The ECOWAS Common External Tariff (CET) and Macroeconomic Performance in Nigeria

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Abstract

This study aims at providing empirical relationship between ECOWAS Common External Tariff and macroeconomic variables in Nigeria. The study made use of quarterly time series data between 2005:01 to 2012:04. The vector error correction model (VECM) model was used to measure the impact of CET on macroeconomic variables in Nigeria. The results revealed that common external tariff (ET) explained (0.006%) in the variance of domestic output (DO) in the 2nd period and rose sharply to (0.02%) in the 4th period. The effect of common external tariff (ET) on the explained variance of domestic output (DO) declined from (0.07%) to (0.08%) at both 6th and 7thperiod respectively. However, common external tariff effect (ET) on the variance of domestic output (DO) decline to (0.08%) at the 8th periods and stabilized at (0.11%) until the 15th period. The study observed that ECOWAS common external tariff (ET) have a positive but minimal effect on macroeconomic performance in Nigeria.

Keywords: Common External Tariff, Domestic Output, government expenditure, Balance of Trade

I. Introduction

Africa has shown an increased degree of having regional integration as a move towards achieving economic development. Some of the regional and sub-regional bodies formed in recent years include: the Common Market for Eastern and Southern Africa (COMESA), the Southern African Development Community (SADC), Economic Community of Africa (ECA), Western Africa Economic and Monetary Union (WAEMU), and the Economic Community of West African States (ECOWAS). These regional bodies have tended to give their members the possibility of specialization and taking advantage of economies of scale and the possibility of trade in likes or intra-industry trade (Kaluwa and Kambewa, 2009).

Nigeria joined other members of the Economic Community of West African States in adopting a common external tariff (CET) in 2005 with the sole aim of removing all form of barriers in trade and charging a uniform tariff against the rest of the world. ECOWAS is comprised of fifteen member states, eight of which belong to a separate regional grouping, that is, the West African Economic and Monetary Union (WAEMU) composed primarily of states in francophone West Africa. Adoption of the WAEMU CET is necessary for (non-WAEMU) ECOWAS states in order to support the goal of deepening economic integration throughout the ECOWAS region. The proposal was for the adoption of a four-band tariff structured as follows: 0 percent (for products with social significance, such as medicine), 5 percent (for necessities and raw materials), 10 percent (for intermediate goods) and 20 percent (for finished consumer goods).

Prior to trade policy reforms among ECOWAS countries, exports within the region was distorted by export taxes, overvalued currencies, export licensing, existence of monopoly marketing boards and high import duties. Trade policy reform could be said to have moved rapidly in many ECOWAS countries in the 1990s through the adoption of a combination of unilateral and regional modalities. However, existing studies on the extent of CET adoption and its effect on regional trade agreement among member countries are very few and inconclusive. Therefore, the need to examine the ECOWAS common external tariff (CET) and its effect on macroeconomic performance in Nigeria, hence, this study.

II. Survey of Literature

Regional trade agreements are an increasing important element of the global trade environment. Indeed, it is estimated that between 50 and 60 per cent of global trade now benefit from regional preferences (WTO, 2005). African countries and regional economic communities (RECs) are engaged in the establishment of free trade areas, customs union and common markets, and currency and custom unions. These objectives can be achieved through trade liberalization programmes focussing on goods as well as services, mechanisms for the free movement of persons and of factors of production, harmonization of tax and currency policies. At the sub-regional level, quite a number of RECs are implementing trade liberalization programme aimed at eliminating tariff and non-tariff barriers, adoption of common external tariff against the rest of the world and facilitating the free movement of another in terms of characteristics, time frames, modalities and pace, but there are a number of common features, such as mechanism for the creation of free trade areas, customs unions and common markets within set time frame.

The study adopts the Viner (1950) theory of regional trade agreements (RTAs). The theory drew the distinction between trade-creating and trade-diverting effects resulting from regional trade agreement (RTA)

formation. Viner's contribution showed that even though an RTA liberalizes trade by reducing at least some barriers, it does not necessarily follow that this will generate net gains from trade. Net gains would be expected if all barriers to trade are reduced on a non-discriminatory basis, but RTAs by their nature discriminate against nonmembers. In regional trade agreements (RTAs) distortions between sources of supply are not eliminated, but are shifted. If partner country production displaces higher cost domestic production then there will be gains, or trade creation. However, if partner country production displaces lower cost imports from the rest of the world, this is trade diversion. (Geloso-Grosso, 2001) Since distortions may likely remain in some activities in the economy, it may not be necessarily true that removing part of the distortions (for example, eliminating trade barriers on UEMOA members but maintaining them on non-members within the ECOWAS countries) is welfare improving. However, it has been argued that for any proposed customs union or free trade area there could be a set of common external tariffs that would precisely leave the new trading bloc's trade with non-member countries unchanged, so preventing trade diversion from taking place. Member countries in a regional trade agreement (RTA) can be affected through different mechanism. One of such mechanisms is when the external barriers of a regional arrangement are low; the potential for trade diversion is low because lower external tariffs offer less scope for the displacement of imports from non-member countries. Also, market enlargement allows firms to exploit economies of scale more fully within a regional trade agreement. The possibilities are that firms in member countries will likely produce greater quantities of products after formation of a regional trade agreement. This therefore occurs as trade preferences which results in demand shift in favour of intra-regional trade to enable these firms achieve greater economies of scale and lower output prices as they capture (and create) larger markets for their outputs at home and abroad. Finally, according to Smith and Venables (1988), RTAs may successfully erode market power of dominant firms in participating countries through encouraging market entry of competing firms from other member countries, bringing lower prices.

Thus, the potential advantages of trade liberalization and integration for African countries are firmly rooted in a theory of economies of scale. The small size of most SSA economies points to unification as a useful means of expanding markets and increasing participation in the global economy. Consequently, a relaxation of trade restrictions within a given region could reduce internal transport costs, stimulate intraregional trade, and ultimately increase the growth and productivity of member states. Additionally, intraregional liberalization could encourage African countries to adopt a more outward-oriented attitude towards trade instead of the protectionist, inward-oriented mentality which frequently exists. (Ajayi, 2005)

Similarly, the adoption of the CET constituted a significant structural reform in Nigerian economy which resulted in a move from a complicated tiered tariff regime structure to the adoption of a simplified five-band tariff regime (Ajayi and Osafo-Kwaako, 2006). The predominance given to liberalization schemes as tools for intracommunity trade expansion should not conceal the fact that trade liberalization schemes have fairly different implementation profiles from one sub-region to another. Some of the RECs are still in the early stages in terms of implementation of free trade area, while others have reached the level of a custom union with common external tariff in place. Nnanna (2006), opined that, the mandate given to ECOWAS under its treaty is as follows: the elimination of customs duties and other charges of equivalent effect in respect of importation and exportation of goods and services between member states; the abolition of quantitative and administrative restrictions on trade among the member states; the establishment of a common external tariff and a common commercial policy towards the third countries; the removal of obstacles to the free movement of persons, services and capital; the harmonization of agricultural policies and the promotion of common projects notably in the field of marketing, research and agro-industrial enterprises; development of joint transport, communication, energy and other infrastructural facilities as well as the evolution of common policy in these fields; the establishment of a fund for cooperation and development and such other activities that could further aim of the community as may from time to time be undertaken in the common member states.

Iyoha (2005), pointed out that the increasing marginalization of Africa in worlds trade has been aggravated by the excessive dependence of African countries on the European exports markets. In 1988, the European Community alone absorbed over 60% of exports of many commodities from Africa. Yet, intra-African trade accounted for less than 6% of Africa's total trade. This low degree of intra-regional trade compares unfavourably with Latin America (15%) and Asia (43%). With the industrialization countries placing more and more tariff and non-tariff barriers on the manufactured exports of developing countries and the attainment of a single European market, it is obvious that continued over-dependence on the European market will become even more unrealistic and counterproductive. In fact, until African countries resolve to increase intra-regional trade, the continent will continue to be marginalized in the world trade and become increasingly irrelevant in global tariffs are higher against regional partners than countries outside the region. The optimal tariffs shift rents from foreign firms to domestic citizens. Lower transport costs imply higher rents and therefore higher tariffs. So regional free trade agreements have a higher pay-off than non-regional free trade agreements. Therefore, adoption of the common external tariff provided an opportunity of streamlining external tariff, ensuring that the tariff regime was

simplified, transparent and predictable (Ajayi and Osafo-Kwaako, 2006).

