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Causal Relationship between Consumption Expenditure and Economic Growth in Bangladesh

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Economists have found it very exciting to identify whether consumption expenditure is a result of economic activity or consumption expenditure drives the economic growth being an essential component in the national income identity across the globe. The objective of this study is to investigate the causal relationship between consumption expenditure and economic growth in Bangladesh using annual data from 1976-2009 in a bivariate framework. To check the stationarity properties, I have employed Augmented Dickey Fuller (ADF) and Phillips-Perron (PP) test and found that all the concerned variables are stationary either in the level form or in the first differenced form. Using Johansen cointegration method and ARDL cointegration method, the empirical findings indicate that there exists long run cointegration between the concerned variables. Then applying the Granger causality test, I have revealed a long run unidirectional causal relationship running from economic growth to consumption expenditure which provides evidence in support for the Keynesian consumption functions. The result shows that in Bangladesh, consumption is the result rather than the cause of growth.

Field of Research: Consumption Expenditure, Economic Growth, Cointegration Test, Causality Test

1. Introduction

The relationship between consumption expenditure and economic growth has occupied a great deal of interest among the policymakers and economists in macroeconomic research. Researchers take different positions on this issue according to their empirical findings and theoretical motivations. On one side, there are Keynesian economists who consider consumption expenditure as a dependable function of income and on the other side there are substantial numbers of economists who believe that higher consumption can stimulate economic growth. Other economists take positions based on their criticisms on these two views. Modigliani (1954, 1963, 1990), Ando (1963), Brumberg (1954, 1990), Friedman (2008) criticized the simple Keynesian consumption theory and proposed their own theories whereas many growth theories reveal savings as the main spur of economic growth. This relationship between consumption and output is not only important from theoretical sense but also from policy perspective as output is the prime concern of any macroeconomic policy and government needs some steering mechanisms for that. In this study, final consumption expenditure is disaggregated in household consumption expenditure and government consumption expenditure. This study is going to investigate the long run cointegrating and causal relationship between consumption expenditure and economic growth in Bangladesh.

However, the relationship between government consumption expenditure and national income has been the subject of two contending propositions. The first and the more popular is Wagner's law. Wagner's law proposes that there is a long-run tendency for public expenditure to grow relative to some national income aggregates such as the Gross Domestic Product (GDP). In other words, the causality of the link between public

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expenditure and national income runs from national income to public expenditure. The second proposition is associated with Keynes. To Keynes, public expenditure is an exogenous factor and a policy instrument for increasing national income. Consequently, he believes that the causality of the relationship between public expenditure and national income runs from expenditure to income (Chimobi, 2009).

Several empirical studies across the world have explored the relationship between public expenditure and economic growth using cross sectional and time series data for both developed and developing countries. Despite having several empirical works regarding the causality between public expenditure and economic growth across the globe, few researchers make attempt to investigate the relationship between final consumption expenditure and economic growth. This investigation could yield some interesting results regarding this relationship.

To the best of my knowledge, there are no studies addressing the causal relationship between final consumption expenditure and economic growth for the case of Bangladesh. This article tries to fill the gap of this relationship in Bangladesh over the period 1976-2009 by using cointegration approach and Granger causality analysis. Macroeconomy of every country is unique and they need to be treated after considering their peculiarities (Amin and Rahman, 2010). It is expected that fundamental relationships between different macroeconomic variables may follow certain common theories but local preferences are also crucial in determining their behavior. The following two questions are addressed in this study:

1. Is there any long run equilibrium relationship between final consumption expenditure and economic growth?
2. Is causality running in either directions or both directions?

This article is organized as follows. Next section presents the review of literature. Then the following section discusses the methodology and attributes of data. Econometric results and their discussions follow in the subsequent section with concluding remarks.

2. Literature Review

The causal relation between consumption expenditure and national income has been the subject of many empirical studies in both the developed and developing economies. Empirical evidence on the consumption-growth relationship is diverse. Most of the empirical studies focus on government's consumption expenditure. For example Ahsan et al. (1989), Ram (1986), Holmes and Hutton (1990) and Singh and Sahni (1984) concluded that public expenditure expansion had significant effect on national income growth. On the contrary, Barth, et al. (1990) and Landau (1983, 1986) found that public expenditure expansion had negative effect on national income growth for both developed and less developed countries. In a most recent study conducted by Sakthivel and Yadav (2007) for India found bidirectional causality between national income and public expenditure and economic services. They also analyzed causality between income, defense services and interest payments. Defense services found independent and interest payments have unidirectional relationship with income.

