The Emperical Determinants of Aggregate Demand and its Effect on the Nigerian Populace

Past. Dr. Abomaye-Nimenibo[1]

[1] Obong University

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Abstract

This study was carried out to examine the determinants of aggregate demand in Nigeria during the period 1970 to 2014. The paper traced the fiscal policy and noted in fiscal policy, the government uses taxation and its own expenditure factors of aggregate demand to steer up the economy in its desired direction. It was observed that the federal Government and the other tiers of government operated consisted huge deficit budgets for this period by relying on the two major factors. The objective of this study is to investigate and ascertain the determinants of aggregate demand in Nigeria between 1970 and 2014 given the argument that Government spending and not tax reduction that determines aggregate demand. The ultimate aim was to ensure adequate use of all factors responsible for stimulating the economy and increase aggregate demand. Our study in five segments, was an attempt at trying to know where Nigeria has been going wrong in her use or application of the Aggregate Demand stimulants to fine tune the economy. An Econometrical approach was adopted in analyzing the data collected. Ordinary least squares (OLS) and cointegration methods have been employed specified in a functional notation form relating Aggregate demand (AD) as dependantThe explanatory variables explained 98.7

Index terms—

1 Introduction

cholars have always stated that the sum total of the expenditures of all goods and services produced within an economy is known as aggregate demand. According to **??**cConnell & Brue (1999:221), aggregate demand is a schedule or a curve showing the various amounts of goods and services-the amounts of real output-that domestic consumers, business, government, and foreign buyers collectively desire to purchase at each possible price level. Aggregate demand is subject to change due to change in government spending or a reduction in taxes. This is so because a reduction in taxes, for example, leads to increase in disposable income, which stimulates Past. Dr. Abomaye-Nimenibo, Williams Aminadokiari Samuel variables to seven (7) We therefore examine the relationship between aggregate demand and the explanation variables were obtained from CBN Statistical bulletin, 2005. A null hypothesis: HO: a1=O, that is AD has no relationship with each of the seven (7) independent determinants the model has used.

The summary of findings revealed that there exist a positive and strong relationship between aggregate demand and change in government spending, change in population, change in investment spending, change in consumer spending, change in export investment. The parsimonial error correction model shows that the model is a good fit and the coefficient of determination was significantly high. An Econometrical approach was adopted in analyzing the data collected. Ordinary least squares (OLS) and cointegration methods have been employed in our investigation. A growth model was therefore specified in a functional notation form relating Aggregate demand (AD) as a dependant variable to the seven (7) aggregate demand. This is also true of increase in government

expenditures. Yet within the Keynesian school of thought there is no consensus as to which of these actions clearly affect the aggregate demand in an economy, whether an increase in government expenditure or a reduction in taxes. Conservatives in U. S. believe that the Government should play a small role in the economy, whereas Liberals believe that government should play an active role. However, President John Kennedy was the first US President to accept Keynesian economics with open arms. He set about to use tax and spending policy to "fine tune" the economy **??**Henderson & Poole, 1991:296). But according to **??**bosi (1993:16), it is the government expenditure that affects aggregate demand more that a reduction in taxes. This is so because it is not easy to predict that when the disposable income is increased due to reduction in taxes that all the increase in income will be spent. In his words:

The level of aggregate demand in an economy also determines capacity utilization in the industries within an economy. This is because if, for instance, aggregate demand is low, there will be a fall in capacity utilization in the industries within an economy. That is to say, that aggregate demand either limits or expands specialization of labour.

Population (labour) is important in an economy because it manipulates other factors of production to produce goods and services that are in demand within and outside an economy. Thus, a country with many people can produce and enjoy more goods and services given abundant resources than a country with small number of people **??**Engelman 1997:25). On the other hand, a country with more people will suffer greatly, if it cannot utilize its abundant resources properly. Hence, population had received increasing attention from both governments and Non Governmental Organization (NGO's) since 1798 when Malthus published his essay on population and the consequences of overpopulation. He has postulated that population was growing at a geometrical progression while food supply was growing at an arithmetic progression. His fear was that in the future, population will outrun food supply and there will be starvation (Okeke 1992).

2 II.

3 Statement of Problem

Malthus theory on population is still a problem in both developed and developing nations. **??**ngelman (1997:6) stated that population growth influences many areas of human affairs, not merely food, security or health or environmental quality or economic growth, but all these and more. It is still a source of concern especially in the developing countries, where a good percentage of the population is not engaged in productive activities. Birth rate is on the increase due to increase in fertility whereas death rate is reduced due to improvement in the medical services, **??**ngelman (1997:27).

According to **??**enderson and Poole (1991:109), in most markets, rising population shifts demand curves out and that total demand in a country with a large population is greater than in a country with a small population. Henderson and Poole further stated that, so many demand studies are based on per-capita data that is, breaking down the population by age group and/or other characteristics and selecting a particular group appropriate to the study.

Thus in developing countries, one may ask whether high population growth can result to excess demand for goods and services. Can it be safely argued then that population affects aggregate demand? We also find in literatures two schools of thought saying that aggregate demand is subject to change due to change in government spending or a reduction in taxes. Within the Keynesian school of thought there is no consensus as to which one of these actions clearly affects the aggregate demand in an economy, whether an increase in government expenditure or a reduction in taxes. **??**hingan (2003:712) also stated that economists do not agree that cutting tax rate will lead to high growth rate and more tax revenue. Proponents of tax cut pointed out that high growth rates generate higher incomes which, in turn, generate higher tax revenues. Therefore, it is not reduction in tax rates that leads to the high growth rate of the economy. He further stated that, supply-side economists emphasise reduction in social (government) spending, subsidies, grants and budget deficit with reduction in taxes. Such policy of reducing social (government) spending, subsidies and grants adversely affects the poor and unemployed and fails to bring social justice.

The question one is poised to ask is that, will government spending stimulate the economy and increase aggregate demand? Will it also be true that aggregate demand determines capacity utilization in our industries?

Generally, what major factor(s) should be responsible for stimulating the economy and increase aggregate demand?

Taking all these issues together, therefore, this work seeks to investigate the relationships that exist between population and aggregate demand in **??**igeria between 1970 and Generally, what major factor(s) should be responsible for stimulating the economy and increase aggregate demand?

These issues need to be investigated and it is the desire to investigate these issues that prompted this research.

4 III.

5 Research Hypotheses

The study was guided by the following hypotheses: i) There is no significant relationship between aggregate demand and population growth. ii) There is no significant relationship between aggregate demand and government

spending. iii) There is no significant relationship between aggregate demand and investment spending. iv) There is no significant relationship between aggregate demand and net export spending. v) There is no significant relationship between aggregate demand and consumption spending. vi) There is no significant relationship between aggregate demand and price. vii) There is no significant relationship between aggregate demand and interest rate.

IV.

6 Significance of the Study

Aggregate behaviour studies or models attempt to predict demand behaviour characteristics for an aggregate population, such as residents of a census tract or area.

Aggregate behaviour models had been contrasted with disaggregate models, which predict an individual's behaviour and then aggregate individual decisions across a population to obtain overall demand characteristics. Aggregate models can be used to: i) Identifying which factors influence overall levels of various demands in an area. ii) Predicting the change in levels of demands caused by a change in one of these factors. iii) Predicting the amount of demand in other areas, based on data collected in one area. iv) Developing data for use in a particular demand model. Of course, aggregate demand behaviour is not devoid of the characteristics of the population and of the area.

However, not much impact had been felt in these areas of aggregation. Aggregate models have not yet been developed which have been demonstrated to be transferable to other situations or areas outside the developed countries. A lot has been said on some aspect of aggregate demand as it concerns itself with Fiscal policies of other nations and had not been able to tell us the level of cointegration between the aggregate demand and the determinant variables. Hence, a knowledge gap was created to be filled. Therefore, this study seeks to fill this knowledge gap.

The study is expected to awaken the interest of policy makers to come up with laws and regulations that will to a large extent stimulate the economy and increase aggregate demand with a view to improving the living standards of the people.

It is therefore necessary to look at the determinants of aggregate demand with a view to proffer solutions to handle population explosion in Nigeria in order to manage our teeming population and propel prospective investors in the country to invest in the areas of agriculture, housing, purchasing, marketing, distribution of essential commodities, transportation, manufacturing, funding of small scale industries and scientific inventions.

Furthermore, it is believed that this study will address a very important subject of addressing the issue of government either cutting down taxes in other to stimulate aggregate demand or government spending to stimulate the economy and increase aggregate demand through capacity utilization in our industries.

According to Ashley and Banister (1989); Epperson, Hendricks, and York (1995); Ridgeway (1995); and Nelson and Allen (1997), aggregate models have not yet been developed which have been demonstrated to be transferable to other situations or areas.

Therefore, this study will be relevant, if its findings provoke further academic inquiries into other sub units of aggregate demand. This will no doubt, enhance further knowledge in the field of study and improve the national economy. This study will contribute to existing literature in Economics as a whole.

V.

7 Literature Review and Theoretical Framework a) Introduction

There have been persistent arguments over what stimulates aggregate demand in any country, of which Nigeria is one. Scholars also argue that aggregate demand either limits or expands specialization of labour.

Early economic development proponents have also argued that aggregate demand is subject to change due to change in government spending or a reduction in taxes. This is so because a reduction in taxes, for example, leads to increase in disposable income, which stimulates aggregate demand. This is also true of increase in government expenditure.

Yet there is no consensus as to which of these actions clearly affect the aggregate demand in an economy, whether an increase in government expenditure or a reduction in taxes.

It has been argued that the fiscal operations of the government were not effective in restoring macroeconomic stability. Osakwe (1983) points specifically at the increasing Federal Government expenditure as a major factor which, via its effects on money supply causes price instability. Ojo and Okunrounmu (1992) attribute the observed persistent economic problem of the period to inappropriate fiscal management. **??**kpakpan (1994) argues that the failure of the government to reactivate the economy through the use of fiscal policy means that the government never used fiscal policy as an instrument of economic management. This implies that change in government spending does not determine or affect aggregate demand. These views have not been thoroughly investigated. But we need concrete facts to be able to guide future policies. This study is an attempt to contribute toward this.

The general debate is that aggregate demand in any economy determines capacity utilization in industries within and outside an economy. This is because if, for instance, aggregate demand is low, there will be a fall in

capacity utilization in the industries within an economy. That is to say, that aggregate demand either limits or expands specialization of labour. It is therefore, necessary to have a glimpse of the tripod upon which aggregate demand pivots. Man is the nucleus of aggregate demand and supply. Hence, the study of the behaviour of the population is very vocal.