Cooperation among developing countries for the expansion of trade in general and regional trade agreements RTAs has been subject to controversy in the literature between neoclassical/neo-liberal economists and their opponents. The proponents of universal free trade have argued against discriminatory trade agreements, in general, and FTAs among developing countries for the expansion of S-S trade, in particular. For example, it has been argued that regional integration among developing countries would result in diversion of some trade from low-cost to high-cost producers and would involve welfare costs, so it is undesirable and unconvincing (Viner, 1950 and Greenaway and Milner (1990). Corden (1993) goes even further, arguing that developing countries will be far better off if they liberalize their trade regime "unilaterally in a non-discriminatory fashion" rather than targeting markets in the South. Some others argue that RTAs between the South and North are more advantageous than RTAs among developing countries (World Bank, 2000, Moen, 1998 and Subramanian and Tamirisa, 2001); that "South-South trade does not clearly have a vast development potential", as the theory of comparative advantage would indicate that "North-South trade would achieve higher gains" and "the potential for trade based on economies of scale among relatively small and poor countries of the South is uncertain" (Kowaski and Shepherd, 2006). However, inefficiency of regionalization has been disproved empirically (e.g. Ng, 2003; Baier, Bergstrand and Vidal, 2007); regionalism has trade creation effects not only for members but also for trade with third parties (Cernat, 2003). The neo-liberal views against S-S trade are based on their ideological bias in favour of universal free trade, which is, in turn, based on the static version of the theory of comparative cost advantage. This theory is based, further, on hypothetical and unrealistic assumptions, including full employment of resources, availability of the same technology to all countries, independence of present and future costs of production, as well as the lack of influence of experience on the production cost, the lack of external economies, atomistic units of production, constant returns to scale and the lack of risk and of influence of power in trade. The opponents of South-South trade do not take into account the characteristics of developing countries, such as underemployment of resources and their lack of technological capabilities; existence of scale economies in many manufacturing industries, and the inter dependence of present and future costs.

In the same context, contrasting Neo-classical theorists, Kaldor (1972) suggested that developing countries should be concerned mainly with promoting "creative efficiency" (growth and development) rather than allocative efficiency, (i.e. allocation of given and "fully employed" resources among different activities efficiently) which is the concern of the static theory of comparative cost advantage. In other words, they should be concerned with attaining dynamic comparative advantage for the sake of promoting "creative efficiency". However, to attain dynamic comparative advantage requires actions by the government; it will not be attained automatically through the operation of market forces alone (Cline, 1983; Amsden, 1992; Shafaeddin, 2005a and 2005.b).

List (1856) introduced, inter alia, the idea of regional integration in his proposal for German unification and cooperation among European countries, which eventually led to the signature of the Treaty of Rome in 1958. In the early 1950s, Prebisch (1984) provided the strongest dynamic argument for regional integration in developing countries in the context of his theory of "collective import substitution" for industrialization and upgrading of the industrial structure (Prebisch, 1984, Shafaeddin, 2005a). For many years, following the initial ideas of Prebisch, arguments in favour of S-S trade cantered mainly on the issues of small size of the domestic market, economies of scale, problems of access to developed country markets (see, for example, UNCTAD, 1986and Agatiello, 2007) or a slowdown in growth rates of developed-country economies thus growing potential for S-S trade expansion (South Centre 1996). Some elements of these arguments are no longer valid. For example, access to markets of the North has improved considerably. Moreover, the experience of 1960s and 1970s has shown that S-S trade will not necessarily expand, even when regional preferential or free trade agreements are signed among a number of developing countries (de Melo and Panagariya, 1993). One argument in favour of, S-S trade is that, trade among equal partners will have a positive influence on the net barter terms of trade (Sarkar and Singer, 1991). Another is that too much reliance on trade with the North will increase vulnerability and risks of dependence on trade (Hirschman, 1968). But, it should be noted that geographical diversification would be possible only to the extent that alternative sources of supply are available in the South as many developing countries have similar production structure and depend on production and exports of primary commodities.

Similarly, Mengistae and Teal (1998) examined the role of trade liberalization, regional integration and firm performance in Africa's manufacturing sector. Their study attempt to understand the role of regional trade and its effects on the performance of firms. The evidence from the study revealed that unilateral tariff reductions have enhanced regional trade. Regional trade can be a method for firm growth provided it is treated as a stepping stone to the international market and used as a device to protect firms that cannot compete international. Members' countries in a RTA can be affected through different mechanism. One of such mechanisms is when the external barriers of a regional arrangement are low; the potential for trade diversion is low external tariffs offer less scope for the displacement of imports from non-member countries. Consequently, a relaxation of trade restrictions within a given regional could reduce internal transport costs; stimulate inter-regional trade, and ultimate increase the growth and productivity of member states.

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III. **Data and Methodology**

This study uses guarterly time series data sourced from the Central Bank of Nigeria (CBN) 2012 edition. For the purpose of analysing and forecasting macroeconomic activity and tracing the effect of policy changes and innovations on the economy, scholars have found that simple, small scale VARs without possible flawed theoretical foundation have proved as good or better than large scale structural equation system, (Greene, 2008). The quarterly data is used in order to allow for tracing out the effect of CET adoption on economic performance in Nigeria more precise than with annual data. The study adopts vector error correction mechanism (VECM) model. The VECM model allows the long-term behavior of the endogenous variables to converge to cointegrating (i.e. long term equilibrium) relationships while allowing a wide range of short term dynamics. Thus, testing for cointegration in the data is necessary step in this analysis, because the presence of cointegration may influence the final form of the model, as it makes the variables meaningful, and do not lose any valuable long term information which would result if we were to use their first difference instead. To test for cointegration, the conventional Johansen cointegration procedure will be used.

The research study considers a vector of four variables:

 $\Delta X_t = [\Delta G E_t, \Delta B T_t, \Delta D O_t, \Delta E T_t,]$

Where $X_t =$ is a 4×1 vector of variables,

 GE_t = the total government expenditure;

 BT_t = balance of trade;

 DO_t = domestic output; and

 ET_t = common external tariff (CET).

The first step, after determining level of integration of the variables included, is to estimate form of VAR $\Delta X_t = A(L)u_t$ (2)

Where ΔX_t a vector of first differences of the variables, A(L) is a lag polynomial and u_t is a vector of disturbances with estimated variances of Σ . In order to disentangle the impact of various structural shocks, the coefficients of the structural model need to be estimated:

$$\Delta X_t = C(L)\varepsilon_t$$

(3)

(1)

Where ε_t is an n×1 vector of unobserved mutually interrelated shocks that are interpreted as above. The long-run representation of the VAR can be represented as:

 $\begin{bmatrix} \Delta GE \\ \Delta BT \\ \Delta DO \\ \Delta ET \end{bmatrix} = \begin{bmatrix} C_{11}(1)C_{12}(1)C_{13}(1)C_{14}(1) \\ C_{21}(1)C_{22}(1)C_{23}(1)C_{24}(1) \\ C_{31}(1)C_{32}(1)C_{33}(1)C_{34}(1) \\ C_{41}(1)C_{42}(1)C_{43}(1)C_{44}(1) \end{bmatrix} \begin{bmatrix} \varepsilon_t \\ \varepsilon_t \\ \varepsilon_t \\ \varepsilon_t \\ \varepsilon_t \end{bmatrix}$ (4) Where $C(1) = C_0 + C_1 + C_2 + ...$ are the long-run multipliers of the VAR. Equations (1) and (2) suggest linear subtimultipliers of the VAR. Equations (1) and (2) suggest linear subtimultipliers of the VAR. Equations (1) and (2) suggest linear subtimultipliers of the VAR. Equations (1) and (2) suggest linear subtimultipliers of the VAR. Equations (1) and (2) suggest linear subtimultipliers of the VAR. Equations (1) and (2) suggest linear subtimultipliers of the VAR. Equations (1) and (2) suggest linear subtimultipliers of the VAR. Equations (1) and (2) suggest linear subtimultipliers of the VAR. Equations (1) and (2) suggest linear subtimultipliers of the VAR. Equations (1) and (2) suggest linear subtimultipliers of the VAR. Equations (1) and (2) suggest linear subtimultipliers of the VAR. Equations (1) and (2) suggest linear subtimultipliers of the VAR. Equations (1) and (2) suggest linear subtimultipliers of the VAR. Equations (1) and (2) suggest linear subtimultipliers of the VAR. Equations (1) and (2) suggest linear subtimultipliers of the VAR. Equations (1) and (2) suggest linear subtimultipliers of the VAR. Equations (1) and (2) suggest linear subtimultipliers of the VAR. Equations (1) and (2) suggest linear subtimultipliers of the VAR. Equations (1) and (2) suggest linear subtimultipliers (1) and (2) s

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	$u_t = C_{03}\varepsilon_t$	(5)	
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Where C_0 is the 4×4 matrix that defines the contemporaneous structure amongst the variables, which is required to be identified to determine the vector structural shocks, ε_t from the estimated disturbance vector u_t . If there is no cointegration in the data, then the standard VAR analysis applies, if, on the other hand, there exist one or more cointegration equation, then the VAR should take them into account through an error correction term. The VAR that incorporates cointegration is called vector error correction mechanism (VECM) model. The VECM model allows the long-term behaviour of the endogenous variables to converge to cointegrating (i.e. long term equilibrium) relationships while allowing a wide range of short term dynamics. Thus, testing for cointegration in the data is necessary step in this analysis, because the presence of cointegration may influence the final form of the model, as it makes the variables meaningful, and do not lose any valuable long term information which would result if we were to use their first difference instead. To test for cointegration, the conventional Johansen cointegration procedure will be used.

The technique provides us with two tools to shed light on the behaviour of these variables in the face of a shock: the impulse response functions and forecast error variance decomposition. The impulse response functions allow the possibility of investigating the dynamic response of the variables to different shocks within the system. The forecast error variance decomposition gives the percentage of the variance accounted for by each of the shocks at different horizons, and shows the relative contribution of the structural shocks to the forecast error variance of the variables.

