effort for Ethiopia have a paramount importance to demystify the nexus. Such attention, however, require appropriate policies drawn from the careful analysis on the macroeconomic variables.

Though there are vast literatures on the relationship between government revenue and economic growth in developed countries evidence from developing countries is still limited thus this paper seeks to extend the debate to Ethiopia. This seemingly puzzled many and led many to suspect the credibility of the stories of

fast economic growth over the past few years are a result of improved revenue. Moreover, understanding the relationship requires a thorough understanding in what manner does the revenue policy the country has and how it is related with the main macroeconomic objectives of a country; maintaining sustainable economic growth.

5. OBJECTIVES OF THE STUDY

The main objective of this study is to investigate the relationship between government revenue growth and economic growth. More specifically, the research attempt:

1. To identify how the growth in components of government revenue affects the long term and short term economic growth of the country.
2. To identify how the growth in total government revenue affects the long term and short term economic growth of the country.
3. To capture the effect of tax reform on economic growth Ethiopia.
4. To suggest feasible policy options to enhance the impact of government tax revenue and its components growth on the country's economic growth.

6. RESEARCH HYPOTHESIS

The preliminary study and different previous researches on this area shows that the relationship between revenue and economic growth would be positive, negative or neutral. To discuss the relationship between government revenue growth and economic growth, the following hypothesis is outlined.

First, regarding the relationship;

H_0 : Government revenue growth has no contribution to economic growth of Ethiopia.

H_A : Government revenue growth has contribution to economic growth of Ethiopia.

Second, regarding the time series nature of the data from equation (4c);

H_0 : $\delta = 0$, i.e., there is a unit root, and the series is non-stationary; against

H_A : $\delta < 0$, i.e., there is no unit root and the series is stationary.

Third, regarding the long run relationship between variables;

H_0 : There is no cointegration between series.

H_A : There is cointegration between series.

7. METHODOLOGY

This study investigates the empirical relationship between government revenue growth and economic growth in Ethiopia. Yearly time series data is collected for the period 1974/75 to 2013/14 providing 40 observations. Most of the studies conducted to study the relationship of economic growth with any variables (Colombage, 2009; Koch et al, 2005; Soli et al, 2008; Karran, 1985; Hahn, 2008; Butkiewicz and Yanikkaya, 2005) used the Gross Domestic Product (GDP) as the measurement of economic growth. This study uses real GDP growth rate as a proxy of economic growth (EG) and the value of GDP (using 2010/11 as base year). Base-year analysis expresses economic measures in base-year prices to eliminate the effects of inflation. Government revenue measured as total revenue growth (i.e., including the tax and non-tax revenue growth) is used in real terms. That is change in real GDP and change in real government tax revenue is used to estimate the whole model. All data's are obtained from NBE and MoFED.

7.1. Unit Root Test

Various time series techniques can be used in order to model the dynamic relationship between time series variables (Gujarati, 2004). However, it is important to determine the characteristics of the individual series before conducting further analysis. Therefore, unit root tests for stationary will be examined on the levels and first differences for all variables using the most common unit root tests, which is the Augmented Dickey-Fuller (ADF). In this research the ADF test is employed since there are no missing gaps and significant structural breaks in the dataset.

7.2. Optimal Lag Length

As a result, another key element in a model specification process is to determine the correct lag length. Several studies in this area demonstrate the importance of selecting a correct lag length. Estimates of the model would be inefficient and inconsistent if the selected lag length is different from the true lag length (Brooks, 2004). Selecting a higher order lag length than the true one over estimates the parameter values and increases the forecasting errors and selecting a lower lag length usually underestimate the coefficients and generates autocorrelated errors. Therefore, accuracy of parameters and forecasts heavily depend on selecting the true lag length. Though, there are so many criteria used in the literature to determine the lag length of an AR process. Hence, the ability to correctly locating the true lag length depends on IC the ordinary least Squares regression model has been run starting with lag zero upwards, since according to (Engle et al, 1995) it is the mostly used and recommended methodology used to determine the lag length. Thus, lag that provides the minimum value is chosen as the optimal lag length, in other words, among the IC that provides majority lag has been chosen as optimal lag length.