The tripod upon which aggregate demand pivots is the fiscal policies of the government, capacity utilization and the relative population of any country. This does not limit the fact that there are other supportive variables that stimulate aggregate demand. Since 1980's, the Nigerian economy has been facing serious economic depressions resulting in both domestic and external instability whereby aggregate demand becomes too low. This development led to the adoption of the structural adjustment programme (SAP) in 1986 by the Federal Government. SAP was intended to restructure the economy, by introducing a market oriented financial system for effective and efficient production and distribution of goods and services. Despite the various measures of SAP, the economic problems have persisted.

Population (labour) is important in an economy because it manipulates other factors of production to produce goods and services that are in demand within an economy. Thus, a country with many people can produce and enjoy more goods and services given abundant resources than a country with small number of people **??**Engelman 1997:25). On the other hand, a country with more people will suffer greatly, if it cannot utilize its abundant resources properly; hence, population studies have received increasing attention from both governments and NGOs since 1798 when Malthus published his essay on population and the consequences of overpopulation. He postulated that population grew at a geometrical progression while food supply grew at an arithmetical progression. His fear was that in the future, population will outrun food supply with its attendant effect of starvation **??**Okeke 1992: 4).

8 b) Theoretical Framework

We discuss two basic economic theories of aggregate demand. The first is the aggregate demand function and the second being the fiscal policies.

According to McConnell and Brue (1999), aggregate demand is a schedule or a curve showing the various amounts of goods and services -the amounts of real output -that domestic consumers, businesses, government, and foreign buyers collectively desire to purchase at each possible price level. Other things being equal, the lower the price level, the larger the real gross domestic product (GDP) or AD = f(CS,IS,GS,ES,PP,PX,IR).....1 output these buyers will purchase. Conversely, the higher the price level, the smaller the real GDP (aggregate demand) they will buy. Thus, the relationship between the price level and the amount of real GDP demand is inverse or negative. Hence, Where AD defines aggregate demand, CS Consumption spending, IS Investment spending, GS government spending, ES Net export spending, PP population, PX price and IR Interest rate are as defined.

Changes in the price level change the level of aggregate spending. The usual assumption is that changes in the quantity of real output demanded (caused by changes in the price level) and call for changes in aggregate demand caused by changes in one or more of the determinants of aggregate demand. These determinants determine the location of aggregate demand curve. So change in aggregate demand equals all the changes in the determinant variables.

Fiscal policy is broadly defined as the package of adjustments in government revenues and expenditures in support of economic stability and a desired rate of economic growth (Ojo and Okunrounmu, 1993). Fiscal policy is described as being neutral, expansionary, or contractionary. Expansionary fiscal policy will increase the output, which will increase interest rates. Contractionary will slowdown the economy and reduce interest rates. **??**kpakpan(1994) defines fiscal policy as the deliberate use of government income and government expenditure to influence the level of economic activities in the economy. **??**ue and Friedlaender (1977) outlined three broad objectives of fiscal policy to include: (a) allocation -securing adjustments in the goods and services available between and within the private and public sectors of the economy; (b) distributionadjustments in the distribution of income and wealth; and (c) stabilization -securing a high level of employment, stability in price level and economic growth. In fiscal policy the government uses its spending and taxation to steer the economy in the desired direction.

The government can use its expenditure to stimulate the economy or to contract the level of A number of empirical studies have been carried out in the area of aggregate demand and its effect on the economy of the people (populace); how aggregate demand is determined and managed; and that of fiscal deficits and growth.

A number of empirical studies have been carried out in the area of aggregate demand and its effect on the economy of the people (populace); how aggregate demand is determined and managed; and that of fiscal deficits and growth.

Using Cross Country regressions, Ram (1986) reports that growth in general is positively correlated with the rate of change in total public expenditure. Similarly, Ram (1986) and Grossman(1988), reported positive relationships between government fiscal deficits and economic growth. But to what extent is the relationship between government and fiscal policies was not clearly stated. It is therefore necessary to make individual country recommendations. This means that the policy relevant to these countries may not work for Nigeria. It should be noted that cross-country or cross sectional studies do not address the problems specific to a given region or country. Hence, the relevance of this study. Ariyo (1993), evaluates the desirability of Nigeria's fiscal deficit profile

between 1970 and 1990. He suggest that the structure of government expenditure is inherently unsustainable by the country's resource profile. The major cause attributed to this was the phenomenal increase in government expenditure financed through debt raised from both internal and external sources.

This has consequently led to persistent and unsustainable annual deficits.

The results also suggest that the Structural Adjustment Programme (SAP) implemented in 1986 has so far not been of much assistance in addressing the problem. This study does show indirectly that the effect of government spending on aggregate demand is negative.

Also, Kouassy and Bohoum (1993), examines the determinants of fiscal deficit of Cote d' Ivoire over two decades. The study also investigated the impact of public investment cuts and tax rate manipulation on the fiscal deficit over the short and medium terms. The study adopted a model that was based on disaggregation of the different components of fiscal deficits. The regression (OLS) results show that public investment is positively linked with fiscal deficits. Furthermore, Ekpo (1994), investigates the impact on government expenditure on economic growth in Nigeria between 1960 and 1992. The study examines the contribution of government expenditure, particularly capital spending on the growth process in Nigeria. He also examines the relationship between private and government expenditure. The study adopts an empirical approach to investigating the relationship between public(government) expenditure as it affects aggregate demand vis-a-vis economic growth. A modified Denison-style growth accounting methodology was used for his analysis. He used the ordinary least square (OLS) technique in estimating the equations that link public sector investments with private sector investment initiatives. The results from the study confirm that government spending on infrastruture as well as investments spending on agriculture crowd in private investment while public spending on manufacturing and construction crowds out private investment. Although the results from this study are insightful, the study was based on the assumption that variables which affect private investment will affect growth (aggregate demand). One therefore wonders what role government spending and investment spending should play in the determination of aggregate demand vis-à-vis GDP. Hence, there is the need to investigate the determinants of aggregate demand which study is lagging.

The study by Ekpo (1994) only estimates private investment model with the assumption that all the factors affecting private investment will automatically affect growth of the economy. It is assumed that there is a direct link between private investment and GDP growth. This is seen as an indirect approach to linking fiscal policy with aggregate demand. A more direct approach is to link fiscal policy variable to aggregate demand. Therefore, this study puts the assumption to empirical testing. Besides, this study estimates an aggregate demand (AD) model (which is missing in most studies including Ekpo's study) and identifies the major determinant variables of aggregate demand. Jappelli and Meana (1994), studied public(government) expenditures on investment and consumption which have different impact on economic activity. Public investment stimulates output and so increases government revenues and, in turn, allows the government to spend more. So based on cross-country data, the study analyses the determinants of public expenditures that are allocated to public investment. The implication of findings from the study is that specific spending promotes output (growth); that is, specific revenue sources can be allocated to specific expenditures which in turn promotes output growth (aggregate demand).

Economic theory justifies economic activities. If at a particular point in time, the government observes that aggregate demand and level of output as well as employment with investment in the economy have declined below the desired levels, the government can stimulate the economy by increasing its expenditure and also decrease the interest rate. The result will be increase in output, aggregate demand and employment.

Alternatively, if the government observes that the economy is over-stimulated; it could deal with the situation by reducing its own expenditure and increase the interest rate. Aggregate demand, income and total government spending will fall. All things being equal, prices of goods and services will tend to go down. earmaking, which assigns revenues from specific taxes to specific activities. To what extent does tax cut affects aggregate demand is missing and calls for an indept study.

El-Khouri (2002), provides a general framework through which the stabilisation function of fiscal policy works. The study begins with the traditional IS-LM aggregate supply and aggregate demand model to assess the short run effects of fiscal policy on output, prices, and the current account of the balance of payments and to explore the interactions between fiscal policy and monetary and exchange rate policies. It then addresses issues specific to fiscal policy and macroeconomics management, including methods for measuring fiscal balance, cyclical and structural defects, the sustainability of the fiscal deficit, and policies for managiong debt and fiscal surpluses. It concludes by exploring how the three primary instruments of fiscal policy, tax policy, expenditure policy and overall budgetary policy, can affect a country's long term growth.

Chete and Adeoye (2002), in their paper, explore the human capital/economic growth connection for Nigeria. The study provides a quatitative evaluation of the effects of human capital on economic growth in Nigeria. A lot of methodological approaches were employed to examine this link. Specifically, the study employs Granger causality tests. Variance decomposition analysis, impulse response analysis and econometric techniques. The results that emanates from the study suggest an anticipated positive impact of human capital on growth. The results also provide evidence to support the submission that the development of skills and knowledge, combined with their effective utilisation, is important for growth and development of an economy.

William Barber (1997) in his article published in an economic journal, stated that price is a, human volition, the human subject, was "brought to the centre of the stage" by marginalist economics, as a bargaining tool.

Neoclassical economists sought to clarify choices open to producers and consumers in market situations, and thus "fears that cleavages in the economic structure might be unbridgeable could be suppressed".

Without denying the applicability of the Austrian theory of value as subjective only, within certain contexts of price behavior, the Polish economist Oskar Lange (1936) felt it was necessary to attempt a serious integration of the insights of classical political economy with neo-classical economics. This would then result in a much more realistic theory of price and of real behavior in response to prices. Marginalist theory lacked anything like a theory of the social framework of real market functioning, and criticism sparked off by the capital controversy initiated by Piero Sraffa (1960),revealed that most of the foundational tenets of the marginalist theory of value either reduced to tautologies, or that the theory was true only if counter-factual conditions applied.One insight often ignored in the debates about price theory is something that businessmen are keenly aware of: in different markets, prices may not function according to the same principles except in some very abstract (and therefore not very useful) sense. From the classical political economists to Michal Kalecki according to Williams Babber (1997), it was known that prices for industrial goods behaved differently from prices for agricultural goods, but this idea could be extended further to other broad classes of goods and services. This calls for an in-dept study.

9 c) Literature Review

According to Bobo The Ninja contribution to Fiscal Policy on 21 st March 2007 in the Wikipedia, the free encyclopedia, Fiscal policy is the economic term that defines the set of principles and decisions of a government in setting the level of public expenditure and how that expenditure is funded. Fiscal policy and monetary policy are the macroeconomic tools that governments have at their disposal to manage the economy. Fiscal policy is the deliberate change in government spending, government borrowing or taxes to stimulate or slow down the economy. It contrasts with monetary policy, which describes the policies about the supply of money to the economy.