IV. **Discussions and Interpretation of Results**

(a) Impulse Response Analysis

The table (V) and figure (I) in the appendix revealed that common external tariff (ET) has no effect on the government expenditure (GE) in the first period. At the second period the effect of common external tariff (ET) on government expenditure (GE) was felt and it is positive (2708.203). Conversely, the effect of common external

tariff (ET) on government expenditure (GE) decline to (2373.635) in the third period. This implies that as a result of the adoption of common external tariff in Nigeria, the government expenditure has been on the increase but with a minimal level of fluctuation. In the fifth period, the effect of common external tariff (ET) on government expenditure decline to (1471.372).

Common external tariff (ET) has a sustained and continuous positive effect on government expenditure (GE) all through the mid-term period (i.e. period 6-10). The effect of common external tariff (ET) on government expenditure (GE) decline from (1314.172) to (1212.700) at the sixth and the seventh period respectively. Furthermore, the effect of common external tariff (ET) on government expenditure (GE) increased from (1596.396) at the eight period to (1776.912) at the ninth period up till (1922.684) at the tenth period. In the long run, the positive effect of common external tariff (ET) on government expenditure (GE) was sustained such that at the fifteen periods, the effect of common external tariff (ET) on government expenditure (GE) stands at (1808.299).

Common external tariff (ET) has no effect on the balance of trade (BT) in the first period. At the second period the effect of common external tariff (ET) on balance of trade (BT) was felt and it is positive (7954.772). Furthermore, the effect of common external tariff (ET) on balance of trade (BT) increased to (7198.415) in the third period. This implies that the adoption of common external tariff (ET) having positive effect on balance of trade (BT). The effect of common external tariff (ET) on balance of trade (BT) having positive effect on balance of trade (BT). The effect of common external tariff (ET) on balance of trade (BT) decline to (7198.412) in the fifth period.

Common external tariff (ET) has a sustained and continuous positive effect on balance of trade (BT) all through the mid-term period (i.e. period 6 - 10). The effect of common external tariff (ET) on balance of trade (BT) decline from (5931.919) to (5465.643) at the sixth and the seventh period respectively. Furthermore, the effect of common external tariff (ET) on balance of trade (BT) increased from (6453.976) at the eight period to (7191.062) at the ninth period up till (7509251) at the tenth period. In the long run, the positive effect of common external tariff (ET) on balance of trade (BT) was sustained such that at the fifteen periods, the effect of common external tariff (ET) on balance of trade (BT) stands at (7007.911).

Table 4.1 and figure 4.1 also show that common external tariff (ET) has no effect on the domestic output (DO) in the first period but in the second period the effect of common external tariff (ET) on domestic output (DO) is positive (4418.060). Conversely, common external tariff (ET) had negative effect on domestic output (DO) from periods (3 - 15) but the negativity is highly felt at the fifth period (-19607.54). This implies that the ECOWAS common external tariff (CET), has led to a reduction in the productivity level of the economy. The crude oil export is the only component of domestic outputs (DO) that command insignificant interest in international market; therefore, domestic output does not command good market price and the inflow of foreign exchange earnings to the economy is only limited to the Nigerian oil sector.

(b) Variance Decomposition Analysis

The table (VI) in the appendix presents the variance decomposition of the variables used in the model. The common external tariff (ET) explained (0.61%) in the variance in government expenditure (GE) in the second period and rose sharply to (0.69%) in the fourth period. The effect of common external tariff (ET) on the explained variance in government expenditure declined from (0.62%) to (0.50%) at both sixth and seventh period respectively. However, common external tariff effect (ET) on variance in government expenditure (GE) declined to (0.47%) at the eighth periods and stabilized at (0.46%) until the fifteenth period. Also, the common external tariff (ET) explained (3.2%) in the variance in balance of trade (BT) in the second period and rose sharply to (5.5%) in the fourth period. The effect of common external tariff (ET) on the explained variance in balance of trade (BT) declined from (4.9%) to (4.6%) at both sixth and seventh period respectively. However, common external tariff effect (ET) on variance balance of trade (BT) decline to (4.4%) at the eighth periods and stabilized at (5.5%) until the fifteenth period. This implies that the introduction of ECOWAS common external tariff (ET) have a positive but small effect on the performance of macroeconomic variables in Nigeria. (ET) is still at the introductory/infant stage in Nigeria, if the common external tariff (ET) policy is adopted for a longer period in Nigeria, then, there would be a need to re-examine the effect of CET on macroeconomic variables in Nigeria.

Furthermore, the common external tariff (ET) explained (0.006%) in the variance in domestic output (DO) in the second period and rose sharply to (0.02%) in the fourth period. The effect of common external tariff (ET) on the explained variance in domestic output (DO) declined from (0.07%) to (0.08%) at both sixth and seventh period respectively.

However, common external tariff effect (ET) on variance domestic output (DO) decline to (0.08%) at the eighth periods and stabilized at (0.11%) until the fifteenth period. This also implies that the introduction of ECOWAS common external tariff (ET) have a positive but small effect on the performance of macroeconomic variables in Nigeria. This is due to the fact that (ET) was only able to explain less than (3%) effect of macroeconomic variables in Niger, (ET) is still at the introductory/infant stage in Nigeria, if the common external tariff (ET) policy is adopted for a longer period in Nigeria, then, there would be a need to re-examine the effect of

CET on macroeconomic variables in the economy.

The salient result from the variance decomposition is that "own shocks" constituted the predominant source of shocks that caused the dismal macroeconomic performance in Nigeria. Government Expenditure (GE) own shocks account for 100%, 70%, 46% and 36% in the 1st, 6th, 10th, and 15th quarters respectively, Balance of Trade (BT) own shocks account for 78%, 31|%, 40% and 43% in the 1st, 6th, 10th, and 15th quarters respectively while Domestic Output own shocks only account for 23%, 9%, 8% and 7.6% in the 1st, 6th, 10th, and 15th quarters respectively while bomestic Output own shocks to domestic output (DO) own shocks could only explain less than 25% of the forecast error in domestic output while shocks to domestic output (DO) is explained more by variation in both Government Expenditure (GE) which account for 30%, 39%, 39%, and 39% in the 1st, 6th, 10th, and 15th quarters respectively and Balance of Trade (BT) which account for 47%, 51%, 53%, and 53% in the 1st, 6th, 10th, and 15th quarters respectively which account for the small value of domestic output (DO) own shocks.

V. Findings and Policy Implications

The common external tariff (ET) has positive effect on government expenditure (GE) and balance of trade (BT) which is sustained such that at the fifteen periods, the effect of common external tariff (ET) on government expenditure (GE) stands at (1808.299) and balance of trade (BT) (7007.911) respectively. Conversely, the effect of common external tariff (ET) on domestic output (DO) is negative. This implies that Nigeria domestic outputs (DO) apart from crude oil are insignificant in international market; therefore, domestic output does not command good market price and the inflow of foreign exchange earnings to the economy. The variance decomposition of the variables used in the study revealed that "own shocks" constituted the predominant source of shocks to measure the effect of common external tariff (CET) on performance of macroeconomic variables in Nigeria.

The adoption and full implementation of common external tariff (CET) are essential tasks that must be accomplished within the shortest period of time with a view of establishing single regional market in West Africa and taking full advantages of trade liberalization among member states in the ECOWAS sub-region. The Nigerian government should ensure stability in her macroeconomic system being the largest economy in the ECOWAS sub-region which determines the overall economic growth of the ECOWAS sub-region as a whole and also fast track the speed of her tariff reform process in line with other ECOWAS countries so as to play a leading role in ECOWAS and also benefit from trade liberalization as a result of the relative openness of Nigeria economic system to international trade.

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Appendix

Table I: Augmented Dickey -	- Fuller (ADF	') Test	
Variables	Sorias	Lavala	

Variables	Series	Levels	First Difference	Second Difference
Government Expenditure	GE	0.080431	(-2.392311)	-3.601743**
Balance of Trade	BT	-1.957658	-3.081689**	
Domestic Output	DO	0.099817	(-2.033201)	-3.149418**
Common External Tariff	ET	-3.094296**	-2.717266**	

*, **, ***, indicates 1%, 5% and 10% level of significance respectively. Source: Author's Computation

Table II: Phillips – Perron (PP) Test

Variables	Series	Levels	First Difference
Government Expenditure	GE	0.502039	-2.973935***
Balance of Trade	BT	-0.993468	-3.400081**
Domestic Output	DO	0.149136	-4.028227*
Common External Tariff	ET	-2.312025	-3.314261**

*, **, ***, indicates 1%, 5% and 10% level of significance respectively.