7.3. Long Run Cointegration: Johansen Approach

Since the influential work of Granger and Newbold (1974) and Engle and Granger (1987) on the treatment of integrated time series data, many studies have been conducted using the co-integration methodology in order to yield consistent results and avoid the spurious regression problems, particularly in causality testing. The purpose of co-integration test in this study is to examine whether economic growth and government revenue growth share a common stochastic trend, that is, whether they move on the same wave-length in the long-run though there might be some disequilibrium in the short-run. This research will employ Johansen's (1988) approach to determine whether any combinations of the variables are co-integrated. Johansen's methodology takes its starting point in the vector autoregression (VAR) of order p given by:

$$Y_t = \mu + A_1 Y_{t-1} + \dots + A_p Y_{t-p} + \varepsilon_t \quad \text{----- 1}$$

Where Y_t is an $n \times 1$ vector of variables that are integrated of order one commonly denoted $I(1)$ and ε_t is an $n \times 1$ vector of innovations. Johansen and Juselius, (1990) recommend the trace test and the maximum Eigen-value t-statistics in making the inference of the number of co-integrating vectors.

$$J_{\text{trace}} = -T \sum_{i=r+1}^n \ln(1 - \tilde{\lambda}_i) \quad \text{----- 2}$$

$$J_{\text{max}} = -T \ln(1 - \tilde{\lambda}_r + 1) \quad \text{----- 3}$$

For trace statistic, the null hypothesis is the number of co-integrating vectors is less than or equal to co-integrating vectors (r) against an unspecified alternative. In the case of maximum Eigen-value co-integration test, the null hypothesis is the number of co-integrating vectors (r) against the alternative of $1 + r$ (Ng et al, 2008). If the trace statistic is greater than the Eigen-value (critical value), we conclude that the model contains at least one co-integrating equation. Where this condition is violated at a higher order, determines the maximum number of co-integrating equations. Therefore, procedures in accordance with Johansen approach is used in this study.

7.4. Short-Run Vector Error Correction Model (VECM)

According to Engle-Granger, (1987), if two-time series are co-integrated then the VECM will represent them most efficiently. If cointegration has been detected between series, we know that there exists a long-term equilibrium relationship between them so we apply VECM in order to evaluate the short run properties of the cointegrated series.

A simple dynamic model of a short-run adjustment model is given by

$$Y_t = \alpha_0 + \gamma_0 X_t + \gamma_1 X_{t-1} + \alpha_1 Y_{t-1} + \varepsilon_t \quad \text{----- 4}$$

Where, Y_t is dependent variable, and Y_{t-1} are lagged values.

X_t is independent variable, and X_{t-1} are lagged values.

$\alpha_0, \gamma_0, \alpha_1, \gamma_1$ are parameters.

TABLE 8.2 A: LAG LENGTH SELECTION FOR TRIVARIATE MODEL

VAR Lag Order Selection Criteria						
Endogenous variables: GRRGDP GRRT,R GRRNTR						
Sample: 1 40						
Included observations: 35						
Lag	LogL	LR	FPE	AIC	SC	HQ
0	-418.9872	NA	5956361.	24.11355	24.24687*	24.15958*
1	-411.5745	13.13104	6541233.	24.20426	24.73752	24.38834
2	-408.1640	5.456783	9124039.	24.52366	25.45687	24.84580
3	-388.3963	28.23965*	5095160.*	23.90836*	25.24151	24.36856
4	-385.2111	4.004228	7563972.	24.24063	25.97374	24.83890

TABLE 8.2 B: LAG LENGTH SELECTION FOR BIVARIATE MODEL

VAR Lag Order Selection Criteria						
Endogenous variables: GRRGDP GRRT,R						
Sample: 1 40						
Included observations: 35						
Lag	LogL	LR	FPE	AIC	SC	HQ
0	-248.8558	NA	5761.147	14.33461	14.42349*	14.36530*
1	-246.4114	4.469702	6301.843	14.42351	14.69014	14.51555
2	-245.9810	0.737873	7751.683	14.62748	15.07187	14.78089
3	-236.4042	15.32283*	5675.917*	14.30881*	14.93095	14.52357
4	-233.5709	4.209478	6144.671	14.37548	15.17537	14.65160

Source: EViews version 6 using NBE data
 Note: * indicates lag order selected by the criterion
 LR: sequential modified LR test statistic (each test at 5% level)
 FPE: Final prediction error
 AIC: Akaike information criterion
 SC: Schwarz information criterion
 HQ: Hannan-Quinn information criterion

8.4 Johansen Test Result for Long Run Cointegration

Table 8.3A and 8.3B, shows the summary of Johansen co-integration test results where both trace and maximum eigenvalue statistics find that one co-integrating vector exists between government revenue growth and economic growth. Therefore, we conclude that there is co-integrating vector between both variables, where both tests reject the null hypothesis of no co-integration with one co-integrating vector.