10 i. Method of Raising Funds

Governments spend money on a wide variety of things, from the military and police to services like education and healthcare, as well as transfer payments such as welfare benefits.

This expenditure can be funded in a number of different ways: ? Taxation of the population ? Seignorage, the benefit from printing money ? Borrowing money from the population, resulting in a fiscal deficit.

11 Funding of Deficits

A fiscal deficit is often funded by issuing bonds, like Treasury bills or consols. These pay interest, either for a fixed period or indefinitely. If the interest and capital repayments are too great, a nation may default on its debts, most usually to foreign debtors.

12 ii. Economic Effects of Fiscal Policy

Fiscal policy is used by governments to influence the level of aggregate demand in the economy, in an effort to achieve economic objectives of price stability, full employment and economic growth.

Keynesian economics suggests that adjusting government spending and tax rates, are the best way to stimulate aggregate demand. This can be used in times of recession or low economic activity as an essential tool in providing the framework for strong economic growth and working toward full employment. However, such policies have commonly resulted in deficit spending.

During periods of high economic growth, a budget surplus can be used to decrease activity in the economy. A budget surplus will be implemented in the economy if inflation is high, in order to achieve the objective of price stability. The removal of funds from the economy will, by Keynesian Theory, reduce levels of aggregate demand in the economy and contract it, bringing about price stability.

Despite the importance of fiscal policy, a paradox exists. In the case of a government running a budget deficit, funds will need to come from public borrowing (the issue of government bonds), overseas borrowing or the printing of new money. When governments fund a deficit with the release of government bonds, an increase in interest rates across the market can occur. This is because government borrowing creates higher demand for credit in the financial markets, causing a lower aggregate demand (AD) due to the lack of disposable income, contrary to the objective of a budget deficit. This concept is called crowding out. However, the effects of crowding out are usually not as large as the increase in GDP stemming from increased government spending.

Another problem is the time lag between the implementation of the policy, and visible effects seen in the economy. It is often contended that when an expansionary Fiscal policy is implemented, by way of decrease in taxes, or increased consumption (keeping taxes at old level), it leads to increase in aggregate demand; however, an unchecked spiral in aggregate demand will lead to inflation. Hence, checks need to be kept in place.

iii. Interest Rate iv. Price Fried Milton (2006) came up with answers to three interesting questions: How does the amount you buy depend on price? How much do you benefit by being able to buy something at a particular price? What is the relation between price and value? He says that first, the consumer is to choose among the various bundles of goods and services you could purchase or produce with your limited resources of time and money. There are two elements to the problem–your preferences and your opportunity set. Your preferences

could be represented by a gigantic table showing all possible bundles–collections of goods and services that you could conceivably consume–and showing for every pair of bundles which one you prefer. We assume that your preferences are consistent; if you prefer A to B and B to C, you also prefer A to C. Your opportunity set can be thought of as a list containing every bundle that you have enough money to buy. Your problem as a consumer is to decide which of the bundles in your opportunity set you prefer.

The first is that the value of something is whatever we are (just) willing to give up for it. Two things have the same value if gaining one and losing the other leaves us neither better nor worse off–meaning that we are indifferent between the situation before the exchange and the situation after the exchange. This is an application of the principle of revealed preference discussed in the previous chapter–our values are defined by the choices we make.

A second lesson is that the value of goods (to you) depends not only on the nature of the goods and your preferences but also on how much of those goods you have. The third lesson is that the price (or cost) of a good is the amount of something else you must give up to get it. This is called opportunity cost–the cost of getting one thing, whether by buying it or producing it; or it is what you have to give up in order getting it. The cost of living in a house that you already own is not, as you might think, limited to expenditures on taxes, maintenance, and the like; it also includes the interest you could collect on the money you would have if you sold the house to someone else instead of living in it yourself. Opportunity cost is not a particular kind of cost but rather the correct way of looking at all costs. The money you spend to buy something is a cost only because there are other things you would like to spend the money on instead; by buying A, you give up the opportunity to buy B. Not getting the most valuable of the B's that you could have bought with the money–the one you would have bought if A had not been available-is then the cost to you of buying A. That is why, if you were certain that the world was going to end at midnight today, money would become almost worthless to you. Its only use would be to be spent today–so you would "spend as if there were no tomorrow."

13 Year ( )

14 2017

15 E

The Emperical Determinants of Aggregate Demand and its Effect on the Nigerian Populace According to CBN monetary policy circular (N0. 33: 1999), the adoption of market-based technique of monetary management requires a flexible and dynamic interest rate policy. Thus, the deregulation of interest rates which came into effect in October 1996 shall continue. In this regard, the CBN would indirectly influence interest rate changes through its intervention rate on various money market instruments, especially the Minimum Rediscount Rate (MRR) as well as the cutoff rate at the weekly tender for treasury bills. The MRR, which is the nominal anchor of CBN's interest rate policy, shall be used more actively in 1999.

The large spread between bank deposits and average lending rates has been a matter of concern to the authorities, as it tends to discourage savings and borrowing to the detriment of the economy. In order to further address this problem, a more competitive financial environment shall be established where banks freely compete for funds.

The final lesson is that you buy something if and only if its cost is less than its value. A drop in the price of everything you consume has the same effect on what you can buy as an increase in income. We are used to thinking of prices and incomes in terms of money, but money is important only for what it can buy; if all prices go down and my income stays the same, my real income–my ability to buy things–has risen in exactly the same way as if prices had stayed the same and my income has gone up, gone down, or stayed the same? Income is useful for what it can buy; the value to me of the bundle of goods that I buy is indicated, on an indifference curve diagram, by what indifference curve it is on. It therefore seems natural to say that a change in money income and prices that leaves me on the same indifference curve as before has left my real income unchanged. A change that leaves me on a higher indifference curve has increased my real income; a Optimal bundles for three different incomes–a normal good and an inferior good. As income increases, consumption of oranges increases but consumption of apples decreases; so apples are an inferior good. IEP is the income expansion path.

A good whose consumption goes down instead of up when its price goes down is called a Giffen good. It is not clear whether any such goods actually exist. The reason is that most of us consume many different goods, spending only a small part of our income on any one. A drop in the price of one good has a large effect on its relative price (hence a large substitution effect) but only a small effect on our real income. A giffen good must either consume a large fraction of income or be so strongly inferior that the effect of a small change in A drop in the price of one good without any compensating change in income or other prices produces both a substitution effect and an income effect. The substitution effect always increases the consumption of the good whose price has fallen; the income effect may increase or decrease it. This suggests the possibility of a good so strongly inferior that the income effect more than cancels the substitution effectas its price falls,and its consumption goes down. Imagine, for example, that you are spending most of your income on garri. If the price of garri falls by 50 percent while your income and all other prices remain the same, your real income has almost doubled. Since you are now much richer than before, you may decide to buy some rice and reduce your consumption of garri. The

substitution effect tends to make you consume more garri; at the lower price of garri, the money required to buy a cup of rice would buy twice as much garrias before the price change; so rice is more expensive in terms of garri than before. But you are now much richer, so you may choose to eat more rice in spite of its higher relative cost.

income outweighs that of a large change in relative price.

For most economic problems, the relevant demand curve is the Marshallian one, since there is generally no reason to expect a change in the price of one good to cause a compensating change in income or other prices. Since raising the price of one of them makes the consumer significantly worse off, his behavior (the amount of the good he buys) is substantially different according to whether we do or do not compensate him for the change. But in the real world, as I pointed out earlier, we divide our expenditure among many goods. If I spend only a small fraction of my income on a particular good, a change in its price has only a small effect on my real income. In such a case, the difference between the two demand curves is likely to be very small. For this reason, we will generally ignore the distinction between ordinary and incomecompensated demand curves in what follows:

Fiscal Policy and Aggregate Demand **??**schauer (1985) carried out an investigation of the effects of fiscal policy on private consumption and aggregate demand within an explicit inter-temporal optimization framework. In his empirical study the following questions formed his hypothesis: o Is consumption sensitive to the choice of tax versus debt financing of current government expenditure?

o To what extent, if any, does government spending directly substitute for private consumer expenditure? Other researchers as listed below also carried out similar empirical studies. Thus, the first question has stimulated a considerable amount of research since **??**arro's (1974) revival of the "Ricardian equivalence" proposition.

The second question has also been touched upon in recent empirical studies. Feldstein's (1982) results detract from the proposition of "fiscal neutrality" whereby an increase in government spending induces an ex ante crowding out of an equal amount of private consumption expenditure. However, Kormendi obtains support for his "consolidated approach" to fiscal policy by finding a substantial degree of substitutability between government spending and private consumption.

The argument advanced is that probable misspecification bias in these previous studies renders the results suspect and may account for the fact that minor changes in the empirical models lead to radically different conclusions regarding the potency of fiscal policy. In place of the conventional methodology, an alternative approach is presented which exploits restrictions placed on the data by the first-order consumption. The empirical evidence is supportive of the joint hypothesis of rational expectations and Ricardian equivalence as well as of the proposition that government spending substitutes poorly for private consumption in utility.

16 vi. Methods of Raising Funds

Governments spend money on a wide variety of things, from the military and police to services like education and healthcare, as well as transfer payments such as welfare benefits.

This expenditure can be funded in a number of different ways: ? Taxation of the population ? Seignorage, the benefit from printing money ? Borrowing money from the population, resulting in a fiscal deficit.

17 Funding of Deficits

A fiscal deficit is often funded by issuing bonds, like Treasury bills or consols. These pay interest, either for a fixed period or indefinitely. If the interest and capital repayments are too great, a nation may default on its debts, most usually to foreign debtors.

18 vii. Economic Effects of Fiscal Policy

Fiscal policy is used by governments to influence the level of aggregate demand in the economy, in an effort to achieve economic objectives of price stability, full employment and economic growth.

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The Emperical Determinants of Aggregate Demand and its Effect on the Nigerian Populace v.

You have just bought a house. A month after you have concluded the deal, the price of houses goes up. Are you better off (your house is worth more) or worse off (prices are higher) as a result of the price change? Most people will reply that you are better off; you own a house and houses are now more valuable.