Source: Author's Computation

Table III.Johansen Cointegration Test

Sample: 2005:1 2012:4 Included observations: 21

Test assumption: Linear deterministic trend in the data

Series: GE BT DO ET

Lags interval: 1 to 2

Eigenvalue	Likelihood Ratio	5 Percent Critical Value	1 Percent Critical Value	Hypothesized No. of CE(s)
0.760075	58.50077	47.21	54.46	None **
0.514473	38.52477	29.68	35.65	At most 1
0.331563	8.508724	15.41	20.04	At most 2
0.002361	0.049638	3.76	6.65	At most 3

*(**) denotes rejection of the hypothesis at 5% (1%) significance level L.R test indicates 2cointegrating equation (s) at 5% significance level Source: Author's Computation

Table IV. Vector Error Correction Estimates

Sample(adjusted): 2005:4 2012:4
Included observations: 21 after adjusting endpoints
Standard errors & t-statistics in parentheses

Cointegrating Eq:	CointEq1			
GE(-1)	1.000000			
BT(-1)	3.399214			
	(0.27476)			
	(12.3717)			
DO(-1)	0.236718			
	(0.04421)			
	(5.35404)			
	0. (00.100			
E1(-1)	-0.600428			
	(0.05921)			
	(-10.1414)			
С	-3019991.			
Error Correction:	D(GE)	D(BT)	D(DO)	D(ET)
Error Correction: CointEq1	D(GE) -0.089731	D(BT) -0.243822	D(DO) -0.176748	D(ET) 0.225504
Error Correction: CointEq1	D(GE) -0.089731 (0.10266)	D(BT) -0.243822 (0.14595)	D(DO) -0.176748 (1.75239)	D(ET) 0.225504 (0.95461)
Error Correction: CointEq1	D(GE) -0.089731 (0.10266) (-0.87406)	D(BT) -0.243822 (0.14595) (-1.67064)	D(DO) -0.176748 (1.75239) (-0.10086)	D(ET) 0.225504 (0.95461) (0.23623)
Error Correction: CointEq1	D(GE) -0.089731 (0.10266) (-0.87406)	D(BT) -0.243822 (0.14595) (-1.67064)	D(DO) -0.176748 (1.75239) (-0.10086)	D(ET) 0.225504 (0.95461) (0.23623)
Error Correction: CointEq1 D(GE(-1))	D(GE) -0.089731 (0.10266) (-0.87406) -0.048886	D(BT) -0.243822 (0.14595) (-1.67064) -1.907007	D(DO) -0.176748 (1.75239) (-0.10086) 7.478351	D(ET) 0.225504 (0.95461) (0.23623) 2.073339
Error Correction: CointEq1 D(GE(-1))	D(GE) -0.089731 (0.10266) (-0.87406) -0.048886 (1.30542)	D(BT) -0.243822 (0.14595) (-1.67064) -1.907007 (1.85582)	D(DO) -0.176748 (1.75239) (-0.10086) 7.478351 (22.2832)	D(ET) 0.225504 (0.95461) (0.23623) 2.073339 (12.1387)
Error Correction: CointEq1 D(GE(-1))	D(GE) -0.089731 (0.10266) (-0.87406) -0.048886 (1.30542) (-0.03745)	D(BT) -0.243822 (0.14595) (-1.67064) -1.907007 (1.85582) (-1.02758)	D(DO) -0.176748 (1.75239) (-0.10086) 7.478351 (22.2832) (0.33561)	D(ET) 0.225504 (0.95461) (0.23623) 2.073339 (12.1387) (0.17080)
Error Correction: CointEq1 D(GE(-1))	D(GE) -0.089731 (0.10266) (-0.87406) -0.048886 (1.30542) (-0.03745)	D(BT) -0.243822 (0.14595) (-1.67064) -1.907007 (1.85582) (-1.02758)	D(DO) -0.176748 (1.75239) (-0.10086) 7.478351 (22.2832) (0.33561)	D(ET) 0.225504 (0.95461) (0.23623) 2.073339 (12.1387) (0.17080)
Error Correction: CointEq1 D(GE(-1)) D(GE(-2))	D(GE) -0.089731 (0.10266) (-0.87406) -0.048886 (1.30542) (-0.03745) 0.048853	D(BT) -0.243822 (0.14595) (-1.67064) -1.907007 (1.85582) (-1.02758) -0.242606	D(DO) -0.176748 (1.75239) (-0.10086) 7.478351 (22.2832) (0.33561) -1.636548	D(ET) 0.225504 (0.95461) (0.23623) 2.073339 (12.1387) (0.17080) 1.704015
Error Correction: CointEq1 D(GE(-1)) D(GE(-2))	D(GE) -0.089731 (0.10266) (-0.87406) -0.048886 (1.30542) (-0.03745) 0.048853 (1.19705)	D(BT) -0.243822 (0.14595) (-1.67064) -1.907007 (1.85582) (-1.02758) -0.242606 (1.70175)	D(DO) -0.176748 (1.75239) (-0.10086) 7.478351 (22.2832) (0.33561) -1.636548 (20.4332)	D(ET) 0.225504 (0.95461) (0.23623) 2.073339 (12.1387) (0.17080) 1.704015 (11.1310)
Error Correction: CointEq1 D(GE(-1)) D(GE(-2))	D(GE) -0.089731 (0.10266) (-0.87406) -0.048886 (1.30542) (-0.03745) 0.048853 (1.19705) (0.04081)	D(BT) -0.243822 (0.14595) (-1.67064) -1.907007 (1.85582) (-1.02758) -0.242606 (1.70175) (-0.14256)	D(DO) -0.176748 (1.75239) (-0.10086) 7.478351 (22.2832) (0.33561) -1.636548 (20.4332) (-0.08009)	D(ET) 0.225504 (0.95461) (0.23623) 2.073339 (12.1387) (0.17080) 1.704015 (11.1310) (0.15309)
Error Correction: CointEq1 D(GE(-1)) D(GE(-2))	D(GE) -0.089731 (0.10266) (-0.87406) -0.048886 (1.30542) (-0.03745) 0.048853 (1.19705) (0.04081) 0.151414	D(BT) -0.243822 (0.14595) (-1.67064) -1.907007 (1.85582) (-1.02758) -0.242606 (1.70175) (-0.14256) 1.016795	D(DO) -0.176748 (1.75239) (-0.10086) 7.478351 (22.2832) (0.33561) -1.636548 (20.4332) (-0.08009) 3.666990	D(ET) 0.225504 (0.95461) (0.23623) 2.073339 (12.1387) (0.17080) 1.704015 (11.1310) (0.15309) 1.050612
Error Correction: CointEq1 D(GE(-1)) D(GE(-2)) D(BT(-1))	D(GE) -0.089731 (0.10266) (-0.87406) -0.048886 (1.30542) (-0.03745) 0.048853 (1.19705) (0.04081) 0.151414 (0.41833)	D(BT) -0.243822 (0.14595) (-1.67064) -1.907007 (1.85582) (-1.02758) -0.242606 (1.70175) (-0.14256) 1.016795 (0.59472)	D(DO) -0.176748 (1.75239) (-0.10086) 7.478351 (22.2832) (0.33561) -1.636548 (20.4332) (-0.08009) -3.666990 (7.14086)	D(ET) 0.225504 (0.95461) (0.23623) 2.073339 (12.1387) (0.17080) 1.704015 (11.1310) (0.15309) -1.050612 (3.82007)
Error Correction: CointEq1 D(GE(-1)) D(GE(-2)) D(BT(-1))	D(GE) -0.089731 (0.10266) (-0.87406) -0.048886 (1.30542) (-0.03745) 0.048853 (1.19705) (0.04081) 0.151414 (0.41833) (0.36194)	D(BT) -0.243822 (0.14595) (-1.67064) -1.907007 (1.85582) (-1.02758) -0.242606 (1.70175) (-0.14256) 1.016795 (0.59472) (1.70971)	D(DO) -0.176748 (1.75239) (-0.10086) 7.478351 (22.2832) (0.33561) -1.636548 (20.4332) (-0.08009) -3.666990 (7.14086) (0.51352)	D(ET) 0.225504 (0.95461) (0.23623) 2.073339 (12.1387) (0.17080) 1.704015 (11.1310) (0.15309) -1.050612 (3.88997) (0.27008)

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D(BT(-2))	0.114598	0.433337	0.523753	-0.744503
	(0.46249)	(0.65749)	(7.89464)	(4.30060)
	(0.24778)	(0.65907)	(0.06634)	(-0.17312)
D(DO(-1))	-0.008993	0.065617	-0.269316	-0.174230
	(0.02686)	(0.03818)	(0.45842)	(0.24972)
	(-0.33486)	(1.71868)	(-0.58748)	(-0.69769)
D(DO(-2))	0.002478	0.027703	0.542210	-0.013584
	(0.04119)	(0.05855)	(0.70303)	(0.38298)
	(0.06017)	(0.47313)	(0.77124)	(-0.03547)
_ / / / / / /				
D(ET(-1))	0.029329	0.098002	0.029615	0.340599
	(0.10922)	(0.15527)	(1.86432)	(1.01558)
	(0.26853)	(0.63118)	(0.01588)	(0.33537)
D(ET(-2))	-0.028052	-0.025698	0.000208	-0.163343
	(0.09006)	(0.12804)	(1.53736)	(0.83748)
	(-0.31147)	(-0.20071)	(0.00014)	(-0.19504)
C	24420 70	56050.96	110000 2	100000 5
C	34429.70	56050.86	-118208.3	-100090.5
	(41245.5)	(58635.8)	(704049.)	(383530.)
	(0.834/5)	(0.95592)	(-0.16/90)	(-0.26097)
R-squared	0.354477	0.418274	0.238014	0.136384
Adj. R-squared	-0.173678	-0.057684	-0.385430	-0.570211
Sum sq. resids	9.69E+09	1.96E+10	2.82E+12	8.38E+11
S.E. equation	29680.42	42194.53	506636.4	275989.7
F-statistic	0.671161	0.878804	0.381773	0.193015
Log likelihood	-239.2712	-246.6591	-298.8547	-286.0986
Akaike AIC	23.74012	24.44372	29.41473	28.19987
Schwarz SC	24.23751	24.94111	29.91212	28.69726
Mean dependent	29133.30	-16077.19	126064.7	15412.24
S.D. dependent	27396.53	41027.79	430431.6	220248.9
Determinant Residual Covar	riance	1.11E+37		
Log Likelihood		-1014.861		
Akaike Information Criteria		100.8439		
Schwarz Criteria		103.0324		
			-	-

