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DISAGGREGATED IMPORTS AND ECONOMIC GROWTH IN NIGERIA.

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ABSTRACT: *This study examines how much of the variance in economic growth can be explained by various categories of imports in Nigeria. The study is set to investigate whether it is the import-led or export-led growth hypothesis that holds for Nigeria. The Johansen testing approach to cointegration and the standard desk top pairwise Granger-causality test technique were implimented to achieve this objective. The cointegration test results demonstrate that the relationship between economic growth and decomposed import variables in Nigeria are stable and coalescing in the long run. Particular categories of interest in this study are Food & Life Animal, Manufactured Goods, and Machinery & Transport Equipment as the trio constitute over 75 percent of aggregate import bills during the period under review. Evidence from the pairwise granger casualty tests, contrary to expectation, suggests that import-led growth hypothesis does not hold for Nigeria. These results cannot be divorced from certain factors such as lack of capacity to take advantage of the advanced technologies embodied in the imported capital goods, inability to sustain installed manufacturing capacity and corrupt practices in procurement processes, associated with contracts for the importation of manufactured and capital goods for most failed capital projects.*

KEYWORDS: Disaggregated Imports, GDP Growth, Exports, Cointrgration, Granger Causality

INTRODUCTION

A vast empirical literature exists that explores the relationship between exports and economic growth. The export-led growth (ELG) hypothesis implies that an expanding export sector is a significant determinant of the long-run economic growth of an economy. The basic argument put forward was that whereas exports stimulate economic growth primarily from the demand side, they also produce efficiency gains by way of global competition on the supply side.

Lately, import-led growth has been more in focus, and faster growing developing countries have experienced much activity emerging from importing. Import-led growth emphasizes the process of modernization and transfer of advanced technology through acquisition of much needed sophisticated capital and material. In addition, many studies provided empirical evidence in support of the export-led growth hypothesis by showing that exports had a significant positive effect on productivity and economic growth. In *The East Asian Miracle*, the World Bank (1993) was of the view that it was the export-promoting policies of East Asia at that point in time that was responsible for accelerated economic growth through the adoption of modern technologies, which enhanced the productivity of exporting firms and economies in general. A lot other studies in this direction provided empirical evidence in support of the export-led growth hypothesis by showing that exports had a significant positive effect on economic growth. The above World Bank report was criticised by Lawrence and Weinstein (1999) who observed that the Bank concentrated only on the export-

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growth relationship, thus ignoring the role of imports in promoting productivity. On the above note, Lawrence and Weinstein commissioned studies that incorporated imports and found that protection was actually harmful to productivity growth, and exports did not enhance productivity whereas imports did for Japan, the US and Korea. Such findings suggest that learning, innovation and competitive pressures resulting from relevant imports are important catalyst for increased total factor production (TFP) and economic growth.

Nigeria's aggregate imports have grown substantially since independence in 1960; from an average annual growth rate of 2.5% during the 1960s, 33% between 1970 and 1989, all record high of 65.27% in the 90s and dropping to average of 21.51% per annum between 1999 - 2008. Imports enhance productive efficiency through transfer of modern technologies embodied in both manufactured and capital goods imports to the benefit of the domestic economy. Despite the fact that Nigeria's average aggregate imports have kept a substantial rising profile within the period under review, the growth in the domestic economic activities in relative terms appears non responsive and this calls for investigation. To this effect, this study is set to determine causal effect of the import-economic activity relationship in Nigeria. The remainder of the paper is organized as follows. Section 2 discusses the review of the related literatures; section 3, presents the empirical specification of the model; Section 4, contains the empirical results; and conclusions of the study are drawn in Section 5.

REVIEW OF LITERATURE

The theoretical relationship between imports and productivity tends to be more complicated than that between exports and productivity. Increased imports of consumer products encourage domestic import-substituting firms to innovate and restructure themselves in order to compete with foreign rivals; therefore, imports enhance productive efficiency. Under perfect competition in the neoclassical model, an industry reduces factor usage in the short run when trade barriers are removed and the market is opened up to imports. In the long run, however, the industry becomes more productive and competitive, and expands its investments in new technology, resulting in a rightward shift of the industry supply curve (Haddad et al., 1996). In general, the effect on productivity of opening the market depends on both market structure and institutional factors. Under imperfect competition, an import-substituting domestic market shrinks as imports increase, causing investment to fall and thereby productivity to eventually fall (See Tybout, 2000). Furthermore, higher future expected profits lead to more active R&D investment and innovation efforts, and such R&D may be greater for exporting firms than for import-substituting firms in light of the large impact of market opening. Imports of capital goods and intermediate goods which cannot be produced domestically enable domestic firms to diversify and specialize, further enhancing their productivity (See Grossman and Helpman 1991, Sjoeholm 1999 and Tybout 2000).