Ansari et al (1997) attempted to determine the direction of causality between government expenditure and national income for three African countries: Ghana, Kenya, and South Africa using standard Granger testing procedures and the Holmes-Hutton (1990) causality test, which is a modified version of the Granger test. The study used annual data on per capita government expenditure and national income for the period from 1957 to 1990. Both variables were deflated by using the GDP deflator for each country. The study finds that in Ghana, Kenya and South Africa there is no long run equilibrium relationship between government expenditure and national income over the sample period. For these countries, there is no evidence of Wagner's hypothesis or the reverse being supported in the short run, except for Ghana where Wagner's law is supported.

Abizadeh and Yousefi (1998) used South Korean data to test Wagner's law. They first conducted Granger type causality tests, and then estimated a growth equation and a government expenditure growth equation by using annual data for the period of 1961-1992. They excluded government expenditures from the GDP to obtain the private sector GDP, and used this in their tests. After comparing the results from the estimations, the authors concluded that government expenditures did not contribute to economic growth in Korea. Singh and Sahni (1984) used the Granger causality test to determine the causality direction between national income and public expenditures in India. Total (aggregate) as well as disaggregate expenditure data for the period of 1950-1981 were used. Data used in the study were annual and deflated by using implicit national income deflator. The study finds no causal relationship confirming the Wagnerian law or the opposite view.

Tang (2001) investigated the relationship between national income and government expenditure in Malaysia over the period from 1960 to 1998. The result of Johansen multivariate cointegration revealed that no long run relationship among the non-stationary variables existed. Further, a unidirectional causality was observed, that is, from national income growth to Government expenditure growth. Thus, they concluded that Wagner's law was supported by the data, in the short run. Cheng and Lai (1997) examined the causality between government expenditure and economic growth in South Korea by applying the techniques of Sims (1980), Johansen's cointegration (1990), and Hsiao's (1981) version of the Granger causality method to post-Korean war data. Unlike other studies, they choose one single country with an attempt to make a more in-depth investigation and analysis.

Dogan (2006) aimed to determine the direction of causality between national income and government expenditures for Indonesia, Malaysia, Philippines, Singapore, and Thailand. Granger causality tests were used to investigate the causal links between the two variables. Support for the hypothesis that causality runs from government expenditures to national income had been found only in the case of Philippines for the previous four decades. There was no evidence for this hypothesis and its reverse for the other countries. Islam (2001) used annual data for the period 1929-1996 to examine the Wagner's hypothesis for the USA. The study found that the relative size of government expenditures and real Gross National Product per capita were cointegrated by using Johansen-Juselius cointegration approach. Moreover, Wagner's hypothesis is strongly supported by the result of Engle-Granger (1987) error correction approach.

3. Methodology, Variables and Data Set:

I have tested the existence of unit root to check the stationarity of the variables. Macro variables are well known for their non stationarity. I have performed Augmented Dickey Fuller (ADF) and Phillips-Perron (PP) test to find the existence of unit root. Both the tests find that some of the variables are non stationary and thus cannot be regressed without making them stationary. Then I ran cointegration test to find out possible linear combination of the variables that can be considered stationary. If I found that the variables are cointegrated, then I ran Granger casualty test to check the possible direction of causality.

In time series analysis, non stationary data may lead to spurious regression unless there exists at least one cointegrating relationship. At first, the Johansen procedure is applied to test for cointegration. This method provides a unified framework for estimation and testing of cointegration relations in the context of Vector Autoregressive (VAR) error correction models. For this approach one has to estimate an unrestricted vector of autocorrelation of the form:

$$\Delta x_t = \alpha + \theta_1 \Delta x_{t-1} + \theta_2 \Delta x_{t-2} + \theta_3 \Delta x_{t-3} + \cdots\cdots + \theta_{k-1} \Delta x_{t-k+1} + \theta_k \Delta x_{t-k} + u_t$$

Where Δ is the difference operator, x_t is a $(n \times 1)$ vector of non-stationary variables (in levels) and u_t is the $(n \times 1)$ vector of random errors. The matrix θ_k contains the information on long run relationship between variables. If the rank of $\theta_k = 0$, the variables are not cointegrated. On the other hand if rank (usually denoted by r) is equal to one, there exists one cointegrating vector and finally if $1 < r < n$, there are multiple cointegrating vectors. Johansen and Juselius (1990) have derived two tests for cointegration, namely the trace test and the maximum Eigen value test. The trace statistic evaluates the null hypothesis that there are at most r cointegrating vectors whereas the maximal eigen value test evaluates the null hypothesis that there are exactly r cointegrating vectors in x_t.