Table V. Impulse Response of GE, BT, DO and ET to One S.D. ET Innovation

Period	GE	BT	DO	ET
1	0.000000	0.000000	0.000000	32548.24
2	2708.203	7954.772	4418.060	39227.16
3	2373.635	9221.124	-6764.219	34306.22
4	2371.892	9863.104	-10948.85	32693.31
5	1471.372	7198.412	-19507.54	34721.94
6	1314.172	5931.919	-16119.54	37782.92
7	1212.700	5465.643	-17146.87	38341.28
8	1596.396	6453.976	-13182.85	37475.36
9	1776.912	7191.062	-15297.04	35873.31
10	1922.684	7509.251	-14276.61	35540.63
11	1832.904	7181.944	-16176.35	35882.13
12	1792.036	6855.887	-14798.59	36735.80
13	1742.730	6707.941	-15226.88	37000.50
14	1788.970	6845.381	-14061.03	36945.66
15	1808.299	7007.911	-14683.58	36561.71
Ordering: GE BT DO ET	_	_		_

Source: Author's Computation

Figure I: Impulse Response Graph



Response to One S.D. Innovations

Source: Author's Computation

Table VI.Variance Decomposition

Period	Variance Decomposition of GE:	S.E.	GE	ВТ	DO	ET
	1	21481.11	100.0000	0.000000	0.000000	0.000000
	2	34797.97	96.47490	0.205435	2.713967	0.605696
	3	44466.83	93.22956	0.728732	5.585850	0.655870
	4	51858.91	86.8/4/1	1.560881	10.8/300	0.691409
	5	58020.89	79.45527	3.032/04	10.29545	0.010550
	0	60522.80	61 71252	11 72072	22.05075	0.330228
	/ 8	7/0/2 00	54 67279	15 73093	20.00024	0.495509
	9	79763 74	49 72051	18 65636	31 15689	0.466233
	10	84235 51	46 03838	20 69975	32 79172	0 470144
	11	88349 19	43 37981	22.14967	34 00010	0 470422
	12	92307.54	41.18108	23.32804	35.02224	0.468631
	13	96067.46	39.38462	24.33296	35.81685	0.465574
	14	99703.62	37.81822	25.20902	36.50833	0.464430
	15	103175.1	36.51694	25.93554	37.08310	0.464420
	Variance Decomposition of BT:					
Period		S.E.	GE	BT	DO	ET
	1	30538.16	21.54373	78.45627	0.000000	0.000000
	2	44734.99	30.10512	66.73060	0.002292	3.161993
	3	56466.01	42.17549	53.15048	0.022573	4.651456
	4	66710.92	54.81324	39.53089	0.137459	5.518409
	5	75585.25	61.69345	32.37485	0.726050	5.205648
	6	82586.39	62.35738	30.78592	1.980330	4.876367
	7	89163.37	58.86473	33.42614	3.149867	4.559265
	8	95441.89	54.64856	36.88896	4.026059	4.436418
	9	101097.7	51.79923	39.21568	4.525227	4.459864
	10	100198.5	50.50084	40.18998	4.901444	4.541/50
	11	111025.2	49.00014	40.34480	5.195055	4.5/4025
	12	120282.0	49.04945	40.91430	5 700606	4.501808
	14	120282.0	47 47776	42 11826	5 885989	4 517991
	15	128950.9	46.84028	42.61675	6.021946	4.521022
	Variance Decomposition of DO:					
Period	-	S.E.	GE	BT	DO	ET
	1	366676.5	29.52683	47.34680	23.12637	0.000000
			35.53327	49.34200	15.11827	0.006459
	2	549739.1				
	2 3	549739.1 775150.1	37.36705	49.62521	12.99687	0.010863
	2 3 4	549739.1 775150.1 910698.8	37.36705 38.65027	49.62521 50.44779	12.99687 10.87962	0.010863 0.022324
	2 3 4 5	549739.1 775150.1 910698.8 1031026.	37.36705 38.65027 39.01679	49.62521 50.44779 50.74380	12.99687 10.87962 10.18619	0.010863 0.022324 0.053216
	2 3 4 5 6	549739.1 775150.1 910698.8 1031026. 1108817.	37.36705 38.65027 39.01679 39.25316	49.62521 50.44779 50.74380 51.23008	12.99687 10.87962 10.18619 9.449616	0.010863 0.022324 0.053216 0.067145
	2 3 4 5 6 7	549739.1 775150.1 910698.8 1031026. 1108817. 1184100.	37.36705 38.65027 39.01679 39.25316 39.21927	49.62521 50.44779 50.74380 51.23008 51.54938	12.99687 10.87962 10.18619 9.449616 9.151496	0.010863 0.022324 0.053216 0.067145 0.079848
	2 3 4 5 6 7 8	549739.1 775150.1 910698.8 1031026. 1108817. 1184100. 1245527.	37.36705 38.65027 39.01679 39.25316 39.21927 39.20121	49.62521 50.44779 50.74380 51.23008 51.54938 51.97265	12.99687 10.87962 10.18619 9.449616 9.151496 8.742776	0.010863 0.022324 0.053216 0.067145 0.079848 0.083369
	2 3 4 5 6 7 8 9	549739.1 775150.1 910698.8 1031026. 1108817. 1184100. 1245527. 1309407.	37.36705 38.65027 39.01679 39.25316 39.21927 39.20121 39.12552	49.62521 50.44779 50.74380 51.23008 51.54938 51.97265 52.26900	12.99687 10.87962 10.18619 9.449616 9.151496 8.742776 8.516397	0.010863 0.022324 0.053216 0.067145 0.079848 0.083369 0.089081
	2 3 4 5 6 7 8 9 10	549739.1 775150.1 910698.8 1031026. 1108817. 1184100. 1245527. 1309407. 1365603.	37.36705 38.65027 39.01679 39.25316 39.21927 39.20121 39.12552 39.10083	49.62521 50.44779 50.74380 51.23008 51.54938 51.97265 52.26900 52.57016	12.99687 10.87962 10.18619 9.449616 9.151496 8.742776 8.516397 8.236187	0.010863 0.022324 0.053216 0.067145 0.079848 0.083369 0.089081 0.092830
	2 3 4 5 6 7 8 9 10 11	549739.1 775150.1 910698.8 1031026. 1108817. 1184100. 1245527. 1309407. 1365603. 1422033.	37.36705 38.65027 39.01679 39.25316 39.21927 39.20121 39.12552 39.10083 39.06382	49.62521 50.44779 50.74380 51.23008 51.54938 51.97265 52.26900 52.57016 52.75918	12.99687 10.87962 10.18619 9.449616 9.151496 8.742776 8.516397 8.236187 8.078448 7.002738	0.010863 0.022324 0.053216 0.067145 0.079848 0.083369 0.089081 0.092830 0.098549 0.19829
	2 3 4 5 6 7 8 9 10 11 12 13	549739.1 775150.1 910698.8 1031026. 1108817. 1184100. 1245527. 1309407. 1365603. 1422033. 1473350. 1525178	37.36705 38.65027 39.01679 39.25316 39.21927 39.20121 39.12552 39.10083 39.06382 39.05084	49.62521 50.44779 50.74380 51.23008 51.54938 51.97265 52.26900 52.57016 52.75918 52.94454 53.07003	12.99687 10.87962 10.18619 9.449616 9.151496 8.742776 8.516397 8.236187 8.078448 7.902728 7.708084	0.010863 0.022324 0.053216 0.067145 0.079848 0.083369 0.089081 0.092830 0.098549 0.101892 0.101892
	2 3 4 5 6 7 8 9 10 11 12 13	549739.1 775150.1 910698.8 1031026. 1108817. 1184100. 1245527. 1309407. 1365603. 1422033. 1473350. 1525178. 1574465	37.36705 38.65027 39.01679 39.25316 39.21927 39.20121 39.12552 39.10083 39.06382 39.05084 39.02594 39.01370	49.62521 50.44779 50.74380 51.23008 51.54938 51.97265 52.26900 52.57016 52.75918 52.94454 53.07093 53.20515	12.99687 10.87962 10.18619 9.449616 8.742776 8.516397 8.236187 8.078448 7.902728 7.798084 7.674504	0.010863 0.022324 0.053216 0.067145 0.079848 0.083369 0.089081 0.092830 0.098549 0.101892 0.105052 0.106554
	2 3 4 5 6 7 8 9 10 11 12 13 14 15	549739.1 775150.1 910698.8 1031026. 1108817. 1184100. 1245527. 1309407. 1365603. 1422033. 1473350. 1525178. 1574465. 1624090.	37.36705 38.65027 39.01679 39.25316 39.21927 39.20121 39.12552 39.10083 39.06382 39.05084 39.02594 39.01379 38.99800	49.62521 50.44779 50.74380 51.23008 51.54938 51.97265 52.26900 52.57016 52.75918 52.94454 53.07093 53.20515 53.30695	12.99687 10.87962 10.18619 9.449616 8.742776 8.516397 8.236187 8.078448 7.902728 7.798084 7.674504 7.586740	0.010863 0.022324 0.053216 0.067145 0.079848 0.083369 0.089081 0.092830 0.098549 0.101892 0.106554 0.108316