On the other hand, the house you just bought a month ago have just changed price which goes down. Are you worse off (i.e. your house is worth less) or better off (prices are lower)? Most people, in my experience, will reply that you are worse off. The answers seem consistent, even to those who are not sure what the right answer is. It appears obvious that if a rise in the price of housing makes you better off, then a fall must make you worse off, and if a rise makes you worse off, then a fall must make you better off. Although it appears obvious, it is wrong. The correct answer is that either a rise or a fall in the price of housing makes you better off. If the price of housing stayed the same, so would the amount of housing you may want to have. You are not, in other words, planning

to have children and move to a bigger house or planning to retire, sell your house, and move to somewhere else. To simplify the argument, wewill ignore all costs of buying, selling, or owning housing other than the price–sales taxes, realtor's or estate vendors commissions, and the like. Finally, wewill assume that the change in price was unexpected; and when you bought the house you were assuming that the price of housing, like everything else, was going to stay the same forever. necessary conditions for inter-temporal optimization in Keynesian economics suggests that adjusting government spending and tax rates, are the best way to stimulate aggregate demand. This can be used in times of recession or low economic activity as an essential tool in providing the framework for strong economic growth and working toward full employment. However, such policies have commonly resulted in deficit spending.

During periods of high economic growth, a budget surplus can be used to decrease activity in the economy. A budget surplus will be implemented in the economy if inflation is high, in order to achieve the objective of price stability. The removal of funds from the economy will, by Keynesian Theory, reduce levels of aggregate demand in the economy and contract it, bringing about price stability.

Despite the importance of fiscal policy, a paradox exists. In the case of a government running a budget deficit, funds will need to come from public borrowing (the issue of government bonds), overseas borrowing or the printing of new money. When governments fund a deficit with the release of government bonds, an increase in interest rates across the market can occur. This is because government borrowing creates higher demand for credit in the financial markets, causing a lower aggregate demand (AD) due to the lack of disposable income, contrary to the objective of a budget deficit. This concept is called crowding out. However, the effects of crowding out are usually not as large as the increase in GDP stemming from increased government spending.

Another problem is the time lag between the implementation of the policy, and visible effects seen in the economy. It is often contended that when an expansionary Fiscal policy is implemented, by way of decrease in taxes, or increased consumption (keeping taxes at old level), it leads to increase in aggregate demand; however, an unchecked spiral in aggregate demand will lead to inflation. Hence, checks need to be kept in place.

22 viii. Fiscal Policy

According to David N. Weil (2002), fiscal policy is the use of the government budget to affect an economy. When the government decides on the taxes that it collects, the transfer payments it gives out, or the goods and services that it purchases, it is engaging in fiscal policy. The primary economic impact of any change in the government budget is felt by particular groups-a tax cut for families with children, for example, raises the disposable income of such families. Discussions of fiscal policy, however, usually focus on the effect of changes in the government budget on the overall economy-on such macroeconomic variables as GNP and unemployment and inflation.

The state of fiscal policy is usually summarized by looking at the difference between what the government pays out and what it takes in-that is, the government deficit. Fiscal policy is said to be tight or contractionary when revenue is higher than spending (the government budget is in surplus) and loose or expansionary when spending is higher than revenue (the budget is in deficit). Often the focus is not on the level of the deficit, but on the change in the deficit. Thus, a reduction of the deficit from $200 billion to $100 billion is said to be contractionary fiscal policy, even though the budget is still in deficit.

The most immediate impact of fiscal policy is to change the aggregate demand for goods and services. A fiscal expansion, for example, raises aggregate demand through one of two channels. First, if the government increases purchases but keeps taxes the same, it increases demand directly. Second, if the government cuts taxes or increases transfer payments, people's disposable income rises, and they will spend more on consumption. This rise in consumption will, in turn, raise aggregate demand.

Fiscal policy also changes the composition of aggregate demand. When the government runs a deficit, it meets some of its expenses by issuing bonds. In doing so, it competes with private borrowers for money lent by savers, raising interest rates and "crowding out" some private investment. Thus, expansionary fiscal policy reduces the fraction of output that is used for private investment.

In an open economy, fiscal policy also affects the exchange rate and the trade balance. In the case of a fiscal expansion, the rise in interest rates due to government borrowing attracts foreign capital. Foreigners bid up the price of the dollar in order to get more of them to invest, causing an exchange rate appreciation. This appreciation makes imported goods cheaper in the United States and exports more expensive abroad, leading to a decline of the trade balance. Foreigners sell more to the country than they buy from it, and in return acquire ownership of assets in the country. This effect of fiscal policy was central to discussions of the "twin deficits" (budget and trade) of the eighties.

Fiscal policy is an important tool for managing the economy because of its ability to affect the total amount of output produced-that is, gross domestic product. The first impact of a fiscal expansion is to raise the demand for goods and services. This greater demand leads to increases in both output and prices. The degree to which higher demand increases output and prices depends, in turn, on the state of the business cycle. If the economy is in recession, with unused productive capacity and unemployed workers, then increases in demand will lead mostly to more output without changing the price level. If the economy is at full employment, by contrast, a fiscal expansion will have more effect on prices and less impact on total output. This ability of fiscal policy to affect output by affecting aggregate demand makes it a potential tool for economic stabilization. In a recession the government can run an expansionary fiscal policy, thus helping to restore output to its normal level and

to put unemployed workers back to work. During a boom, when inflation is perceived to be a greater problem than unemployment, the government can run a budget surplus, helping to slow down the economy. Such a countercyclical policy would lead to a budget that was balanced on average.

One form of countercyclical fiscal policy is known as automatic stabilizers. These are programs that automatically expand fiscal policy during recessions and contract it during booms. Unemployment insurance, on which the government spends more during recessions (when the unemployment rate is high), is an example of an automatic stabilizer. Unemployment insurance serves this function even if the federal government does not extend the duration of benefits. Similarly, because taxes are roughly proportional to wages and profits, the amount of taxes collected is higher during a boom than during a recession. Thus, the tax code also acts as an automatic stabilizer. But fiscal policy need not be automatic in order to play a stabilizing role in business cycles. Some economists recommend changes in fiscal policy in response to economic conditions-so-called discretionary fiscal policy-as a way to moderate business cycle swings. These suggestions are most frequently heard during recessions, when there are calls for tax cuts or new spending programs to "get the economy going again."

Unfortunately, discretionary fiscal policy is rarely able to deliver on its promise. Fiscal policy is especially difficult to use for stabilization because of the "inside lag"-the gap between the time when the need for fiscal policy arises and when it is implemented by the president and Congress. The tax cut proposed by President Kennedy to stimulate the economy in 1962, for example, was not enacted until 1964. If economists forecast well, then the lag would not matter. They could tell Congress in advance what the appropriate fiscal policy is. But economists do not forecast well. Most economists, for example, badly under predicted both the rise in unemployment in 1981 and the strength of the recovery that began in late 1982. Absent accurate forecasts, attempts to use discretionary fiscal policy to counteract business cycle fluctuations are as likely to do harm as good.

The case for using discretionary fiscal policy to stabilize business cycles is further weakened by the fact that another tool, monetary policy, is far more agile than fiscal policy. Even here, though, many economists argue that monetary policy is too prone to lags to be effective, and that the best countercyclical policy is to leave well enough alone.

Whether for good or for ill, fiscal policy's ability to affect the level of output via aggregate demand wears off over time. Higher aggregate demand due to a fiscal stimulus, for example, eventually shows up only in higher prices and does not increase output at all. That is because over the long run the level of output is determined not by demand, but by the supply of factors of production (capital, labor, and technology). These factors of production determine a "natural rate" of output, around which business cycles and macroeconomic policies can cause only temporary fluctuations. An attempt to keep output above its natural rate by means of aggregate demand policies will lead only to ever-accelerating inflation.

The fact that output returns to its natural rate in the long run is not the end of the story, however. In addition to moving output in the short run, fiscal policy can change the natural rate, and ironically, the long-run effects of fiscal policy tend to be the opposite of the short-run effects. Expansionary fiscal policy will lead to higher output today but will lower the natural rate of output below what it would have been in the future. Similarly, contractionary fiscal policy, though dampening the level of output in the short run, will lead to higher output in the future.

Fiscal policy affects the level of output in the long run because it affects the country's saving rate. The country's total saving is composed of two parts private saving (by individuals and corporations) and government saving (which is the same as the budget surplus). A fiscal expansion entails a decrease in government saving. Lower saving means, in turn, that the country will either invest less in new plant and equipment or increase the amount that it borrows from abroad, both of which lead to unpleasant consequences in the long term. Lower investment will lead to a lower capital stock and to a reduction in a country's ability to produce output in the future. Increased indebtedness to foreigners' means that a higher fraction of a country's output will have to be sent abroad in the future rather than being consumed at home.

Fiscal policy also changes the burden of future taxes. When the government runs an expansionary fiscal policy, it adds to its stock of debt. Because the government will have to pay interest on this debt (or repay it) in future years, expansionary fiscal policy today imposes an additional burden on future taxpayers. Just as taxes can be used to redistribute income between different classes, the government can run surpluses or deficits in order to redistribute income between different generations.

Some economists have argued that this effect of fiscal policy on future taxes will lead consumers to change their saving. Recognizing that a tax cut today means higher taxes in the future, the argument goes; people will simply save the value of the tax cut they receive now in order to pay those future taxes. The extreme of this argument, known as Ricardian Equivalence, holds that tax cuts will have no effect on national saving, since changes in private saving will offset changes in government saving. But if consumers decide to spend some of the extra disposable income they receive from a tax cut (because they are myopic about future tax payments, for example), then Ricardian Equivalence will not hold; a tax cut will lower national saving and raise aggregate demand. The experience of the eighties, when private saving fell rather than rose in response to tax cuts, is evidence against Ricardian Equivalence.

In addition to its effect on aggregate demand and on saving, fiscal policy also affects the economy by changing incentives. Taxing an activity tends to discourage that activity. A high marginal tax rate on income reduces

people's incentive to earn income. By reducing the level of taxation, or even by keeping the level the same but reducing marginal tax rates and reducing allowed deductions, the government can increase output. The "supply-side" economists who were prominent early in the Reagan administration argued that reductions in tax rates would have a large effect on the amount of labor supplied, and thus on output. Incentive effects of taxes also play a role on the demand side. Policies such as the investment tax credit, for example, can greatly influence the demand for capital goods.