However, ARDL cointegration test is also applied to test for cointegration. Pesaran et al (1996) and Pesaran and Shin (1995) introduces the ARDL approach of cointegration which is becoming very popular now a days in the field of econometric analysis. Recent empirical studies have indicated that the ARDL approach to cointegration is more preferable to other conventional cointegration approaches such as Engle and Granger (1987) and Johansen and Juselius (1980).

The main advantage of this procedure is that it can be applied irrespective of whether the variables are I(0) or I(1) and this avoids the pre testing problems associated with standard cointegration analysis which requires the classification of the variables into I(1) and I(0). In addition, the ARDL approach also gives more robust results when the sample size is small.

In the ARDL approach, the long run relationship between the variables under investigation is tested by computing the F-statistics for testing the significance of the lagged levels of the variables in the error correction form of the underlying ARDL model (Pesaran and Pesaran, 1996). Instead of the conventional critical values, ARDL test involves two critical values bounds, based on whether the variables are I (0) or I (1).

If the computed F-statistics falls above the upper critical value, the null hypothesis of no long run relationship can be rejected without needing to know the orders of integration for the time series. Conversely, if the computed F value is below the lower critical value, the

null hypothesis cannot be rejected. Finally, if the computed statistics falls within the critical value band, the result is inconclusive.

The ARDL approach also provides the Error Correction Model (ECM) estimations. The ECM represents the speed of adjustment to restore equilibrium in the model. The ECM coefficient shows how slowly or quickly a variable returns to equilibrium and it should be negative, less than 1 and highly significant. Bannerjee, Dolado and Mestre (1998) hold that a highly significant error correction term is further proof of the existence of a stable long-term relationship.

The ARDL framework takes the following form:

$$\Delta Y_t=\beta_0+\sum\beta_1\Delta Y_{t-i}+ \sum\beta_2\Delta X_{t-i}+ \beta_3 Y_{t-1}+ \beta_4 X_{t-1}+\varepsilon_t$$

According to cointegration analysis, when two variables are cointegrated then there is at least one direction of causality. Granger-causality, introduced by Granger (1969, 1980, 1988), is one of the important issues that has been much studied in empirical macroeconomics and empirical finance. Engle and Granger (1987) have indicated that the existence of non-stationarity can give misleading conclusions in the Granger causality test. It is only possible to infer a causal long run relationship between non stationary time series when the variables are cointegrated.

Granger (1988) has explained that for cointegrated time series, it is very important to include the error correction term in the tests. Otherwise the standard Granger test may provide invalid causal information. In addition, the inclusion of the error correction term helps us to distinguish between short run and long run causality. The lagged change in the independent variables represents the short run causal impact whilst the significance of the error correction term gives the information on long run causality. The standard Granger causality follows the F-test whereas the causality test with error correction term follows the t-test.

If y and x are the variables of interest, then the Granger causality test determines whether past values of y add to the explanation of current values of x as provided by information in past values of x itself. If past changes in y does not help explain current changes in x, then y does not Granger cause x. Similarly, I can investigate whether x Granger causes y by interchanging them and repeating the process. There are four likely outcomes in the Granger causality test: (1) neither variable Granger cause each other, (2) y causes x but not otherwise, (3) x causes y but not otherwise, (4) both x and y Granger cause each other.

In this study, the causality test between GDP and Final Consumption Expenditure (FCE) will be conducted. For this the following two sets of equation will be estimated:

$$\Delta GDP_t= \alpha_1 + \beta_1 RES_{t-1} + \sum \alpha_{11}\Delta GDP_{t-1} + \sum \alpha_{12}\Delta FCE_{t-1} + \mu_t$$

$$\Delta FCE_t= \alpha_2 + \beta_2 RES_{t-1} + \sum \alpha_{21}\Delta FCE_{t-1} + \sum \alpha_{22}\Delta GDP_{t-1} + \mu_t$$

Including the error correction term in the equation offers an extra channel through which causality may be observed. The error correction coefficients are expected to capture the adjustments of ΔGDP_t and ΔFCE_t to their long run equilibrium, while the coefficients on lagged GDP and final consumption expenditure are expected to capture the short run dynamics of the models. According to Choudry (1995), even if the coefficients of the lagged variables are not statistically significant, Granger causality can still exist as long

as the coefficient of error correction term is significantly different from zero. The short run dynamics are captured through individual coefficients of the differenced term.