	2 3 4 5 6 7 8 9 10 11 12 13 14 15 Variance Decomposition of ET:	549739.1 775150.1 910698.8 1031026. 1108817. 1184100. 1245527. 1309407. 1365603. 1422033. 1473350. 1525178. 1574465. 1624090.	37.36705 38.65027 39.01679 39.25316 39.21927 39.20121 39.12552 39.10083 39.06382 39.05384 39.02594 39.01379 38.99800	49.62521 50.44779 50.74380 51.23008 51.54938 51.97265 52.26900 52.57016 52.75918 52.9445 53.07093 53.20515 53.30695	12.99687 10.87962 10.18619 9.449616 9.151496 8.742776 8.516397 8.236187 8.078448 7.902728 7.798084 7.674504 7.586740	$\begin{array}{c} 0.010863\\ 0.022324\\ 0.053216\\ 0.067145\\ 0.079848\\ 0.083369\\ 0.089081\\ 0.092830\\ 0.092830\\ 0.098549\\ 0.101892\\ 0.101892\\ 0.105052\\ 0.106554\\ 0.108316 \end{array}$
Period	2 3 4 5 6 7 8 9 10 11 12 13 14 15 Variance Decomposition of ET:	549739.1 775150.1 910698.8 1031026. 1108817. 1184100. 1245527. 1309407. 1365603. 1422033. 1473350. 1525178. 1574465. 1624090. S.E.	37.36705 38.65027 39.01679 39.25316 39.21927 39.20121 39.12552 39.10083 39.06384 39.05084 39.02594 39.01379 38.99800	49.62521 50.44779 50.74380 51.23008 51.54938 51.97265 52.26900 52.57016 52.75918 52.94454 53.07093 53.20515 53.30695	12.99687 10.87962 10.18619 9.449616 9.151496 8.742776 8.516397 8.236187 8.078448 7.902728 7.798084 7.674504 7.586740 DO	0.010863 0.022324 0.053216 0.067145 0.079848 0.083369 0.089081 0.092830 0.098549 0.101892 0.105052 0.106554 0.108316 ET
Period	2 3 4 5 6 7 8 9 10 11 12 13 14 15 Variance Decomposition of ET:	549739.1 775150.1 910698.8 1031026. 1108817. 1184100. 1245527. 1309407. 1365603. 1422033. 1473350. 1525178. 1574465. 1624090. <u>S.E.</u> 199746.7	37.36705 38.65027 39.01679 39.25316 39.21927 39.20121 39.12552 39.10083 39.06382 39.05384 39.02594 39.01379 38.99800 <u>GE</u> 95.98485	49.62521 50.44779 50.74380 51.23008 51.54938 51.97265 52.26900 52.57016 52.75918 52.94454 53.07093 53.20515 53.30695 BT 1.301635	12.99687 10.87962 10.18619 9.449616 9.151496 8.742776 8.516397 8.236187 8.078448 7.902728 7.798084 7.674504 7.586740 DO 0.058325	0.010863 0.022324 0.053216 0.067145 0.079848 0.083369 0.089081 0.092830 0.098549 0.101892 0.105052 0.106554 0.108316 ET 2.655192
Period	2 3 4 5 6 7 8 9 10 11 12 13 14 15 Variance Decomposition of ET: 1 2	549739.1 775150.1 910698.8 1031026. 1108817. 1184100. 1245527. 1309407. 1365603. 1422033. 1473350. 1525178. 1574465. 1624090. <u>S.E.</u> 199746.7 329104.8	37.36705 38.65027 39.01679 39.25316 39.21927 39.20121 39.12552 39.10083 39.06382 39.05084 39.02594 39.01379 38.99800 <u>GE</u> 95.98485 96.40092	49.62521 50.44779 50.74380 51.23008 51.54938 51.97265 52.26900 52.57016 52.75918 52.94454 53.07093 53.20515 53.30695 BT 1.301635 0.499524	12.99687 10.87962 10.18619 9.449616 9.151496 8.742776 8.516397 8.236187 8.078448 7.902728 7.798084 7.674504 7.586740 DO 0.058325 0.700737	0.010863 0.022324 0.053216 0.067145 0.079848 0.083369 0.089081 0.092830 0.098549 0.101892 0.105052 0.106554 0.108316 ET 2.655192 2.398816
Period	2 3 4 5 6 7 8 9 10 11 12 13 14 15 Variance Decomposition of ET: 1 2 3	549739.1 775150.1 910698.8 1031026. 1108817. 1184100. 1245527. 1309407. 1365603. 1422033. 1473350. 1525178. 1574465. 1624090. <u>S.E.</u> 199746.7 329104.8 424175.8	37.36705 38.65027 39.01679 39.25316 39.21927 39.20121 39.12552 39.10083 39.06382 39.05084 39.02594 39.01379 38.99800 <u>GE</u> 95.98485 96.40092 96.66937	49.62521 50.44779 50.74380 51.23008 51.54938 51.97265 52.26900 52.57016 52.75918 52.94454 53.07093 53.20515 53.30695 BT 1.301635 0.499524 0.318081	12.99687 10.87962 10.18619 9.449616 9.151496 8.742776 8.516397 8.236187 8.078448 7.902728 7.798084 7.674504 7.586740 DO 0.058325 0.700737 0.914411	0.010863 0.022324 0.053216 0.067145 0.079848 0.083369 0.092830 0.092830 0.098549 0.101892 0.105052 0.106554 0.108316 ET 2.655192 2.398816 2.098137
Period	2 3 4 5 6 7 8 9 10 11 12 13 14 15 Variance Decomposition of ET: 1 2 3 4	549739.1 775150.1 910698.8 1031026. 1108817. 1184100. 1245527. 1309407. 1365603. 1422033. 1473350. 1525178. 1574465. 1624090. <u>S.E.</u> 199746.7 329104.8 424175.8	37.36705 38.65027 39.01679 39.25316 39.21927 39.20121 39.12552 39.006382 39.06382 39.05084 39.02594 39.01379 38.99800 <u>GE</u> 95.98485 96.40092 96.66937 96.02448	49.62521 50.44779 50.74380 51.23008 51.54938 51.97265 52.26900 52.57018 52.75918 52.94454 53.07093 53.20515 53.30695 BT 1.301635 0.499524 0.318081 0.635308	12.99687 10.87962 10.18619 9.449616 9.151496 8.742776 8.516397 8.236187 8.078448 7.902728 7.798084 7.674504 7.586740 DO 0.058325 0.700737 0.914411 1.354424	0.010863 0.022324 0.053216 0.067145 0.079848 0.083369 0.089081 0.092830 0.098549 0.101892 0.105052 0.106554 0.108316 ET 2.655192 2.398816 2.098137 1.985788
Period	2 3 4 5 6 7 8 9 10 11 12 13 14 15 Variance Decomposition of ET: 1 2 3 4 5	549739.1 775150.1 910698.8 1031026. 1108817. 1184100. 1245527. 1309407. 1365603. 1422033. 1473350. 1525178. 1574465. 1624090. <u>S.E.</u> 199746.7 329104.8 424175.8 493892.5 551346.6	37.36705 38.65027 39.01679 39.25316 39.21927 39.20121 39.12552 39.10083 39.06382 39.05084 39.02594 39.01379 38.99800 <u>GE</u> 95.98485 96.40092 96.66937 96.02448 95.39857	49.62521 50.44779 50.74380 51.23008 51.54938 51.97265 52.26900 52.57016 52.75918 52.94454 53.07093 53.20515 53.30695 BT 1.301635 0.499524 0.318081 0.635308 1.034246	12.99687 10.87962 10.18619 9.449616 9.151496 8.742776 8.516397 8.236187 8.078448 7.902728 7.798084 7.674504 7.586740 DO 0.058325 0.700737 0.914411 1.354424 1.577092	0.010863 0.022324 0.053216 0.067145 0.079848 0.083369 0.089081 0.092830 0.098549 0.101892 0.105052 0.106554 0.108316 ET 2.655192 2.398816 2.098137 1.985788 1.990091
Period	2 3 4 5 6 7 8 9 10 11 12 13 14 15 Variance Decomposition of ET: 1 2 3 4 5 6	549739.1 775150.1 910698.8 1031026. 1108817. 1184100. 1245527. 1309407. 1365603. 1422033. 1422033. 1473350. 1525178. 1574465. 1624090. <u>S.E.</u> 199746.7 329104.8 4224175.8 493892.5 551346.6 602238.2	37.36705 38.65027 39.01679 39.25316 39.21927 39.20121 39.12552 39.10083 39.06382 39.05084 39.02594 39.01379 38.99800 <u>GE</u> 95.98485 96.40092 96.66937 96.02448 95.39857 94.78903	49.62521 50.44779 50.74380 51.23008 51.54938 51.97265 52.26900 52.57016 52.75918 52.94454 53.07093 53.20515 53.30695 BT 1.301635 0.499524 0.318081 0.635308 1.034246 1.330537	12.99687 10.87962 10.18619 9.449616 9.151496 8.742776 8.516397 8.236187 8.078448 7.902728 7.798084 7.674504 7.586740 DO 0.058325 0.700737 0.914411 1.35424 1.577092 1.819489	0.010863 0.022324 0.053216 0.067145 0.079848 0.083369 0.092830 0.098549 0.101892 0.105052 0.106554 0.108316 ET 2.655192 2.398816 2.098137 1.985788 1.990091 2.060944