Helpman and Krugman (1985) argue that an expanding export sector increases productivity by offering greater economies of scale. Second, in view of the fact that most developing countries suffer from a foreign exchange constraint, exports relieve that constraint and allow these countries to import essential inputs and capital goods that embody sophisticated technology that are not produced domestically (see, Esfahani, 1991 and Serletis, 1992). In the same direction, it has been suggested that capital goods imported from the world's technologically most advanced countries may have exceptionally large externalities (Lee, 1995). Thus, without imports in the production estimating equation, the results will be biased.

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Furthermore, it has been identified that the major sources of technical innovations resulting in productivity growth in most of the OECD countries are traceable to external economies rather than domestic economies (Eaton and Kortum, 1999; Keller, 2002). This suggests that importance of international permeation of technology in determining the level of a developing nation's per capita income cannot be overemphasised. Furthermore, Sangho, et al., (2007) using quarterly data from 1980 to 2003, investigate the relationship between exports, imports, and economic Growth in Republic of Korea. Results indicate that imports have a significant positive effect on productivity growth but exports do not. Furthermore, the evidence reveals that the productivity-enhancing impact of imports is due to competitive pressures arising from consumer goods import and technological transfers embodied in capital goods import from developed countries. Most of the study's results still hold using gross domestic product growth rather than productivity growth as the measure of economic growth. The evidence implies that in certain conditions, import liberalization can make a positive and significant contribution to economic growth and development.

An extensive empirical literature exists on the relationship between exports and growth, largely because of its bi-directionality. In fact, much of the empirical literature on trade and productivity defines trade as exports rather than imports. Therefore, relative to the empirical literature on exports and productivity, the number of empirical studies on the relationship between imports and productivity is quite limited. From Adam Smith's discussion of specialization and the extent of the market, to the debates about import substitution versus export-led growth, to recent works on increasing returns and endogenous technological progress, economists interested in the determination of standards of living have also been interested in trade. But despite the great effort that has been devoted to studying the issue, there is little persuasive evidence concerning the effect of trade on income (Frankel and Romer, 1999)**.** In **N**igeria, studies on import and growth are relatively scarce. This justifies author's decision to investigate the effect of import demand on economic growth using decomposed import variables for better informed trade policy decisions and equally add to economic literature of Nigeria.

MODEL SPECIFICATION/EMPIRICAL METHODOLOGY

To the best of our knowledge, most of the earlier studies are using aggregate import and studies on the effect of disaggregate import on economic growth is relatively few. Therefore, an empirical study on the relationship between import and economic growth from the disaggregated import perspective for Nigeria is of utmost importance. To this effect, this paper examines the relationship between imports and growth in GDP in Nigeria using the model specification which relates GDP with decomposed import variables during the period 1961-2008 to determine the effects of different import components on economic activities. Imports for the period under review are disaggregated into various components and included in a productivity determination equation for the purpose of investigating the import–GDP growth relationship in more detail for better informed trade policy decisions. The study attempts to extend the conventional growth model specification by disaggregating the imports data into nine categories of imports as: Manufactured goods (MFG), Machinery, transport and equipment (MCHTRAQ), Food and life animal (FOLA), Beverages and tobacco (BEVTA), Crude minerals inedible (CRUMI), Mineral fuel (MFUEL), Animal vegetable oil and fats (ANIVEGO), Chemicals (CHEMIC), and Miscellaneous transactions (MISCTRAN). Therefore, the following augmented model is estimated:

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$$L\Delta GDP = B_o + B_1L\Delta MFG + B_2L\Delta MACHTRAQ + B_3L\Delta FOLA + B_4\Delta LBEVTA + B_5\Delta LCRUM + B_6L\Delta MFUEL + B_7L\Delta ANIVEGO + B_8L\Delta CHEMIC + B_9L\Delta MISCTRAN + \varepsilon_t \quad (1)$$

Where: GDP = aggregate economic activity, Δ = rate of variations in employed variables, L = Logarithm, B_o = Constant, $B_{1...9}$ = Explanatory power of the variables and ε_t = Stochastic error term.