As explained in the introduction, this paper examines the long run relationship and the direction of causality between consumption expenditure and national output of Bangladesh. The measure of Real GDP (RGDP) can be considered as an indicator of economic development. Final Consumption Expenditure (FCE) has been considered as a proxy of Consumption Expenditure.

The Data for all the variables have been collected from World Development Indicators managed by the World Bank. My data set spans over the period 1976-2009 for which 34 observations are available at most. Expansion of data set is not possible due to unavailability of data. Also since the relationship is a dynamic one, so inclusion of very old data can produce us wrong outcomes. Small sample size might be problematic in finding the long run relationship. Eviews 5.0 and Microfit 4.1 have been used as statistical software packages for all the tests run in this study. All the econometrics results are available on request.

4. Results Obtained

Unit root tests are conducted to determine the order of integration of the data series for each of the variables. Table 1 shows the ADF statistics and corresponding critical values of all the variables in their level and first differenced forms. For getting more robust result, Phillips Perron test has been conducted and obtained the uniform results for the variables. (Table 2)

Table 1: Augmented Dickey Fuller(ADF) Unit Root Test for the selected variables

Panel 1: Levels			
	ADF Statistics (Only Constant)	ADF Statistics (Constant & Trend)	Decision
Economic Growth	20.99692	7.093595	Stationary
Final Consumption Expenditure	6.204506	1.452923	Non Stationary considering trend and constant but stationary considering only constant.
Household Consumption Expenditure	3.933778	3.395478	Non Stationary considering trend and constant but stationary considering only constant.
Government Consumption Expenditure	2.653951	-0.103517	Non Stationary
Panel 2: First Differences			
	ADF Statistics (Only Constant)	ADF Statistics (Constant & Trend)	Decision
Economic Growth	Not Applicable	Not Applicable	-
Final Consumption Expenditure	Not Applicable	-5.879173	Stationary
Household Consumption Expenditure	Not Applicable	-7.933838	Stationary
Government Consumption Expenditure	-2.840977	-4.656828	Stationary

Note: All regression is estimated with and without trend. Selection of the lag is based on Schwartz Information Criterion (SIC). Eviews 5.0 software automatically selects the most significant lag length based on this criterion.

Table 2: Phillips-Perron Unit Root Test for the Variables			
Panel 1: Levels			
	PP Statistics (Only Constant)	PP Statistics (Constant & Trend)	Decision
Economic Growth	21.81432	13.21713	Stationary
Final Consumption Expenditure	10.76854	3.341035	Non Stationary considering trend and constant but stationary considering only constant.
Household Consumption Expenditure	7.449887	1.527063	Do
Government Consumption Expenditure	4.120871	0.680807	Do
Panel 2: First Differences			
	PP Statistics (Only Constant)	PP Statistics (Constant & Trend)	Decision
Economic Growth	Not Applicable	Not Applicable	-
Final Consumption Expenditure	Not Applicable	-5.857391	Stationary
Household Consumption Expenditure	Not Applicable	-7.456145	Stationary
Government Consumption Expenditure	Not Applicable	-4.635414	Stationary
Note: All regression is estimated with and without trend. Selection of bandwidth is based on Newey-West Bandwidth Criterion. Eviews 5.0 software automatically selects the most significant bandwidth based on this criterion.			

One of the most important issues in conducting the unit root test is to select the appropriate lag length. One approach is to include a relatively long lag length and select the model by the usual t-test. If the t-statistics on lag p is insignificant at some specified critical value, the regression should be repeatedly estimated using a lag length p-1 until the lag is significantly different from zero.

Here it is worth mentioning that unit root tests have non-standard and non-normal asymptotic distribution which are highly affected by the inclusion of deterministic terms, e.g., constant, time trend etc. A time trend is considered as an extraneous regressor whose inclusion reduces the power of the test. However, if the true data generating process were trend stationary, failing to include a time trend also results in a reduction in power of the test. In addition, this loss of power from excluding a time trend when it should be present is more severe than the reduction in power associated with including a time trend when it is extraneous (Lopez et al, 2005). So, in this study I have also considered time trend for more robust results.