Period	2 3 4 5 6 7 8 9 10 11 12 13 14 15 Variance Decomposition of ET: 1 2 3 4 5 6 7 7 8 9 10 11 12 13 14 15 7 8 9 10 11 12 13 14 15 7 8 9 10 11 12 13 14 15 7 8 9 10 11 12 13 14 15 7 8 9 10 11 12 13 14 15 7 8 9 10 11 12 13 14 15 7 8 9 10 11 12 13 14 15 7 8 9 10 11 12 13 14 5 6 7 8 9 10 11 12 13 14 5 7 8 9 10 11 12 13 14 5 7 8 9 10 11 15 10 11 12 13 14 5 7 8 9 10 11 15 15 16 7 7 8 9 10 10 11 12 13 14 5 6 7 7 8 9 10 11 15 15 16 7 7 8 9 10 11 15 15 16 7 7 8 9 10 10 11 12 13 14 5 6 7 7 8 9 10 10 10 10 10 10 10 10 10 10	549739.1 775150.1 910698.8 1031026. 1108817. 1184100. 1245527. 1309407. 1365603. 1422033. 1473350. 1525178. 1574465. 1624090. <u>S.E.</u> 199746.7 329104.8 424175.8 493892.5 551346.6 602328.2 650514.2	37.36705 38.65027 39.01679 39.25316 39.21927 39.20121 39.12552 39.10083 39.05084 39.05084 39.02594 39.01379 38.99800 <u>GE</u> 95.98485 96.40092 96.66937 96.02448 95.39857 94.78903 94.53408	49.62521 50.44779 50.74380 51.23008 51.54938 51.97265 52.26900 52.57016 52.75918 52.94454 53.07093 53.20515 53.30695 BT 1.301635 0.499524 0.318081 0.635308 1.034246 1.330537 1.397213	12.99687 10.87962 10.18619 9.449616 9.151496 8.742776 8.516397 8.236187 8.078448 7.902728 7.798084 7.674504 7.586740 DO 0.058325 0.700737 0.914411 1.354424 1.577092 1.819489 1.954383	0.010863 0.022324 0.053216 0.067145 0.079848 0.083369 0.089081 0.092830 0.092830 0.098549 0.101892 0.105052 0.106554 0.108316 ET 2.655192 2.398816 2.098137 1.985788 1.990091 2.060944 2.114320
Period	2 3 4 5 6 7 8 9 10 11 12 13 14 15 Variance Decomposition of ET: 1 2 3 4 5 6 7 8 8 9 10 11 12 13 14 15 8 8 9 10 11 12 13 14 15 8 8 8 9 10 11 12 13 14 15 8 8 8 9 10 11 12 13 14 15 8 8 8 8 9 10 11 12 13 14 15 8 8 8 8 8 9 10 11 12 13 14 15 8 8 8 8 9 10 11 12 13 14 5 8 8 8 9 10 11 12 13 14 5 8 8 8 8 9 10 11 12 13 14 5 8 8 8 8 8 8 8 10 11 12 13 14 5 8 8 8 8 8 8 8 8 8 8 8 8 8	549739.1 775150.1 910698.8 1031026. 1108817. 1184100. 1245527. 1309407. 1365603. 1422033. 1473350. 1525178. 1574465. 1624090. <u>S.E.</u> 199746.7 329104.8 424175.8 493892.5 551346.6 602328.2 650514.2 695697.4	37.36705 38.65027 39.01679 39.25316 39.21927 39.20121 39.12552 39.10083 39.06382 39.05084 39.02594 39.01379 38.99800 <u>GE</u> 95.98485 96.40092 96.66937 96.02448 95.39857 94.78903 94.53408 94.30030	49.62521 50.44779 50.74380 51.23008 51.54938 51.97265 52.26900 52.57016 52.75918 52.94454 53.07093 53.20515 53.30695 BT 1.301635 0.499524 0.318081 0.635308 1.034246 1.330537 1.397213 1.432663	12.99687 10.87962 10.18619 9.449616 9.151496 8.742776 8.516397 8.236187 8.078448 7.902728 7.798084 7.674504 7.586740 DO 0.058325 0.700737 0.914411 1.354424 1.577092 1.819489 1.954383 2.128261	0.010863 0.022324 0.053216 0.067145 0.079848 0.089081 0.092830 0.098549 0.101892 0.105052 0.106554 0.108316 ET 2.655192 2.398816 2.098137 1.985788 1.990091 2.060944 2.114320 2.138772
Period	2 3 4 5 6 7 8 9 10 11 12 13 14 15 Variance Decomposition of ET: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	549739.1 775150.1 910698.8 1031026. 1108817. 1184100. 1245527. 1309407. 1365603. 1422033. 1473350. 1525178. 1574465. 1624090. <u>S.E.</u> 199746.7 329104.8 424175.8 493892.5 551346.6 602328.2 650514.2 695697.4 737744.4	37.36705 38.65027 39.01679 39.25316 39.21927 39.20121 39.12552 39.006382 39.06382 39.05084 39.02594 39.01379 38.99800 <u>GE</u> 95.98485 96.40092 96.66937 96.02448 95.39857 94.78903 94.53408 94.30030 94.10708 92.25215	49.62521 50.44779 50.74380 51.23008 51.54938 51.97265 52.26900 52.57016 52.75918 52.94454 53.07093 53.20515 53.30695 BT 1.301635 0.499524 0.318081 0.635308 1.034246 1.330537 1.397213 1.432663 1.487798	12.99687 10.87962 10.18619 9.449616 9.151496 8.742776 8.516397 8.236187 8.078448 7.902728 7.798084 7.674504 7.586740 DO 0.058325 0.700737 0.914411 1.354424 1.577092 1.819489 1.954383 2.128261 2.266751	0.010863 0.022324 0.053216 0.067145 0.079848 0.083369 0.092830 0.092830 0.098549 0.101892 0.105052 0.106554 0.108316 ET 2.655192 2.398816 2.098137 1.985788 1.990091 2.060944 2.114320 2.138772 2.138370
Period	2 3 4 5 6 7 8 9 10 11 12 13 14 15 Variance Decomposition of ET: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 15 16 17 18 19 10 11 12 13 14 15 16 17 18 19 19 10 11 12 13 14 15 10 11 12 13 14 15 16 17 18 19 19 19 10 10 11 12 13 14 15 10 10 11 12 13 14 15 10 11 12 13 14 15 10 10 10 10 10 10 10 10 10 10	549739.1 775150.1 910698.8 1031026. 1108817. 1184100. 1245527. 1309407. 1365603. 1422033. 1473350. 1525178. 1574465. 1624090. <u>S.E.</u> 199746.7 329104.8 424175.8 493892.5 551346.6 602328.2 650514.2 695697.4 737744.4 776485.7 912002.1	37.36705 38.65027 39.01679 39.25316 39.21927 39.20121 39.12552 39.06382 39.06382 39.05084 39.02594 39.01379 38.99800 <u>GE</u> 95.98485 96.40092 96.66937 96.02448 95.39857 94.78903 94.53408 94.30030 94.10708 93.83317 93.83317 93.83317	49.62521 50.44779 50.74380 51.23008 51.54938 51.97265 52.26900 52.57016 52.75918 52.94454 53.07093 53.20515 53.30695 BT 1.301635 0.499524 0.318081 0.635308 1.034246 1.330521 1.397213 1.432663 1.487798 1.610219 1.720224	12.99687 10.87962 10.18619 9.449616 9.151496 8.742776 8.516397 8.236187 8.078448 7.902728 7.798084 7.674504 7.586740 DO 0.058325 0.700737 0.914411 1.354424 1.577092 1.819489 1.954383 2.128261 2.266751 2.416794 2.50591	0.010863 0.022324 0.053216 0.067145 0.079848 0.083369 0.089081 0.092830 0.098549 0.101892 0.105052 0.106554 0.108316 ET 2.655192 2.398816 2.098137 1.985788 1.990091 2.060944 2.114320 2.138772 2.138370 2.139813 2.147230
Period	2 3 4 5 6 7 8 9 10 11 12 13 14 15 Variance Decomposition of ET: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 10 11 12 13 14 15 16 17 18 19 19 10 11 12 13 14 15 16 17 18 19 19 10 11 12 13 14 15 18 19 19 19 19 10 10 11 12 13 14 15 10 10 10 10 10 10 10 10 10 10	549739.1 775150.1 910698.8 1031026. 1108817. 1184100. 1245527. 1309407. 1365603. 1422033. 1422033. 1473350. 1525178. 1574465. 1624090. <u>S.E.</u> 199746.7 329104.8 424175.8 493892.5 551346.6 602328.2 650514.2 695697.4 737744.4 776485.7 812902.1 847712.5	37.36705 38.65027 39.01679 39.25316 39.21927 39.20121 39.12552 39.10083 39.06382 39.05084 39.02594 39.01379 38.99800 <u>GE</u> 95.98485 96.66937 96.02448 95.39857 94.78903 94.53408 94.30030 94.10708 93.83317 93.59293 93.29272	49.62521 50.44779 50.74380 51.23008 51.54938 51.97265 52.26900 52.57016 52.75918 52.94454 53.07093 53.20515 53.30695 BT 1.301635 0.499524 0.318081 0.635308 1.034246 1.330537 1.397213 1.432663 1.487798 1.610219 1.739264	12.99687 10.87962 10.18619 9.449616 9.151496 8.742776 8.516397 8.236187 8.078448 7.902728 7.798084 7.674504 7.586740 DO 0.058325 0.700737 0.914411 1.354424 1.577092 1.819489 1.954383 2.128261 2.266751 2.416794 2.520581 2.602300	0.010863 0.022324 0.053216 0.067145 0.079848 0.083369 0.092830 0.098549 0.101892 0.105052 0.106554 0.108316 ET 2.655192 2.398816 2.098137 1.985788 1.990091 2.060944 2.114320 2.138772 2.138370 2.139813 2.147230 2.162307