As we are aware, import is not the only contributor to economic growth. Export is considered as one of the very important contributors amongst others. In as much as most of the empirical studies support the export-led economic growth hypothesis, there is yet no consensus on this issue. For instance, while some studies (Krueger, 1978; Chenery, 1979; Balassa, 1985; Ram, 1985, 1987; Fosu 1990) appear to find support for export-led growth, others as: (Jung and Marshal, 1985; Kwan and Cotsomitis, 1990; Ahmad and Kwan, 1991; Oxley, 1993; Yaghmaian, 1994; and Ahmad and Harnhirum, 1995) did not find much support for export-led economic growth hypothesis. To this effect, and for purpose of comparison, this study employs Thirlwall's theory which regards exports as an important exogenous variable that can significantly affect economic growth through influencing consumption, investments and government expenditure, to also investigate and determine the export-economic growth relationship in Nigeria. We therefore follow the path of Thirlwall and others' theories and specify the export-led growth econometric models as follows:

$$L\Delta GDP = \alpha + L\Delta\beta x + \mu \quad (2)$$

or

$$L\Delta GDP = \alpha + L\Delta\beta x + L\Delta G + \mu \quad (3)$$

where x *and G* denote exports and government expenditures respectively. All the variables are still expressed in logarithmic terms (L) for the usual statistical reasons, α represents constant and μ, the stochastic error terms. The only difference between the two models is just the inclusion of government expenditure as an autonomous variable in equation (3).

RESULTS AND DISCUSSIONS

In this section, we provide the benchmark test of the significance of the independent variables in equations 1, 2 and 3 in explaining the impact trade on aggregate economic activity in Nigeria.

Unit Root Tests Results

It is almost a convention in time series analysis, to verify the order of integration for each series to avoid the perennial problem of spurious regression (see Granger and Newbold, 1974; Phillips, 1986). The enquiry into stationary property of each variable is conducted using Augmented Dickey-Fuller (Dickey and Fuller, 1979) and Phillips-Perron (Phillips and Perron, 1988) test procedures. The Phillips-Perron test method which computes a residual variance that is robust to auto-correlation is employed as alternative to the ADF. The results of the unit root tests, (see table 1 in the appendix), suggest that at both level and first-difference, the unit root hypothesis cannot be rejected at 1 percent significance level for all

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the variables. This in effect suggests that all the employed data series are non-stationary and thus quite suitable for the purpose intended.

Test for Pairwise Granger Causality

The simplest standard causality test is the pairwise Granger causality test, which is a bidirectional test for Granger causality vis-à-vis only two variables. This tool is employed in this study. Our empirical results, as presented in table 2 in the appendix, indicate that the hypothesis that decomposed import variables do not granger cause GDP growth cannot be rejected for 8 out of the 9 categories of imports variables in the estimation equations. The only exception is the crude minerals inedible (CRUMG) category which significantly causes GDP growth. The categories of interest in this study are, Food & Life Animal (FOLAG), Manufactured Goods (MFGG), and Machinery & Transport Equipments (MTQG). The trio constitute over 75 percent of aggregate import bills during the period under review. As seen above, none of these categories granger causes GDP growth in Nigeria.

For manufactured goods category, these results may not be unconnected with inconsistent trade policies and perennial problems of importation of manufactured goods of no value in their countries of make (inferior and sub-standard goods) which most times are confiscated and destroyed without recourse to the value transferred and even if they find their ways into the domestic economy, the earned value is grossly inadequate vis-à-vis the value in exchange for them abroad. Furthermore, increased importation of consumer goods generates market competition. Better competition from imports get import-substituting firms to become more competitive by improving on quality of their products and/or cutting costs to generate GDP growth through adopting more efficient production techniques, engaging in innovation, and pursuing cost-cutting restructuring. But with the importation of fake, inferior and sub-standard goods as is the case with Nigeria, the above growth process is not initiated. All these may have combined to account for the non responsiveness of GDP to manufactured goods imports in Nigeria.