From table 1 and table 2, it is clear that some of the concerned variables are non stationary in their level. However, all the concerned variables are stationary in the first differenced form. The above results also imply that the variables would yield spurious results unless the variables are cointegrated.

These results, however, allow us to proceed to the next stage of testing for cointegration. Results of Johansen test for cointegration is given in table 3.

Table 3: Johansen Test for Cointegration (Maximum Eigen value Test)					
	Null Hypothesis	Alternative Hypothesis	Statistics	95% Critical Value	Conclusion
Economic Growth and Final Consumption Expenditures	None	At Most One	23.51	15.87	One Cointegrating Relationship
Economic Growth and Household Final Consumption Expenditures	None	At Most One	21.4745	11.0300	One Cointegrating Relationship
Economic Growth and Government Final Consumption Expenditures	None	At Most One	17.4931	12.3600	One Cointegrating Relationship
Johansen Test for Cointegration (Trace Test)					
	Null Hypothesis	Alternative Hypothesis	Statistics	95% Critical Value	Conclusion
Economic Growth and Final Consumption Expenditures	None	At Most One	24.01	20.81	One Cointegrating Relationship
Economic Growth and Household Final Consumption Expenditures	None	At Most One	21.9567	12.3600	One Cointegrating Relationship
Economic Growth and Government Final Consumption Expenditures	None	At Most One	15.0650	11.0300	One Cointegrating Relationship

In the ARDL model, firstly, the order of lags on the first differenced variables was obtained from unrestricted VAR model by means of SBC. ARDL model is very sensitive in choosing the order of the distributed lag function and including the trend in the model. In this paper, different lags have been considered to increase the robustness of the tests. Lag 1 is excluded because as a rule of thumb we should include more than one lag for the annual data. The computed F-test statistics for each order of lag is presented in the following table where F-statistics is highly significant in all the different lags considering with and without trend except one case (Lag 2) because under every circumstance computed F statistics is higher than the upper critical values at 5% significance level. As my main intension is to consider the long run relationship between the economic growth and final consumption expenditure, the results of the other two variables are not included in this section.

Table 4: ARDL Cointegration Test(F Test)		
Order of Lag	**F Statistics without Trend**	**F Statistics with Trend**
2	F(2,24)= 10.4905	F(2,21)=4.5245
3	F(2,21)= 6.5844	F(2,19)=2.7016
4	F(2,18)= 7.8558	F(2,17)=7.5037

The estimated coefficient of the ECM (–1) is equal to –0.076, suggesting that deviation from the long-term path is corrected by almost 7 per cent in the following year, meaning that the adjustment takes place very slowly.

Table 5: Estimated Error Correction Model in ARDL(1,1)		
ECM-ARDL: Dependent Variable dGDP		
Regressors	Coefficient	T-Ratio
dFCE	.30929	2.8778
dINT	-2.48E+10	-1.0385
ECM(-1)	-.076440	1.7242
Lag 2 is taken because in this lag, there is no autocorrelation problem. Trend is excluded from the model because it is not significant at any order of lag.		

The Granger causality test has been done and the results are reported in table 6.

Table 6(a) : Granger Causality Test Statistics		
Dependent Variable: DGDP		
Null: FCE does not cause GDP		
Regressor	**Coefficient**	**T-Ratio**
INT	5.94E+07	.010592
DFCE(-1)	.48114	3.5382
DGDP(-1)	.72399	7.8236
RES(-1)	-.068604	-1.0381
Table 6(b) : Granger Causality Test Statistics		
Dependent Variable: DFCE		
Null: GDP does not cause FCE		
Regressor	**Coefficient**	**T-Ratio**
INT	9.98E+09	1.6148
DGDP(-1)	.61203	6.6727
DFCE(-1)	-.11042	-.87507
RES(-1)	.17480	2.4364

The result shows that there is long run causal relationship running from final consumption expenditure to economic growth which is not the case in the other way. However bidirectional short run causality is found in the results.