Period	2 3 4 5 6 7 8 9 10 11 12 13 14 15 Variance Decomposition of ET: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 Variance Decomposition of ET: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 14 15 10 11 12 13 14 15 10 11 12 13 14 15 10 11 12 13 14 15 10 11 12 13 14 15 10 11 12 13 14 15 10 11 12 13 14 15 10 11 12 13 14 15 10 11 12 13 14 15 10 11 12 13 14 15 16 17 18 19 10 11 12 13 14 15 16 17 18 19 10 11 12 13 14 15 16 10 11 12 13 14 15 16 17 18 19 19 10 11 12 13 14 15 16 17 18 19 10 11 12 13 14 15 16 17 18 19 19 10 10 11 12 13 14 15 10 10 10 10 11 11 12 13 14 15 10 10 10 10 11 12 13 14 15 10 10 10 11 12 13 13 14 15 10 10 11 12 13 13 14 15 10 10 11 12 13 13 13	549739.1 775150.1 910698.8 1031026. 1108817. 1184100. 1245527. 1309407. 1365603. 1422033. 1473350. 1525178. 1574465. 1624090. <u>S.E.</u> 199746.7 329104.8 424175.8 493892.5 551346.6 602328.2 650514.2 695697.4 737744.4 776485.7 812902.1 847712.5 81540.6	37.36705 38.65027 39.01679 39.25316 39.21927 39.20121 39.12552 39.10083 39.06382 39.05084 39.02594 39.01379 38.99800 <u>GE</u> 95.98485 96.40092 96.66937 96.02448 95.39857 94.78903 94.53408 94.30030 94.10708 93.83317 93.59293 93.38272 93.38272 93.25107	49.62521 50.44779 50.74380 51.23008 51.54938 51.97265 52.26900 52.57016 52.75918 52.94454 53.07093 53.20515 53.30695 BT 1.301635 0.499524 0.318081 0.635308 1.034246 1.330537 1.397213 1.43263 1.487798 1.610219 1.739264 1.846594 1.907452	12.99687 10.87962 10.18619 9.449616 9.151496 8.742776 8.516397 8.236187 8.078448 7.902728 7.798084 7.674504 7.586740 DO 0.058325 0.700737 0.914411 1.354424 1.577092 1.819489 1.954383 2.128261 2.266751 2.416794 2.520581 2.608390 2.664974	0.010863 0.02324 0.053216 0.067145 0.079848 0.083369 0.089081 0.092830 0.092830 0.092830 0.098549 0.101892 0.106554 0.108316 ET 2.655192 2.398816 2.098137 1.985782 1.990091 2.060944 2.114320 2.138772 2.138370 2.139813 2.147230 2.162297 2.162297 2.175609
Period	2 3 4 5 6 7 8 9 10 11 12 13 14 15 Variance Decomposition of ET: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 Variance Decomposition of ET: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 Variance Decomposition of ET: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 Variance Decomposition of ET: 1 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 Variance Decomposition of ET: 1 1 1 1 1 1 1 1 1 1 1 1 1	549739.1 775150.1 910698.8 1031026. 1106817. 1184100. 1245527. 1309407. 1365603. 1422033. 1473350. 1525178. 1574465. 1624090. <u>S.E.</u> 199746.7 329104.8 424175.8 493892.5 551346.6 602328.2 650514.2 695697.4 737744.4 776485.7 812902.1 847712.5 881540.6 014324.8	37.36705 38.65027 39.01679 39.25316 39.21927 39.20121 39.12552 39.10083 39.06382 39.05084 39.02594 39.01379 38.99800 <u>GE</u> 95.98485 96.40092 96.66937 96.02448 95.39857 94.78903 94.53408 94.30030 94.10708 93.83317 93.83317 93.59293 93.38272 93.25197 93.15006	49.62521 50.44779 50.74380 51.23008 51.54938 51.97265 52.26900 52.57016 52.75918 52.94454 53.07093 53.20515 53.30695 BT 1.301635 0.499524 0.318081 0.635308 1.034246 1.330537 1.397213 1.432663 1.487798 1.610219 1.739264 1.846594 1.907452 1.	12.99687 10.87962 10.18619 9.449616 9.151496 8.742776 8.516397 8.236187 8.078448 7.902728 7.798084 7.674504 7.586740 DO 0.058325 0.700737 0.914411 1.354424 1.577092 1.819489 1.954383 2.128261 2.266751 2.416794 2.520581 2.608390 2.664874 2.712744	0.010863 0.022324 0.053216 0.067145 0.079848 0.089081 0.092830 0.098549 0.101892 0.105052 0.106554 0.106554 0.108316 ET 2.655192 2.398816 2.098137 1.985788 1.990091 2.060944 2.114320 2.138772 2.138772 2.138772 2.138813 2.147230 2.162297 2.175699 2.185452
Period	2 3 4 5 6 7 8 9 10 11 12 13 14 15 Variance Decomposition of ET: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 Variance Decomposition of ET:	549739.1 775150.1 910698.8 1031026. 1108817. 1184100. 1245527. 1309407. 1365603. 1422033. 1473350. 1525178. 1574465. 1624090. <u>S.E.</u> 199746.7 329104.8 424175.8 493892.5 551346.6 602328.2 650514.2 695697.4 737744.4 736485.7 812902.1 847712.5 881540.6 914384.8 946199.8	37.36705 38.65027 39.01679 39.25316 39.21927 39.20121 39.12552 39.10083 39.06382 39.05084 39.02594 39.01379 38.99800 <u>GE</u> 95.98485 96.40092 96.66937 96.02448 95.39857 94.78903 94.53408 94.30030 94.10708 93.83317 93.59293 93.38272 93.25197 93.1509 93.07467	49.62521 50.44779 50.74380 51.23008 51.54938 51.97265 52.26900 52.57016 52.75918 52.94454 53.07093 53.20515 53.30695 BT 1.301635 0.499524 0.318081 0.635308 1.034246 1.330537 1.397213 1.432663 1.487798 1.610219 1.739264 1.846594 1.907452 1.946336 1.975983	12.99687 10.87962 10.18619 9.449616 9.151496 8.742776 8.516397 8.236187 8.078448 7.902728 7.798084 7.674504 7.586740 DO 0.058325 0.700737 0.914411 1.354424 1.577092 1.819489 1.954383 2.128261 2.266751 2.416794 2.520581 2.608390 2.664874 2.717244 2.717244	0.010863 0.022324 0.053216 0.067145 0.079848 0.089081 0.092830 0.098549 0.101892 0.105052 0.106554 0.108316 ET 2.655192 2.398816 2.098137 1.985788 1.990091 2.060944 2.114320 2.138772 2.138370 2.138772 2.138772 2.138772 2.138772 2.138770 2.13975 2.185463 2.190275
Period	2 3 4 5 6 7 8 9 10 11 12 13 14 15 Variance Decomposition of ET: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 Variance Decomposition of ET: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 0 0 0 0 0 0 0 0 0 0 0 0 0	549739.1 775150.1 910698.8 1031026. 1108817. 1184100. 1245527. 1309407. 1365603. 1422033. 1473350. 1525178. 1574465. 1624090. <u>S.E.</u> 199746.7 329104.8 424175.8 493892.5 551346.6 602328.2 650514.2 695697.4 737744.4 736485.7 812902.1 847712.5 881540.6 914384.8 946199.8	37.36705 38.65027 39.01679 39.25316 39.21927 39.20121 39.12552 39.10083 39.06382 39.05084 39.02594 39.01379 38.99800 <u>GE</u> 95.98485 96.40092 96.66937 96.02448 95.39857 94.78903 94.53408 94.30030 94.10708 93.83172 93.8272 93.25197 93.15096 93.07467	49.62521 50.44779 50.74380 51.23008 51.54938 51.97265 52.26900 52.57016 52.75918 52.94454 53.07093 53.20515 53.30695 BT 1.301635 0.499524 0.318081 0.635308 1.034246 1.330537 1.397213 1.432663 1.487798 1.610219 1.739264 1.846594 1.907452 1.946336 1.975983	12.99687 10.87962 10.18619 9.449616 9.151496 8.742776 8.516397 8.236187 8.078448 7.902728 7.798084 7.674504 7.586740 DO 0.058325 0.700737 0.914411 1.354424 1.577092 1.819489 1.954383 2.128261 2.266751 2.416794 2.520581 2.608390 2.664874 2.717244 2.759072	0.010863 0.022324 0.053216 0.067145 0.079848 0.083369 0.092830 0.092830 0.098549 0.101892 0.105052 0.106554 0.108316 ET 2.655192 2.398816 2.098137 1.985788 1.990091 2.060944 2.114320 2.138772 2.138370 2.139813 2.147230 2.162297 2.175699 2.185463 2.190275