For the machine & transport equipment category, the contribution of capital goods imports from developed countries to the GDP growth is largely through technology transfer effect, which translates to improved quality and/or reduced costs of both tradable and none tradable domestic products. Quite unlike consumer goods, capital goods such as machines and transport equipment are used to produce other goods. Therefore, the main effect of capital goods imports is to import the technology embodied in the goods and thus bring about a more efficient production of other goods and services. The granger causality tests results indicate that importation of capital goods failed to cause GDP growth during the period under review. This result may stem from the following: (i) Some of the imported capital goods are never installed and put to use for the purpose of growing the economy, due to inadequate human capital to effectively take advantage of the imported technological innovations. (ii) In addition, the average manufacturing capacity utilization (AMCU) rate of the installed capacity in Nigeria has witnessed downward trend within the period under review as follows: 78.7% in 1977, 70.1% in 1980, 40.3% in 1990, and 36.1% in 2000 and 53.38% by 2008 (CBN, 2008). (iii) Corrupt practices in public procurement associated with contracts for the importation of capital goods for capital projects such as several failed Turnaround Maintenance (TAMs) of the Nation's refineries, power sector projects, Ajokuta Steel projects etc, which most times resulted in funds being transmitted overseas without value in return for them. The combined effect of all these among others must have been responsible for lack of

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causality between capital goods import and the GDP and negative coefficient of the import of capital goods variable as identified in the estimation equation.

To test for structural stability of the estimated coefficients and functional misspecification, we also plot the cumulative sum (CUSUM) and cumulative sum squares (CUSUMSQ) using the information contained in the estimated residuals. According to the CUSUM (fig.3) and CUSUM OF SQUARE (fig. 4) test results in the appendix, the recursive residuals are within the critical 5% significant lines, which indicate the absence of structural change or misspecification in the estimated model. This suggests that the stability of the parameter estimates is verified.

CONCLUDING REMARKS

Utilizing annual data drawn from Nigeria for the period of 1960-2008, this paper has examined the validity of import-led and export-led growth hypotheses for Nigeria based on Cointegration analysis, and causality test procedures. For this purpose, empirical investigation of the stationary properties and the order of integration of the employed variables are conducted using Augmented-Dickey Fuller (ADF) and Philips Peron tests. The results show that all the variables were non stationary at both level and their first difference. Since the variables are integrated of 1 (1), we applied co-integration test to the regression model. The import-led growth hypotheses was investigated using Johansen cointegration test and found that the null hypothesis of no co integration (r = o) between the dependent and independent variables in the estimation equation cannot be sustained, as evidence of long run steady state relationships among the variables were identified for all the estimation models. All the diagnostic tests confirmed the stability and absence of structural change or misspecification in the estimated model.

Evidence from the pairwise granger casualty tests suggests that the import-led growth hypothesis does not hold for Nigeria. These results could be attributed to several factors such as lack of capacity to take advantage of advance technologies embodied in the imported capital goods, inability to sustain installed manufacturing capacity and corrupt practices in procurement processes associated with contracts for the importation of manufactured and capital goods for most failed capital projects.

These empirical findings have significant implications for policymakers: (1) Nigeria's policy on education should prescribe for more emphasis on technical education in the areas of Engineering and information Technology. This will serve to bridge the manpower lacuna by vigorously pursuing capacity building and manpower development programmes that will enable us effectively download and transfer the modern technologies embodied in both manufactured and capital goods imports for the domestic economy to benefit from the expected technology diffusion. (2) In this era of globalization, the current Trade liberalization policy should be sustained, but must be fortified with control mechanisms to ensure zero tolerance for corrupt practices (corruption proof). This will eliminate or at least reduce to the barest minimum the rate at which fake, inferior and sub-standard goods, that are of no value in their countries of make, are exchanged for our hard earned foreign exchange. Such policies should incorporate severe sanctions for the economic saboteurs. (3) Finally, the energy problem in Nigeria should get priority attention in order to resuscitate many manufacturing and production outfits, which were products of imported machineries and equipments with

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the attendant technologies, but have downed tools due to very high and unsustainable operating costs.