The greatest obstacle to proper use of fiscal policy-both for its ability to stabilize fluctuations in the short run and for its long-run effect on the natural rate of output-is that changes in fiscal policy are necessarily bundled with other changes that please or displease various constituencies. A road in Congressman X's district is all the more likely to be built if it can be packaged as part of countercyclical fiscal policy. The same is true for a tax cut for some favored constituency. This naturally leads to an institutional enthusiasm for expansionary policies during recessions that are not matched by a taste for contractionary policies during booms. In addition, the benefits from such a policy are felt immediately, whereas its costs-higher future taxes and lower economic growth-are postponed until a later date. The problem of making good fiscal policy in the face of such obstacles is, in the final analysis, not economic, but political.

23 ix. Price

According to Lange (1936), price in economics and business is the assigned numerical monetary value of a good, service or asset. The concept of price is central to microeconomics where it is one of the most important variables in resource allocation theory (also called price theory). Price is also central to marketing where it is one of the four variables in the marketing mix that business people use to develop a marketing plan .

In ordinary usage or conventional terms, price is the quantity of payment or compensation for something. People may say about a criminal that he has 'paid the It is now becoming clear that the distinction is not useful and indeed hides a major confusion. The conventional wisdom is that proportional change in all nominal prices does not affect real price, and hence should not affect either demand or supply and therefore also should not affect output. The new criticism is that the crucial question is why there is more money to pay for the same old real output. If this question is answered, it will show that dynamically, even as the real price remains exactly the same, output in real terms can change, just because additional money allow additional

The difference between nominal price and relative or real price (as exchange ratio) is often made. Nominal price is the price quoted in money while relative or real price is the exchange ratio between real goods regardless of money. The distinction is made to make sense of inflation. When all prices are quoted in terms of money units, and the prices in money units change more or less proportionately, the ratio of exchange may not change much. In the extreme case, if all prices quoted in money change in the same proportion, the relative price remains the same.

Theory of price asserts that the market price reflects interaction between two opposing considerations. On the one side are demand considerations based on marginal utility, while on the other side are supply considerations based on marginal cost. An equilibrium price is supposed to be at once equal to marginal utility (counted in units of income) from the buyer's side and marginal cost from the seller's side. Though this view is accepted by almost every economist, and it constitutes the core of mainstream economics, it has recently been challenged seriously. There was time when people debated use-value versus exchange value, often wondering about the Diamond-Water Paradox (paradox of value). The use-value was supposed to give some measure of usefulness, later refined as marginal benefit (which is marginal utility counted in common units of value) while exchange value was the measure of how much one good was in terms of another, namely what is now called relative price.

price to society' to imply that he has paid a penalty or compensation. They may say that somebody paid for his folly to imply that he suffered the consequence. Economists view price as an exchange ratio between goods that pay for each other. In case of barter between two goods whose quantities are x and y, the price of x is the ratio y/x, while the price of y is the ratio x/y. This however has not been used consistently, so that old confusion regarding value frequently reappears. The value of something is a quantity counted in common units of value called numeraire, which may even be an imaginary good. This is done to compare different goods. The unit of value is frequently confused with price, because market value is calculated as the quantity of some good multiplied by its nominal price.

output to be traded. The supply curve can shift such that at the old price, the new higher output is sold. This shift is not possible without additional money.

From this point of view, a price is similar to an opportunity cost, that is, what must be given up in exchange for the good or service that is being purchased. For example, if x=1 and y=2, the relative price of x in terms of y is 2, and the price of y in terms of x is 0.5.

The price of an item is also called the price point, especially where it refers to stores that set a limited number of price points. For example, Dollar General is a general store or "five and dime" store that sets price points only at even amounts, such as exactly one, two, three, five, or ten dollars (among others). Other stores (such as dollar stores, pound stores, euro stores, 100-yen stores, and so forth) only have a single price point ($1, £1, ?1, ¥100), though in some cases this price may purchase more than one of some very small items.

Lange (1936) further stated that in Marxian economics, it is argued that price theory must be firmly grounded in the real history of economic exchange in human societies. Money-prices are viewed as the monetary expression

of exchange-value. Exchangevalue can however also be expressed in trading ratios between quantities of different types of goods. In Marxian economics, the increasing use of prices as a convenient way to measure the economic or trading value of labor-products is explained historically and anthropologically, in terms of the development of the use of money as universal equivalent in economic exchange. However, in an anthropological-historical sense, Marxian economists argued that a "price" is not necessarily a sum of money; it could be whatever the owner of a good gets in return, when exchanging that good. Money prices are merely the most common form of prices.

Marxian economists distinguish very strictly between real prices and ideal prices. Real prices are actual market prices realized in trade. Ideal prices are hypothetical prices which would be realized if certain conditions would apply. Most equilibrium prices are hypothetical prices, which are never realized in reality, and therefore of limited use, although notional prices can influence real economic behavior. However, Marxian economists stressed that all labor-products existing in an economy have economic value, only a minority of them have real prices; the majority of goods and assets at any time are not being traded, and they have at best a hypothetical price. Six criticisms Marxian economists make of neoclassical economics are that -neoclassical price theory: a) Is not based on any substantive, realistic theory of economic exchange as a social process, and simply assumes that exchange will occur;

Lange (1936) advocated the use of market tools (especially the neoclassical pricing theory) in economic planning of socialism and Marxism. He proposed that central planning boards set prices through "trial and error," making adjustments as shortages and surpluses occurred rather than relying on a free price mechanism. If there were shortages, prices would be raised; if there were surpluses, prices would be lowered. Raising the prices would encourage businesses to increase production, driven by their desire to increase their profits, and in doing so eliminate the shortage. Lowering

The bulk of Lange's contributions to economics came during his American interlude of 1933-1945. Despite being an ardent socialist, Lange deplored the Marxian labor theory of value, being very much a believer in the Neoclassical theory of price. In the history of economics, he is probably best known for his work On the Economic Theory of Socialism published in 1936, where he famously put Marxian and neoclassical economics together.

24 described what is diamonds

The last objection is also sometimes interpreted as the paradox of value, which was observed by classical economists Adam Smith now called the Diamond -Water Paradox command a higher price than water, yet water is essential for life, while diamonds are merely ornamentation. One solution offered to this paradox is through the theory of marginal utility proposed by Carl Menger, the father of the Austrian School of economics.

Most marginalist economists dismiss Marxian theories of price, arguing that those theories require a method of converting from labour values into monetary prices, and that the method given in Marx's Capital (Volume 3) is mathematically flawed. Marxian economists themselves argue that it is impossible to convert values into prices because that attempt involves a conceptual confusion. In certain abstract models, Marx compares quantities of value with price quantities but he does so, only because of the reality that goods may be traded above or below their value, and the reality that a quantity of value is produced before it is known how much of that value will be realized as income through sales. It would be more correct to say that Marx lacked a theory of short-term price movements.

b) Simply assumes prices can be attached or imputed to all goods and services; c) Assumes equilibrium prices will exist and that markets tend spontaneously to equilibrium prices; d) Fails to distinguish adequately between actual market prices; administered prices; and ideal, accounting, or hypothetical prices; e) Disconnects price theory from the real economic history of the use of prices. f) Is unable to provide a coherent explanation of the relationship between price and economic value.

VI.

25 Method of Study

The data set for this work consists of the annual time series spanning 1970 through 2014. The variables under consideration are:i) Aggregate Demand (AD) ii) Consumption Expenditure (CS) iii) Investment Expenditure (IS) iv) Government Expenditure (GS) v) Net Export Expenditure (ES) vi) Population (PP)

The required secondary data was collected from the Central Bank of Nigeria (CBN), National Bureau of Statistics (NBS), The International Monetary Funds (IMF), The World Bank and some published journal articles, textbooks etc.

26 a) Model Specification

The functional relationship between the dependent and the independent variables in our study are established as follows: AD = f(CS, IS, GS, ES, PP, PX, IR) ???????...3.1

Where AD, CS, IS, GS, ES, PP, PX and IR are as defined in section 3.1.

The equation 3.1 above would be tried with both linear and log linear specification and the one that suits our specification, judged in terms of goodness of fit, precision of estimates and a tolerable level of multicollinearity will be chosen. Thus transforming the argument in equations 3.1 into log equations we have: log AD = ? 0 +?1log CS+? 2 log ES+? 3 log GS+? 4 log IS+? 5 log PP+? 6 log PX+? 7 logIR+µ??3.2

The aggregate model therefore is: AD = f (?CS, ?IS, ?GS, ?ES, ?PP, ?PX, ?IR) i. Variables in the Model (i) Dependent Variable: AD = Aggregate demand (a schedule showing the various amounts of goods and services-the amounts of real output-that domestic consumers, business, government, and foreign buyers collectively desire to purchase at each possible price level at a given time). (ii) Explanatory Variables: a. Change in consumer spending The amount of consumer's assets consumed. A sharp decline in the real value of consumer assets such as stocks and bonds as well as physical assets such as houses and land, encourages people to save more (buy fewer products) to restore their wealth. The resulting decline in consumer spending will decrease aggregate demand -that is, shift the aggregate demand curve leftward. In contrast, an increase in the real value of consumer wealth will increase consumption spending at each price level; the aggregate demand curve will shift rightward.

This assumes a fixed aggregate demand curve and results from a change in the price level. In contrast, the change in real wealth addressed here is independent of a change in the price level; it is a nonprice-level factor which shifts the entire aggregate demand curve. An example would be a rocketing boost in stock prices which increases consumer wealth, even though the price level has not changed. Similarly, a sharp decline in the real value of houses and land reduces consumer wealth, independent of changes in the general price level. The relationship is positive.

27 b. Change in Investment Spending

Investment spending is the purchase of capital goods. A decline in the amount of new capital goods desired by businesses at each price level will shift the aggregate demand curve leftward. An increase in the desired amount of investment goods will increase aggregate demand. Alternatively, if the profit outlook on possible investment projects dims because of an expected decline in consumer spending, investment spending will decline.

Consequently, aggregate demand will also decline. The relationship is positive.

28 c. Change in Government Spending

This is government's desire to buy goods and services. An increase in government purchases of real output at each price level will increase aggregate demand as long as tax collections and interest rates do not change as a result. An example would be a decision by government to expand the interstate highway system. In contrast, a reduction in government spending, such as a cutback in orders for military hardware, will reduce aggregate demand.