5. Discussion on Results Obtained

Now, summarizing the results that I have obtained, I see that some of the macroeconomic variables are stationary with constant and trend in the level form. However, both the ADF and PP test reveal non stationarity among some of the variables which is somewhat expected. So before applying cointegration test, it need to be checked whether the variables are stationary or not in the first differenced form. Both ARDL and Johansen cointegration tests tell that all variables are cointegrated. The long run unidirectional causality running from RGDP to final consumption expenditure supports the conventional economic theory where consumption expenditure is considered as a stable function of income. The follower of Consumption-Led Growth might find this result ambiguous and conclude that there are some other sources of consumption than the conventional channels. And these other sources of consumption as they are not reflected in regular GDP will be reflected in unofficial economy. In that case I would expect that underground economy of Bangladesh will be very high. In fact, different measures of underground economy of Bangladesh has pointed out that the figure is at least 35% of official economy which is a large value and sufficient enough to distort results. (Schneider, 2004). One of the interesting findings of this study is that government consumption expenditure turns out to be unproductive in the short run which indicates government consumption expenditure does not accelerate economic activities in Bangladesh.

6. Conclusion

The main objective of this paper is to analyze empirically the dynamic relationships between consumption expenditure and output in Bangladesh by using time series data. This article uses the ADF and PP unit root test, Johansen and ARDL cointegration and Granger causality techniques to investigate the intertemporal relationship between final consumption expenditure and economic growth in Bangladesh. The empirical findings reveal a long run cointegrating relationship between final consumption expenditure and

economic growth in Bangladesh. The results of the Granger causality test indicate that there is long run unidirectional casual relationship running from economic growth to final consumption expenditure in the long run. So Wagner's hypothesis is supported by time series data for Bangladesh economy that means consumption is the result rather than the cause of growth which is a standard economic phenomenon.

As with other empirical studies, it is difficult to draw firm conclusions regarding the growth-consumption expenditure nexus. There are obvious problems with data inconsistency, classification of expenditure categories, and omitted factors affecting the growth process. Intuitively, productivity of different types of expenditures may be judged both on how they positively enhance private investments and to what extent they impact private incomes and consumption. Although some expenditure may be regarded as unproductive in theory, in practice they may affect individual incomes hence national income.

One of the main limitations of this study is that a bivariate model instead of a multivariable model is considered. There are many factors along with consumption expenditure that may affect the economic growth of a country. The model could be under fitted causing the model to be specification biased. Further research could be done to test the causality between public expenditure and economic growth in Bangladesh. A new direction for future research would be to examine the causal relationship between consumption expenditure, economic growth and pollution emissions.

REFERENCES

Abizadeh, S & Yousefi, M 1998, "An Empirical Analysis of South Korea's Economic Development and Public Expenditures Growth", *Journal of Socio-Economics*, Vol. 27, pp.687-700.

Ahsan S, Kwan A & Sahni B 1989, "Causality between Government Consumption Expenditures and National Income: OECD Countries", *Public Finance,* Vol.44, No.2, pp.204-224.

Amin, SB and Rahman A.F.M.Ataur 2010, "An Empirical Exercise of Money Output Relationship of Bangladesh Economy", *Bangladesh Journal of Political Economy*, Volume 22, No. 1 & 2, December 2010.

Ando A & Modigliani, F 1963, "The 'Life Cycle' Hypothesis of Savings: Aggregate Implications and Tests," *American Economic Review*, Vol.53, pp.55-84.

Ansari, MI, Gordon, DV & Akuamoah C 1997, "Keynes versus Wagner: Public Expenditure and National Income for Three African Countries", *Applied Economics*, Vol.29, pp.543-550.

Banerjee A, Dolado JJ & Mestre R 1998, "Error-Correction Mechanism Tests for Cointegration in a Single-Equation Framework", *Journal of Time Series Analysis*, Vol.19, Issue 3, pp. 267-83.

Barth JR, Keleher RE & Russek FS 1990, "The Scale of Government and Economic Activity", *Southern Economic Journal,* Vol.13, pp.142–183.

Cheng, BS & Lai, TW 1997, "Government Expenditure and Economic Growth in South Korea: A VAR Approach", *Journal of Economic Development,* Vol.22, No.1, pp.11-24.

Choudry, T 1995, "Long Run Money Demand Function in Argentina during 1935-1962: Evidence from cointegration and Error Correction Models", *Applied Economics*, Vol.27, pp.661-67.