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APPENDIX

Table 1. ADF and PP Unit Root Test

Variables	DF		Phillips Peron		Decision
	Intercept	Trend/Intercept	Intercept	Trend/Intercept	
LGDPG	-7.0678(1)	-7.2036(1)	-7.0695(1)	-7.2045(1)	1(1)*
ΔLGDPG	-6.8043(1)	-6.7842(1)	-41.4150(1)	-50.1657(1)	1(1)*
LMFGG	-7.9685(1)	-8.3732(1)	-7.9801(1)	-8.5316(1)	1(1)*
ΔLMFGG	-9.9685(1)	-9.7441(1)	-35.0639(1)	-35.4190(1)	1(1)*
LMTQG	-7.8824(1)	-7.8080(1)	-7.8608(1)	-7.7919(1)	1(1)*
ΔLMTQG	-9.9371(1)	-9.8838(1)	-23.7478(1)	-24.9453(1)	1(1)*
LFOLGG	-7.7182(1)	-7.7781(1)	-7.8720(1)	-7.7234(1)	1(1)*
ΔLFOGG	-11.4092(1)	-11.2920(1)	-18.7655(1)	-18.5638(1)	1(1)*
LCHEMIG	-6.8726(1)	-6.9767(1)	-6.8731(1)	-6.9767(1)	1(1)*
ΔLCHMIG	-8.3543(1)	-8.2675(1)	-27.4283(1)	-27.9664(1)	1(1)*
LCRUMIG	-6.6850(1)	-6.7201(1)	-6.6848(1)	-6.7201(1)	1(1)*
ΔLCRUMIG	-8.5852(1)	-8.4965(1)	-28.3248(1)	-27.6753(1)	1(1)*
LMFUELG	-6.8516(1)	-6.8628(1)	-6.8516(1)	-6.8628(1)	1(1)*
ΔLMFUELG	-8.8037(1)	-8.7103(1)	-25.5865(1)	-25.7774(1)	1(1)*
LANIVEGOG	-8.0657(1)	-8.0204(1)	-7.9728(1)	-7.9346(1)	1(1)*
ΔLANIVEGOG	-10.1780(1)	-10.0631(1)	-14.6441(1)	-14.4911(1)	1(1)*
LBEVTAG	-7.0395(1)	-7.1261(1)	-7.0395(1)	-7.1261(1)	1(1)*
ΔLBEVTAG	-7.9458(1)	-7.8648(1)	-48.4953(1)	-52.2277(1)	1(1)*
LMISCTRANG	-7.6933(1)	-7.6374(1)	-7.7272(1)	-7.6730(1)	1(1)*
ΔLMISTRANG	-7.9161(1)	-7.8337(1)	-34.5324(1)	-35.6351(1)	1(1)*
LXG	-7.559(1)	-7.589(1)	-7.605(1)	-7.687(1)	1(1)*
ΔLXG	-6.538(1)	-5.021(1)	-38.391(1)	-43.188(1)	1(1)*
LGG	-5.903(1)	-6.990(1)	-5.921(1)	-5.987(1)	1(1)*
ΔLGG	-11.384(1)	-11.257(1)	-24.762(1)	-24.663(1)	1(1)*
LMG	-7.519(1)	-7.628(1)	-7.519(1)	-7.627(1)	1(1)*
ΔLMG	-7.045(1)	-6.466(1)	-40.301(1)	-42.037(1)	1(1)*

Note: The test was performed using E-view version 6.0 Econometric package.

*. **. ***. represent 1%, 5% and 10% significant level respectively.

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Table 2. Granger Causality Tests for the Relationship between GDP Growth and Decomposed Import Variables for Nigeria, 1961 – 2008.

Null Hypothesis (H_o)	F – Statistic	Probability	Decision
LMFGG ≠> GDPG	0.965	0.389	not rejected
LMTQG ≠> GDPG	2.448	0.098	not rejected
GDPG ≠> LMTQG	4.003	0.025	reject
LAVOG ≠> GDPG	0.098	0.911	not rejected
LGDPG ≠> LAVDG	1.757	0.185	not rejected
LBEVTAG ≠> GDPG	0.380	0.685	not rejected
GDPG ≠> LBEVTGG	7.272	0.002	rejected
LCHEMG ≠> LGDPG	2.138	0.130	not rejected
LGDPG ≠> LCHEMG	0.192	0.825	not rejected
LCRUMG ≠> LGDPG	3.378	0.044	rejected
LGDPG ≠> LCRUMG	0.380	0.685	not rejected
LFOLAG ≠> LCRUMG	0.152	0.859	not rejected
LGDPG ≠> LFOLAG	1.187	0.315	not rejected
LMFUELG ≠> LGDPG	1.439	0.248	not rejected
LGDPG ≠> LMFUELG	0.190	0.827	not rejected
LMISCTRANG ≠> LGDPG	0.993	0.378	not rejected
LGDPG ≠> LMISCTRANG	0.435	0.649	not rejected

Note: The test is conducted using E-view Version 6.0 Econometric Package.