29 d. Change in Export Spending

When foreign consumers change their purchases of Nigerian goods independently of changes By this idea, Lange also argued that a state-run economy could at least be as efficient as -if not more efficient than -a free market economy. He argued that this was possible if the government planners used the price system as if in a market economy and instructed state industry managers to respond parametrically to the state-determined prices (minimize cost, etc.). Lange's argument was one of the pivots of the Socialist Calculation Debate with the Austrian School.

the prices would encourage businesses to curtail production in order to prevent losses, which would eliminate the surplus. Therefore, it would be a simulation of the market mechanism, which Lange thought would be capable of effectively managing supply and demand. Proponents of this idea argue that it combines the advantages of a market economy with those of socialist economics.

30 vii) Price (PX) and viii) Interest Rate (IR)

in the Nigerian price level, the nation's aggregate First, a higher level of Nigerian exports constitutes an increased foreign demand for Nigerian goods. Secondly, a reduction of Nigerian imports implies an increased domestic demand for Nigeria's produced products.

The non-price-level factors which alter net exports are primarily national income abroad and exchange rates. Rising national income in a foreign nation increases the foreign demand for Nigerian goods, increasing aggregate demand in Nigeria. As income levels rise in a foreign nation, its citizens can afford to buy both more products made at home and more made at abroad. Nigeria's exports therefore rise in step with increases in the national income of Nigeria's trading partners. Declines in national income abroad have the opposite effect; Nigeria's net exports decline, shifting the Nigerian aggregate demand curve leftward.

Thus from the above discussion, the model can be presented as

31 b) Mathematical Form of the Model

The estimated mathematical form of the model is as follows:In Y1= ? 0 + ? 1 In X 1 + ? 2 In X 2 + ? 3 In X 3 + ? 4 In X 4 + ? 5 In X 5 + ? 6 In X 6 + ? 7 In X 7 +µ ?????..3 Where Y 1 = AD X 1 = CS X 2 = IS X 3 = GS X 4 = ES X 5 = PP X 6 = PX X 7 = IR ? = Parameters of the models µ = Stochastic Disturbance term.

It is believed that the stochastic disturbance term will capture the impact of the other variables that were not included in the models. Hence the estimated form of the model becomes5 5 4 4 3 3 2 2 1 1 0 ln ln ln ln ln X X X X X Y ? ? ? ? ? ? + + + + + = +â 6 X 6 +â 7 X 7 ????..?.4

32 c) Method of Data Analysis

Econometric investigation techniques of Ordinary Least Squares (OLS), Cointegration methods were employed in the analysis using secondary data. Some statistical test such as Log likelihood, Durbin-Watson statistics and coefficient of determination test (R 2), were conducted to examine the relationship between aggregate demand and the explanatory variables. According to Onuchuku and Adoghor (1999), when regression analysis involves only two variables, one dependent or regressand, the other independent or explanatory; then Simple Regression is used to determine the relationship while Multiple Regression analysis is used to determine the relationship between three or more variables, one dependent and the others explanatory.

33 d) Estimation Techniques and Procedures

This study employed cointegration and error correction technique to estimate the model (Johansen and Juselius, 1990).

Most economic time series (variables) that exhibit strong trends are nonstationary, yet they are being treated as though they were stationary by most economists. Correct and appropriate specification and estimation of time series models require that we determine whether the time series are stationary or nonstationary. Since most time series encountered in applications are nonstationary, there is no need to analyse nonstationary time series since this might lead to spurious relationship, Granger (1969).

This leads to the coefficient of determination R 2 , tending to unity (i.e. very high R 2), or adjusted coefficient of R 2 , together with highly auto-correlated residuals as indicated by low Durbin-Watson (DW) statistic. In the same way, the standard significance test (measured by the traditional T-test) will reject the null hypothesis of no trend or no relationship between the series on approximately three quarters of all occasions. Hence, there is a danger of accepting a close relationship between the series when they are almost independent. Consequent upon the above, these macroeconomic variables were subjected to a unit root test to determine their time series characteristics. Unit root test is basically required to ascertain the number of times a variable has to be differenced to arrive at stationary **??**Yoshida, 1990). According to Maddala (1992), testing for unit root is a formalization of the Box-Jenkins approach of differencing the time series after a visual inspection of the correlogram.

The methods of testing for unit roots are by use of the Dickey-Fuller (DF) test and the Augmented Dickey-Fuller (ADF), but the ADF test is considered superior to the Dickey-Fuller test because it adjusts appropriately for the occurrence of serial correlation.

The analysis of and testing for Unit roots naturally lead to the theory of cointegration (Iyoha and Ekanem, 2002). This is because, basically, cointegration deals with methodology of modelling non stationary time series variables and the idea rest on the thesis that even though two time series may not themselves be stationary, a linear combination of two non stationary time series are said to be "cointegrated" (Iyola and Ekanem, 2002). Usually, for cointegration, the two time series have to be of the same "order" i.e., they should be stationary after the same number of differencing.

Economic variables are said to be integrated of order-zero, i.e. it is 1(0), if the original time series is stationary. Those that are differenced once to obtain stationarity are said to be integrated of order one i.e. 1(1). There are variables that have to be differenced more than once to achieve stationarity.

The theory of cointegration according to Granger (1981); and Engle and Granger (1987), address the issue of integrating short-run dynamics with long-run equilibrium. Basically, the theory demonstrates that if two variables are cointegrated, it implies that there is a meaningful long-run relationship between them, the short run dynamics can be described by the Error Correction Model (ECM).

The necessary condition for fitting an error correction representation is the existence of at least one cointegrating vector in the system. In other words, the error correction model is internally consistent only if at least one cointegrating vector exists. In order to determine the number of cointegrating equation in the Vector Error Correction Model (VECM), the Johansson (1988) approach will be adopted.

Economic software called E-View 5.1, which provides a sophisticated data analysis, was used to analyse the data. The following tests were also being conducted. (i) The coefficient of determination, R 2 test. In this case, R 2 was used purely as measure of the explanatory power of model. (ii) The estimated regression coefficient test, t-test. This was used to determine whether or not the estimated coefficients of each of the selected explanatory variables are significantly different from zero. (iii) The F-test was used to determine the joint significant of the explanatory variables, that is, the overall test of significance of the model.

34 VII.

35 Determinants of Aggregate Demand in Nigeria a) The Concept of Aggregate Demand

The sum total of the expenditures of all goods and services produced within an economy is known as aggregate demand. **??**egg et al (1994:364) noted that aggregate demand is the amount that firms and households plan to spend on goods and services at each level of income. Aggregate demand is simply household's consumption demand (C) plus firms' investment demand (I), hence the simple model. Aggregate demand is what households plan to spend on consumption and firms spend on investment. Assuming investment demand is constant,

consumption is the only part of aggregate demand that increases with income. This vertically, adding the constant investment demand, to the consumption factors (C) gives the aggregate demand schedule AD. He went further to say aggregate demand determines the level of output and income.

When prices and wages are fixed, the output demand or planned aggregate spending just equals the output that is actually produced. Thus, spending plans are not being frustrated by a shortage of goods. Nor are firms producing more output than they can sell. In short run equilibrium, the output produced exactly equals the output demanded by households as consumption and by firms as investment.

When aggregate demand exceeds actual output there is either unplanned disinvestment (inventory reductions) or unplanned savings (frustrated customers). Actual investment always equals actual savings as a matter of national income accounting. Unplanned inventory reductions or frustrated customers act as a signal to firms to increase output when aggregate demand exceeds actual output. Similarly, unplanned additions to stocks occur when aggregate demand is less than actual output.

An increase in planned investment increases the equilibrium level of output by a larger amount. The initial increase in income to meet investment demand leads to further increases in consumption demand.

According to McConnell and Brue (1999:221) aggregate demand is a schedule or a curve showing the various amounts of goods and services-the amounts of real output-that domestic consumers, business, government, and foreign buyers collectively desire to purchase at each possible price level. Other things being equal, the lower the price level, the larger the real

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Volume XVII Issue III Version I Year ( ) market is in short-run equilibrium when aggregate GDP (Gross domestic product) these buyers will purchase. Conversely, the higher the price level, the smaller the real GDP they will buy. Thus, the relationship between the price level and the amount of real GDP demanded is inverse or negative.

With the inverse relationship between the price level and real output where the aggregate demand curve slopes downward as does the demand curve for an individual product. But these explanations do not work for aggregates.

When the economy moves down its aggregate demand curve, it moves to lower price levels. But our circular flow model tells us that when consumers pay lower prices for goods and services, less income is likely to flow to resource suppliers in the form of wages, rents, interests, and profits.

As a result, a decrease in the price level does not necessarily mean an increase in the nominal income of the economy as a whole. Thus, a decline in the price level need not produce an income effect (more of a product is purchased because a decline in its price leaves buyers with more real income).

Similarly, we also see in the figure above that prices in general are falling as we move down the aggregate demand curve, so the rationale for the substitution effect (more of a product is purchased because it becomes cheaper relative to all other products) is not applicable. There is no overall substitution effect when the price level falls.

If the substitution and income effects do not explain the down sloping aggregate demand curve, what else does? The rationale rests on the following factors.

37 i. Wealth Effect

The first reason for the down sloping aggregate demand curve involves the wealth effect. A higher price level reduces the real value or purchasing power of the public's accumulated financial assets. In particular, the real value of assets with fixed money values, such as savings accounts or bonds, diminishes. Because of the erosion of purchasing power of such assets, the public (population) is poorer in real terms and will reduce its spending. A household might buy a new car or a sailboat if the purchasing power of its financial asset balances, that is to say, N50, 000.00 but if inflation erodes the purchasing power of the asset balances to N30, 000.00; the family may defer its purchase.

Conversely, a decline in the price level will increase the real value or purchasing power of a household's wealth and increase consumption spending.

38 ii. Interest-Rate Effect

The interest-rate effect suggests that the aggregate demand curve is down sloping because of the impact of price-level changes on interest rates and, in turn, on consumption and investment spending.

Elaboration: The aggregate demand curve assumes that the supply of money in the economy is fixed. When the price level increases, consumers need more for money to meet their payrolls and to buy other needed resources. In short, a higher price level increases the demand for money.

With a fixed supply of money, this increase in the demand for money drives up the price paid for its use. That price is the c. Higher interest rates curtail interest-sensitive expenditures by businesses and households. A firm expecting a 10 percent return on a potential purchase of capital will find that purchase profitable when the interest rate is, say, only 7 percent. But the purchase is unprofitable and will not be made when the interest rate has risen to, say, 12 percent. Similarly, some consumers will decide not to purchase houses or automobiles when

the interest rate rises. Conclusion: A higher price level -by increasing the demand for money and the interest rate -reduces the amount of real output demanded.