Chimobi, OP 2009, “Government Expenditure and National Income: A Causality Test for Nigeria”, *European Journal of Economic and Political Studies*, Vol.2, pp.1-11.

Dogan, E 2006, “Government Expenditure and National Income: Causality test for five South East Asian Countries”, *International Business and Economics Research Journal*, Vol.5, No.10, pp.49-58.

Engle, RF & Granger CWZ 1987, “Co-integration and Error Correction: Representation, Estimation, and Testing”, *Econometrica,* Vol.55, pp.251- 76.

Friedman, Milton 2008, “Theory of the Consumption Function”, Princeton University Press..

Granger, CWJ 1969, ‘Investigating Causal Relations by econometric Models and Cross-Spectral Methods’, *Econometrica,* Vol.37, pp.424-438.

Granger, CWJ 1980, “Testing for Causality: A Personal Viewpoint”, *Journal of Economic Dynamics and Control,* Vol.2, pp.329-352.

Granger, CWJ 1988, “Some Recent Developments in a Concept of Causality”, *Journal of Econometrics,* Vol.39, pp.199-211.

Holmes, JM & Hutton, PA 1990, “On the Causal Relationship between Government Expenditures and National Income”, *The Review Of Economics and Statistics,* Vol. 72, pp.87-95.

Hsiao, C 1981, “Autoregressive Modeling and Money-Income Causality Detection”, *Journal of Monetary Economics*, Vol.7, pp.85-106.

Islam, AM 2001, “Wagner’s law revisited: cointegration and exogeneity tests for the USA”, *Applied Economics Letters*, Vol.8, No.509-515.

Johansen, S & Juselius, K 1990, “Maximum likelihood estimation and inference on cointegration with application to the demand for money, *Oxford Bulletin of Economics and Statistics*”, Vol. 52, pp 169–209.

Landau, D 1983, “Government Expenditure and Economic Growth: A Cross-Country Study” *Southern Economic Journal*, Vol.49, No.3, pp.783–792.

Landau, D 1986, “Government Expenditure and Economic Growth in the Less Developed Countries, an Empirical Study for 1960-80” *Economic Development and Cultural Change*, Vol.35, No.1, pp. 36-75.

Lopez, C, Murray, CJ & Papell, DH 2005, “State of the Art Unit Root Tests and Purchasing Power Parity”, *Journal of Money, Credit and Banking*, Vol.37, No.2, pp.361-369.

Modigliani, F & Brumberg, RH 1954, “Utility analysis and the consumption function: an interpretation of cross-section data,” in Kenneth K. Kurihara, ed.,Post-Keynesian Economics, New Brunswick, NJ. Rutgers University Press. Pp 388–436

Modigliani, F & Brumberg, RH 1990, “Utility analysis and aggregate consumption functions: an attempt at integration,” in Andrew Abel, ed., *The Collected Papers of Franco Modigliani: Volume 2, The Life Cycle Hypothesis of Saving*, Cambridge, MA. The MIT Press. Pp 128–197.

Pesaran, MH & Shin, Y 1995, “An autoregressive distributed lag modeling approach to cointegration analysis”, In: Strom, S., Holly, A., Diamond, P. (Eds.), Centennial Volume of Rangar Frisch, Cambridge University Press, Cambridge.

Pesaran, MH & Pesaran, B 1996, “Working with Microfit 4.0: Interactive Econometric Analysis”, Oxford, Oxford University Press.

Ram, R 1986, “Causality between Income and Government Expenditure: A Broad International Perspective”, *Public Finance*, Vol.41, No.3, pp.393-414.

Sakthivel, P & Yadav IS, 2007, “Causality between Public Expenditure and National Income in India: A Re-examination”, *The Icfai University Journal of Public Finance,* Vol.5, No.4, pp. 36-51.

Schneider, F 2004, “The Size of the Shadow Economies of 145 Countries all over the World: First Results over the Period 1999 to 2003”, IZA Discussion Papers, Institute for the Study of Labor (IZA).
Sims, CA 1980, “Macroeconomics and Reality”, *Econometrica*, Vol.48, pp.1-48.
Singh, B & Sahni, BS 1984, “Causality between Public Expenditure and National Income”, *The Review of Economics and Statistics*, Vol.66, pp.630-644.
Tang, TC 2001, “Testing the relationship between Government Expenditure and National Income in Malaysia”, Vol. 8, No.1 & 2, pp. 37-51.