Figure 1: CUSUM TEST

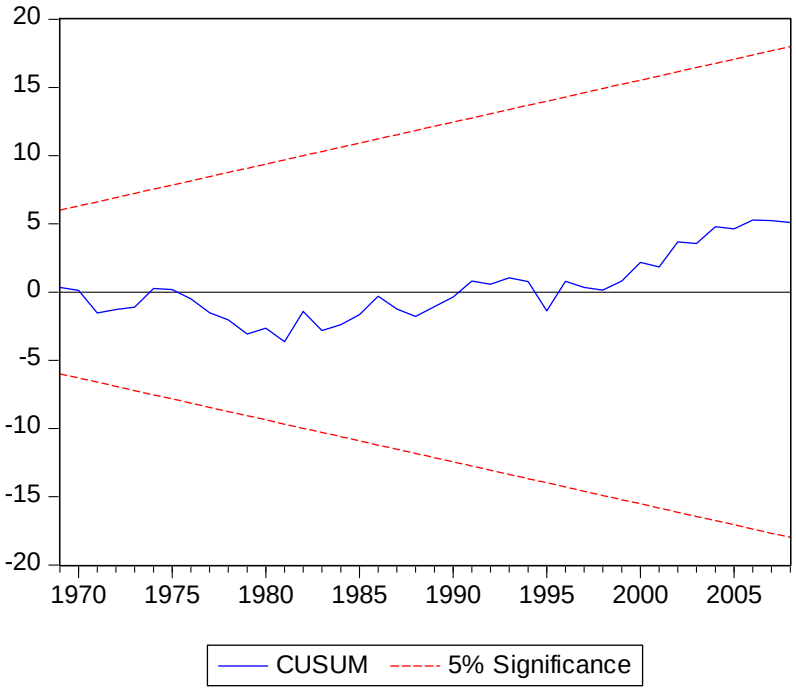

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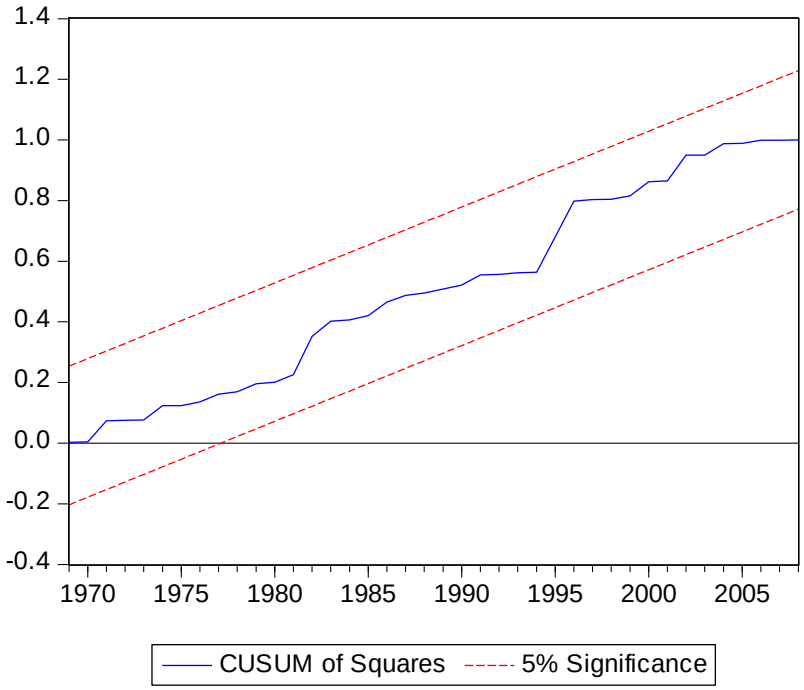
Figure 2: CUSUM OF SQUARE TEST



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