39 iii. Foreign Purchases Effect

We found in national income accounting that imports and exports are components of total spending. The volumes of our import and exports depend on, among other things, relative price levels here and abroad. If the price level rises in the United States relative to the levels in foreign countries, U.S. buyers will purchase more imports and fewer domestic goods. Similarly, the rest of the world will buy fewer U.S. goods, reducing U.S. exports. In brief, a fall in the U.S. price level will increase our imports and reduce our exports, reducing the amount of net export (export minus import) spending on U.S. produced products.

40 b) Determinants of Aggregate Demand

Changes in the price level change the level of aggregate spending; this, in turn, changes the amount of real GDP demanded by the economy. More specifically, an increase in the price level, other things being equal, will decrease the quantity of real GDP demanded; a decrease in the price level will increase the amount of real GDP demanded. The changes are represented graphically as movements along a fixed aggregate demand curve. However, if one or more of those "Other things" change, the entire aggregate demand curve shifts. We refer to those "Other things" as determinants of aggregate demand; they "determine" the location of the aggregate demand curve.

We must then distinguish between changes in the quantity of real output demanded (caused by More generally, the foreign purchases effect is this: A relative increase in a nation's price level reduces its net exports, resulting in a decline in the aggregate amount of domestic output demanded. Conversely, a relative decline in a nation's price level increases its net exports, thereby increasing the amount of domestic output demanded.

changes in the price level) and change in aggregate demand (caused by changes in one or more of the determinants of aggregate demand).

41 Figure 4.1: Change in Aggregate Demand

In Figure **??**.1 above, an increase in aggregate demand is depicted by the rightward movement of the curve from AD 1 to AD 2 . This shift indicates that, at each price level, the desired amount of real goods and services is larger than before.

A decrease in aggregate demand is shown as the leftward shift of the curve from AD 1 to AD 3 , indicating that people desire to buy less real output at each price level.

The changes in aggregate demand shown in Figure **??**.1 occur when changes happen in any of the factors we have assumed to be constant under the phrase "other things being equal". These determinants of aggregate demand, or aggregate demand shifters, are listed below: i. Change in Consumer Spending a. Consumer Spending Even if the price level is constant, domestic consumers collectively may alter their purchases of produced real output. When this happens, the entire aggregate demand curve shifts. It shifts leftward, as from AD 1 to AD 3 in Figure **??**.1, when consumers buy less output than before at each possible price level; it moves rightward, as from AD 1 to AD 2 , when they buy more at each possible price levels.

Several factors other than the price level may change consumer spending, thus shifting the aggregate demand curve. As indicated in Figure **??**.1, these factors are real consumer wealth, consumer expectations, household indebtedness, and taxes.

42 b. Consumer Wealth

Consumer wealth includes all consumer assets, both financial assets such as stocks and bonds and physical assets such as houses and land. A sharp decline in the real value of consumer assets encourages people to save more (buy fewer products) to restore their wealth. The resulting decline in consumer spending will decrease aggregate demand -that is, shift the aggregate demand curve leftward. In contrast, an increase in the real value of consumer wealth will increase consumption spending at each price level; the aggregate demand curve will shift rightward.

This assumes a fixed aggregate demand curve and results from a change in the price level. In contrast, the change in real wealth addressed here is independent of a change in the price level; it is a nonprice-level factor which shifts the entire aggregate demand curve. An example would be a rocketing boost in stock prices which increases consumer wealth, even though the price level has not changed. Similarly, a sharp decline in the real value of houses and land reduces consumer wealth, independent of changes in the general price level.

43 c. Consumer Expectations

Changes in expectations of the future may alter consumer spending. When people expect their future real incomes to rise, they spend more of their current incomes.

Thus present consumption spending increases (present saving falls), and the aggregate demand curve shifts rightward. An expectation that real income will decline in the future reduces present consumption spending and therefore shifts the demand curve leftward.

Similarly, a widely held expectation of surging future inflation increases aggregate demand today because consumers want to buy products before prices escalate. Conversely, expectations of lower prices in the near future may reduce present consumption. People may postpone some of their present consumption to take advantage of the future lower prices.

44 d. Household Indebtedness

Households with high levels of indebtedness from past buying financed by borrowing may be forced to cut present spending to pay off their existing debt. The result is a decline in consumption spending and a leftward shift of the aggregate demand curve. When household indebtedness is low, borrowing and present consumption tend to increase. The aggregate demand curve shifts to the right.

45 e. Taxes

A reduction in personal income tax rates raises take-home income and increases consumer purchases at each possible price level. So tax cuts shift the aggregate demand curve rightward. Tax increases reduce consumption spending and shift the aggregate demand curve to the left.

ii. Change in Investment Spending a. Investment Spending Investment spending is the purchase of capital goods which is a second major determinant of aggregate demand. A decline in the amount of new capital goods desired by businesses at each price level will shift the aggregate demand curve leftward. An increase in the desired amount of investment goods will increase aggregate demand.

Let's consider the individual factors which can alter the level of investment spending, as listed in Figure **??**.1

46 b. Interest Rates

All else equal, an increase in interest rates caused by a factor other than a change in the price level will lower investment spending and reduce aggregate demand. We are not referring here to the so-called "interest-rate effect" due to a change in the price level. Instead, we are identifying a change in the interest rate resulting from, say, a change in the nation's money supply. An increase in the money supply reduces the interest rate, increasing investment and aggregate demand. A decrease in the supply of money increases the interest rate, reducing investment and aggregate demand.

47 c. Expected Returns on Investment Projects

Higher expected returns on investment projects will increase the demand for capital goods and shift the aggregate demand curve rightward. For example, an anticipated rise in consumer spending can improve the expected returns of possible investment projects. Alternatively, if the profit outlook on possible investment projects dims because of an expected decline in consumer spending, investment spending will decline. Consequently, aggregate demand will also decline.

48 d. Business Taxes

An increase in business taxes reduces after-tax profits from corporate investment and reduces investment spending and aggregate demand.

Conversely, a tax reduction increases after-tax profits from corporate investment, boost investment spending, and pushes the aggregate demand curve rightward.

49 e. Technology

New and improved technologies stimulate investment spending and increase aggregate demand. Example: Recent advances in microbiology and electronics have spawned new labs and production facilities to exploit the new technologies.

50 f. Degree of Excess Capacity

A rise in excess capacity (unused existing capital) will retard the demand for new capital goods and reduce aggregate demand. Other things equal, firms operating factories at well below capacity have little incentive to build new factories. But when firms collectively discover their excess capacity is dwindling, they build new factories and buy more equipment. Thus investment spending rises and the aggregate demand curve shifts to the right.

iii. Change in Government Spending a. Government Spending Government's desire to buy goods and services is a third major determinant of aggregate demand. An increase in government purchases of real output at each price level will increase aggregate demand as long as tax collections and interest rates do not change as a result. An example would be a decision by government to expand the interstate highway system. In contrast, a reduction in government spending, such as a cutback in orders for military hardware, will reduce aggregate demand.

51 iv. Change in Net Export Spending

a. Net Export Spending Another major determinant of aggregate demand is net export spending.

When foreign consumers change their purchases of Nigerian goods independently of changes in the Nigerian price level, the nation's aggregate demand curve shits. We specify "independently of changes in price level" to distinguish these changes from spending changes arising from the foreign purchases effect. That effect helps explain why a change in the Nigerian price level moves the economy along its existing AD curve.

In discussing aggregate demand shifters, we instead address changes in net exports caused by factors other than change in the price level. Increases in net exports caused by these other factors push the Nigerian aggregate demand curve rightward. The logic is as follows: First, a higher level of Nigerian exports constitutes an increased foreign demand for Nigerian goods. Secondly, a reduction of Nigerian imports implies an increased domestic demand for Nigeria's produced products.

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The non-price-level factors which alter net exports are primarily national income abroad and exchange rates.

54 b. National Income Abroad

Rising national income in a foreign nation increases the foreign demand for Nigerian goods, increasing aggregate demand in Nigeria. As income levels rise in a foreign nation, its citizens can afford to buy both more products made at home and more made at abroad. Nigeria's exports therefore rise in step with increases in the national income of Nigeria's trading partners. Declines in national income abroad have the opposite effect; Nigeria's net exports decline, shifting the Nigerian aggregate demand curve leftward.

55 c. Exchange Rates

A change in the exchange rate between the naira and other currencies also affects net exports and hence aggregate demand. Suppose the naira price of dollar rises, meaning the naira depreciates in terms of the dollar. This is the same as saying the dollar price of naira falls -then dollar appreciates. The new relative values of naira and dollar means consumers in Nigeria can obtain more naira with any particular number of dollars. Consumers in Nigeria can obtain fewer dollars for each naira. Nigerian consumers therefore discover that Nigerian goods are cheaper in terms of dollar. They buy more of Nigerian goods. Consumers in Nigeria find that fewer U.S. products can be purchased with a set number of naira. They buy fewer U.S. goods.

With respect to Nigerian exports, a N300.00 pair of Nigerian made shirt now might be bought for $2880 compared to $3600 in U.S. And in terms of Nigerian imports, a U.S. watch might now cost N225.00 rather than $180. In these circumstances Nigerian exports will rise and imports will fall. This increase in net exports translates into a rightward shift of the Nigerian aggregate demand curve.

You may be urged to think through the opposite scenario in which the naira appreciates (the dollar depreciates).

Aggregate demand is subject to change due to change in government spending or a reduction in taxes. This is so because a reduction in taxes, for example, leads to increase in disposable income, which stimulates aggregate demand. This is also true of increase in government expenditures.

Of course, aggregate demand behaviour is not devoid of the characteristics of the population of the area. Government is spending on behalf of the people and for the people. Hence, we cannot talk of aggregate demand without talking of the population of a given area.

56 v. Population

The Webster's Encyclopedia Unabridged Dictionary speaks of population as (i) the total number of persons inhabiting a country, city, or any district or area. (ii) The body of inhabitants of a place. (iii) The number or body or inhabitants of a particular race or class in a place; such as the native population; the working population; (iv) Statistically, is any finite or infinite aggregation of individuals, not necessarily animate, subject to a statistical study.

It goes further to talk of population parameter as a quantity or statistical measure which, for a given population, is fixed and which is used as the value of a variable in some general distribution or frequency function to make it descriptive of that population; e.g. the mean and variance of a population are population parameters.