TABLE 8.3 A AND 8.3 B: JOHANSEN TEST OF COINTEGRATION

8.3 A: FOR TRIVARIATE MODEL				
H ₀	λ Trace	CV (5%)	λ Max – eigen	CV (5%)
r= 0	43.627	42.915	21.011	25.823
r= 1	22.615	25.872	11.911	19.387
8.3 B: FOR BIVARIATE MODEL				
r=0	28.266	25.872	20.070	19.387
r= 1	8.196	12.517	8.196	12.517

Source: Own computation using EViews version 6 NBE data

8.4 Long run Impact of Variables on Economic Growth

8.4.1 Trivariate Model

The long run relationship for parameter estimate of components of government revenue on economic growth is derived by normalizing growth in real GDP from Table 8.3A. The long run relationship is specified mathematically as;

$$grRGDP = -0.601T + 1.013grRT_xR + 0.112grRNTR$$

Where, T is time trend. The trend exert a negative effect on growth in RGDP. This implies that holding all other factors constant in the long run, as time passes by, the growth in real GDP of Ethiopia decline by about 60% each year. This is justified by the fact that since all the variables are changed in real terms inflation (i.e., imported inflation) and persistent devaluation of birr in terms of other currencies mainly dollar restrain the activities in the real sector. The other result has come up with the expected sign. On average a 1% growth in real tax revenue and real non-tax revenue increases the growth in real GDP by 1.01% and 0.11% respectively. Moreover, the degree of relationship is strong in the case of real tax revenue growth than real non-tax revenue growth. Accordingly, in the long run improving both tax and non-tax revenue is important for economic growth in Ethiopia, in other words both tax and non-tax revenues encourage economic growth of the country.

8.4.2 Bivariate Model

Also in the bivariate system it is important to look at how the growth in government revenue encourage or discourage economic growth in real term. The normalized cointegration coefficient is derived by normalizing growth in real GDP from Table 8.3B. The long run relationship is specified mathematically as;

$$grRGDP = -0.810T + 3.753grRTR$$

Where, T is time trend. The trend exerts a negative effect on growth in RGDP. Also it implies that holding all other factors constant in the long run, as time passes by, the growth in real GDP of Ethiopia decline by about 81% each year. Again, this is justified by the fact that as time goes on inflation and devaluation restrain the activities in the real sector. Moreover, the result in Table 5.6A shows the growth in real total tax revenue has a positive impact on economic growth and come up with the expected sign. In an empirical sense, a 1% growth in total revenue in real term increases the growth in real GDP on average by 3.75% and the coefficient shows strong relationship in Ethiopia for the period under investigation. This might be attributed to the fact that government take measures to enhance the tax collection capacity of institutions.

The finding of this result is consistent with (Friedman, 1978; Barro’s, 1979; Easterly et al 1994). On one side of the coin Friedman finds, raising tax revenue either through increasing tax rates or tax base would lead to more fiscal space which will drive growth. On the other side, Barro and easterly finding support the supply side hypothesis that the relationship between tax revenue and economic growth shows a positive relationship. Any significant increase in tax income will have a positive impact on economic growth. A possible explanation is that an increase in tax revenue will boost the economy and prospect development. Moreover, these results show that economic development was the strongest determinant of tax growth.

Besides, the model can be verified by its ability to justify that the coefficients of the model are stable over a sample interval, otherwise, a shift from one regression scheme to another cannot be located easily. Figure 8.2A and 8.2B shows the parameter stability test for trivariate and bivariate model respectively.

FIGURE 8.2 A: STABILITY TEST FOR TRIVARIATE MODEL

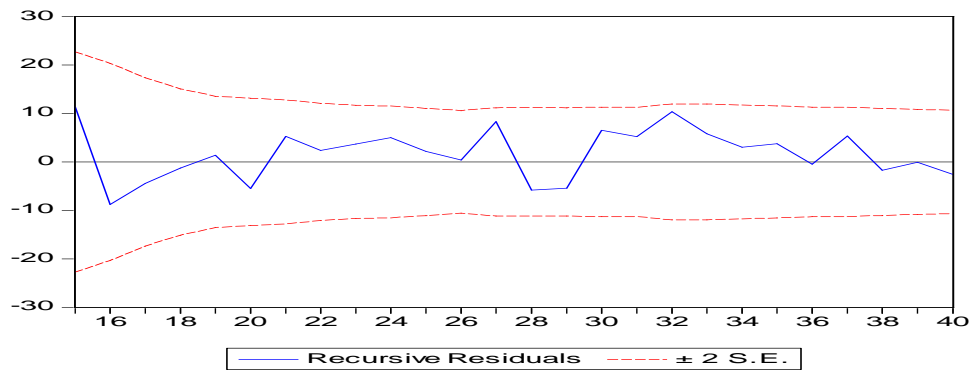
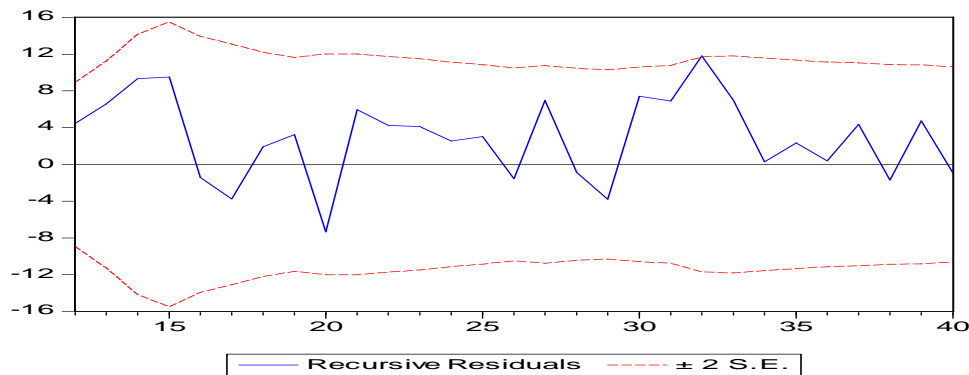


FIGURE 8.2 B: STABILITY TEST FOR BIVARIATE MODEL



8.5 Short Run Vector Error Correction Model

8.5.1 Trivariate Model

Since the series are co-integrated, the short run equation of the series can be determine using VECM. The VECM equation is as follows given the diagnostic test for stability results:

$$grRGDP = 0.332 - 0.274grRGDP_{t-1} + 1.013grRT_xR_{t-1} + 0.112grRNTR_{t-1}$$

Where,

ECT_{t-1} is represented by the coefficient of $grRGDP_{t-1}$

The speed of adjustment or the error correction term (ECT) in the trivariate setting is come up with the expected sign and level of significance. In an empirical sense, it implies 27% of the disturbance in the short run is corrected each year or it adjust any disequilibrium towards long run equilibrium state.

8.5.2 Bivariate Model

$$grRGDP = 0.521 - 0.069grRGDP_{t-1} + 3.753grRTR_{t-1}$$

Where,

ECT_{t-1} is represented by the coefficient of $grRGDP_{t-1}$

The speed of adjustment or the error correction term in the bivariate setting is come up with the expected sign and level of significance. In an empirical sense, it implies 7% of the disturbance in the short run is corrected each year or it adjust any disequilibrium towards long run equilibrium state. The slow speed of adjustment could be related to the revenue generation within the economy has been bedeviled by the narrow base of the economy, low-income levels, dominance of the primary sector, low monetization and urbanization. These constrained the federal government from generating and increasing its revenue from taxes.

All stability test conducted through VECM did not indicates any chronic indications, therefore the estimated VECM was statistically in a stable mode.

Likewise, the trivariate and bivariate system diagnostic test of residuals is examined and it shows that the model has desirable properties of OLS. Residual test of normality, serial correlation LM test and heteroskedasticity test is conducted. The result of heteroskedasticity test of the residuals also does not show evidence for autoregressive conditional heteroskedastic errors. This indeed is not surprising, since heteroskedasticity is not much problem in time series (Green14, 1997), the result is presented as follows for the trivariate and bivariate models respectively.

$$x^2Normality = 0.914 \quad x^2Serial = 0.277 \quad x^2Heteroskedasticity = 0.016, \text{ and}$$

$$x^2Normality = 0.879 \quad x^2Serial = 0.157 \quad x^2Heteroskedasticity = 0.014$$

8.6 Government Tax reform and Economic Growth

Accordingly, wheather tax reform in Ethiopia has a positive impact on economic growth is investigated using Dummy variable with in a VECM environment. Year 2003/04, among others witnessed the scaling up of previous tax reforms, introduction of VAT and foreign trade tariff brought down would be taken to compare and contrast wheather tax reform has a positive and significant impact on economic growth. The following equation provides the result on tax reform and economic growth in Ethiopia.

$$grRGDP = -1.975 - 1.092grRGDP_{t-1} + 0.161grRTR_{t-1} + 6.751DUMMY$$

Where,

ECT_{t-1} is represented by the coefficient of $grRGDP_{t-1}$

The result in the above equation shows that, tax reform in Ethiopia has a positive and significant impact on economic growth. In addition it can be evident from the result that the ECT_{t-1} comes with the correct sign and it can be explained as 109% of the disturbance in the short run is corrected each year. While, comparing the amount of changes in real GDP to bring the system back to equilibrium before dummy has been inculcated (i.e., with 7% speed of adjustment) it could be inferred that tax reform remove large percentage of disequilibrium in each year. Hence, we can explain a 1% growth in real total revenue after tax reform increase real GDP growth by 6.7%. Thus it can be concluded that tax reform makes the contribution of growth in revenue very important for economic growth in real terms. Likewise, the bivariate system diagnostic test of residuals is examined and it shows that the model has desirable properties of OLS.

9. CONCLUSION AND RECOMMENDATION

This research attempts to determine the role of government revenue growth in fostering economic growth in the long run and short run for Ethiopia. To capture this, time series macroeconomic data were culled from 1974/75-2013/14. In fact it was worthwhile to conduct an empirical test to observe the time related nature of the relationship between revenue collection and growth in order to see the direction of movement of these so called two potent components of government fiscal policy. The determination of the causal ordering between these two macroeconomic aggregates is crucial to ensure a sharpening of tax policy and the effectiveness of fund management for expenditure (Taha and Loganathan, 2008) and poverty eradication.

The econometric analysis, using Johansen test of co-integration affirmed that a long run relationship exists between the explanatory and explained variable both in trivariate and bivariate system. In the long run, both the trivariate and bivariate form of model estimation reveals both growth in tax, non-tax revenue and total revenue encourage economic growth. Besides, the model ability in maintained hypothesis that the coefficients of the model are stable over a sample interval is verified.

In the short run, the speed of adjustment is slow implying that it takes long for growth in real GDP to move back to its equilibrium once it drifts away from its long run equilibrium value.

While looking at the relationship between government revenue growth and economic growth in Ethiopia after tax reform periods, the result confirmed that reforming the tax system and structure catalyzes the trajectory of economic growth. Then, in terms of the impact of growth in total revenue on economic growth and the speed of adjustment the post-reform period's exhibits very great importance. Hence, the following policy recommendations is forwarded to improve the nexus in government revenue growth and economic growth for Ethiopia.

- Government revenue growth including its component have insignificant effect on economic growth in the trivariate and bivariate system for long run and short run most of the time. It should be noted that improvement in government revenue generation is not productive and buoyant enough to influence economic growth as expected. Therefore, fiscal institutions must build the principle of good governance in administering the revenue generated from the economy.
- The ratio of tax revenue to GDP is very low in Ethiopia even as compared to sub Saharan African economies, and the country never experiences fiscal surplus over the period under investigation. This is attributed to low tax rate, and oftentimes government were seen on bond financing and foreign debt to finance fiscal gap. Therefore, optimal tax rate should be the concern of government and decided to finance the budget. For this purpose, government can use debt and tax instrument simultaneously.
- There are several ways to extend this paper. Since the impact of fiscal policy on economic growth is unmitigated debate, it could be possible to extend the debate for Ethiopia by examining the correlation fiscal policy (i.e., distortionary revenues, non-distortionary revenues and other revenues) with economic growth, average tax rate and economic growth, and by inculcating control variables to tax revenue (i.e., inflation, population and trade openness) with economic growth.

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