The Dictionary explains population pyramid as a graph showing the distribution of a population by sex, age, etc. A. E. Amaechi and C.R. Azubuike (2004:88) defined population as the number of people living in any defined geographical area e.g. a country or town or city. In the view of Gbosi (2005: 251-2), population is the total number of people who live in a country during a given period of time. **??**keke (1994:110) defined population as the number of people living in a given geographical area at a particular time. Interest in population studies arose naturally from the existence of the fundamental economic problem of resource scarcity. Resource scarcity is an ever present problem in all economies. Why do we then border ourselves talking of population? The reason is

that all the fruits of production in form of goods and services are ultimately for human consumption, and man is yet at the same time the source of all production. Man addresses the 'why', 'how' and whom questions in economics. Aggregate demand and supply functions are at the instance of man. Keen interest in population studies as it is the nation's source of strength and its responsibility.

People and resources have from the very beginning been in a keen competition. Whether people or resources outrun the other is very significant for human existence and general welfare.

Wonnacott/Wonnacott (1979:3) defining Economics tells us that Economics is the study of how people make their living, how they acquire the food, shelter, clothing, and other material necessities and comforts of this world. It is a study of the problems they encounter, and of the ways in which these problems can be reduced.

The first economist to view so seriously the problem of resource scarcity side by side with increasing population was a reverend gentleman Robert Thomas Malthus. Writing in 18 th century England, he shocked and influenced the then academic community by painting a very gloomy picture of human race doomed to eternal misery. **??**amuelson (1976:30) talking about Thomas Robert Malthus stated that he (Thomas Robert Malthus) used to argue at breakfast against his father's perfectionist view that the human race was getting ever better. Finally, the younger Malthus became so agitated that he wrote a book, titled "Essay on the Principle of Population" (1798), which became an instantaneous best-seller.

Going through several editions, for a century the book influenced the thinking of people all over the world (including Charles Darwin, the expositor of the doctrine of biological evolution). It is still a living influence today. Malthus' views depend directly on the law of diminishing returns, and continue to have reference.

Malthus first took the observation of Benjamin Franklin that, in the American colonies where resources were abundant, population tended to double every 25 years or so. Malthus postulated, therefore, a universal tendency for population -unless checked by food supply -to grow at a geometric progression. Now, anyone with imagination knows how fast geometric progressions grow -how soon 1, 2, 4, 8, 16, 32, 64, 128, 256, 1,024 ?... becomes so large that there is no space in the world for all the people to stand. (At 6% compound interest, money doubles in value every 12 years. It has been estimated that the $24 received by the Indians for Manhattan Island would, if deposited at compound interest, be today as much as all real property on the island . Malthus stated that food production was at arithmetic progression -1, 2, 3, 4, 5, 6, 7, 8, 9, 10 ??..

As population doubles and redoubles, it is exactly as if the globe were halving in size, until finally it shall shrunk so much that food and subsistence fall below the level necessary for life. Because of the law of diminishing returns, food tends not to keep up with the geometric progression rate of growth of population.

Malthus did not say that population would increase at these rates. This was only its tendency if unchecked. He considered it an important part of his argument to show that, in all places in all times, checks does operate to hold population down. In his first edition, he put emphasis on positive checks that act to increase the death rate: pestilence, famine and war. Later, he backed down from this gloomy doctrine and held out hope for the human race through preventive checks operating on the birth rate. Although the birthcontrol movement is called neo-Malthusianism, clergyman Malthus advocated only moral restraint with prudential postponement of early marriages until a family could be supported. In fact, he preached that the struggle for existence was an illustration of the wisdom of nature keeping poor people from getting soft and lazy.

Malthus ideas had widespread repercussion. His book was used to support a stem revision of the English poor laws, whereby destitution was considered a result of laziness and unemployment, a state to be made as uncomfortable as possible. His opinion also bolstered the argument that trade-unions could not improve the welfare of workers, since any increase in their wages would only cause workers to reproduce until there was again barely subsistence enough for all. Even in the 1970s, the computer makes headlines when it spells at the "limits of growth" by a more elaborate simulation of Malthus geometric and arithmetic progressions.

Despite the statistics covering many countries incorporated in his editions, it is today recognized that his views were oversimplifications. In his discussion of diminishing returns, Malthus never fully anticipated the miracles of the Industrial Revolution. In the next century, technological innovation shifted production -possibility frontiers rapidly outward and made possible better standards of living for more people, even though at the same time medical advances were prolonging human life and further lessening the positive checks to population. Nor did he anticipate that after 1870 in most Western nation family fertility as measured by actual number of children would begin to fall far short of family fecundity, or biological reproductive capacity.

Nevertheless, the germs of truth in his doctrines are still important for understanding the population behaviour of India, Haiti, China, Africa and other parts of the globe where the balance of numbers and food supply is a vital factor.

The world population has increased tremendously. This increase was made possible mainly through the declining death rate, resulting from scientific advances in medicine and from the improved living standards made possible by the Industrial Revolution. Life expectancy of a Western baby has doubled since 1800 to over 206 years at present, and standards of living far exceeded those of any previous century. Fertility means population growth from the point of view of individual households. It further treats human beings in terms of their costs and benefits to the households associated with additional child, that is, the costs and benefits associated with adding one more child to the family. The growth rate is the rate at which the population increases per period of time, usually a year. **??**amuno (1999:45) speaking on Malthus population thesis says that, Malthus began by saying that the basic requirement of life is food and the second requirement is reproduction. Because of food

and reproduction he argued that population grows geometrically whereas food supply increases arithmetically. He therefore, looked around the country and wanted to find out what the problem was. He saw land being limited but fail to consider about technological progress. To check population growth, he proposed both positive aspects which include death, war, famine, disease and the negative aspects which are lowering both rate through postponement of marriages.

However, in 1803, he published another book in which he started talking about moral restraint that is, no marriage and no promiscuity.

He failed to say something about contraception, relationship between marriage and number of children. So he sought ways to holding down the population. He seems to assume that sexual desire is more with children. He tied his population theory with the wage fund theory. With both theories he argued that more wages to labour will increase marriage and hence children. On population growth, Mc Connell and Brue (1999:688) said, once a minimum income level is reached, each individual consumer's intake of food and fiber becomes relatively fixed.

Thus subsequent increase in demand depends on growth in the number of consumers. In most advanced nations, the demand for farm products increases at a rate roughly equal to the rate of population growth, and this is the case in the United States. U.S. population growth unlike that of Nigeria has not been rapid. Therefore, the increase in U.S. demand for farm products has not kept pace with the rate of growth of farm output. **??**egg et al (1994: 539) has this to say; living in a largely agricultural society, Malthus was worried about the fixed supply of land. As a growing population tried to work a fixed supply of land, the marginal product of labour would diminish and agricultural output would fail to increase in line with population.

A country should be concerned with both the size and growth rate of its population since they have implications for the standard of living and welfare of its citizens. This is why Nigeria had been concerned with getting an accurate population figure.

In 1963, Nigeria's population stood at 55.7m while efforts made to conduct population census in 1973 and 1983 all met with failures. However, the 1991 census figure put Nigerian population at 88 million.

The 2006 provisional population total census by sex revealed that there are 71,709,859 males and 68,293,683 females totaling 140,003,542 with a land size of 936,930 square meters. vi. Interest Rate **??**egg et el (1994: 434) stated that a fall in interest rates increases the level of investment demand by moving firms down their investment demand schedule. A fall in interest rates will also increase consumption demand by increasing household wealth and shifting the consumption function upwards. Similarly an increase in the money supply will reduce the equilibrium interest rate to increase the quantity of money demanded and maintain money market equilibrium. So an increase in the money supply shifts the aggregate demand schedule upwards and increases the equilibrium level of output and income. It is the equilibrium because aggregate demand or planned spending equals actual income and output. Supposing money supply increases, a reduction in interest rate is required to increase money demand in line with the higher money supply. However, lower interest rates increases investment demand (or spending) and shift the consumption function upward. The aggregate demand schedule shifts from AD to AD 1. Hence, an increase in the money supply lowers interest rates, shifts aggregate demand upwards, and increases income and output. The quantity of money demanded depends on interest rates and on the level of income.

If negative changes in consumption and investment demand (spending) completely offset higher government demand, aggregate demand would then be unchanged. With unchanged income, there would be no upward pressure on the demand for money and interest rates. Without higher interest rates, investment and consumption demand would not have been reduced. Hence, increased government spending must lead to some upward shift in the aggregate demand schedule, some increase in interest rates, and to only partially offsetting falls in consumption and investment.

57 VIII.

58 Data Presentation, Analysis and Findings

Our main concern is the analysis of data. We proceed to examine the method applied in analyzing the data. We use the stationarity and Cointegration Error Model tests which seek to really establish a long-run relationship among the variables; and eliminate spurious or false regression. This does not mean relegating OLS to the background. In line with time series modelling, unit test, cointegration and error correction model is used to regress the variables using the available data. In testing for the stationarity of the variables, Augmented Dicky-Fuller (ADF) test is employed to determine the degree of integration of the variables. That is how many times a variable should be differenced to attain stationarity **??**Dickey and **??**uller, 1979, 1981).

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Volume XVII Issue III Version I Year ( ) Table 5.1 above presents the OLS results. It is very clear that the regression is spurious. This is so because the R 2 and R 2 of 0.85 and 0.82 respectively show that variable in aggregate demand explained by the regressors is high, but t-values of the regressors indicate that none of them is significant. That is, the result shows very high R 2 and R 2 but none of the explanatory variables is significant. This weakness in the OLS result gave rise to the Unit root test as shown below:

60 a) Unit Root Test Result

As stated in the literature, most time series variables are non-stationary and using non-stationary variables in the model might lead to spurious regressions (Granger 1969). This is clearly shown in the OLS result above. The first or second differenced terms of most variables will usually be stationary.

We therefore proceed to carry out the stationarity test at ordinary level as shown below to see the stationarity of the variables. The stationary result as presented in Tables 5.2 above show that all the variables are non-stationary at ordinary level using 5% ADF critical value of -2.9499. Granger (1969) The parsimonious error correction model above shows that the model is a good fit since the coefficient of determination is significantly high. That is, the explanatory variables included in the model explained 98.23% change in aggregate demand. The adjusted R 2 is 92.93% which is quite high, implying that changes in aggregate demand (dependable variable) is well explained by the explanatory variables included in the model. Also, the overall regression was significant at 1%. The error correction coefficient was relatively high, rightly signed (that is negative) and is significant at 1% level. Durbin-Watson statistics (DW) value of 2.55 is a reflection of minimal autocorrelation. The error correction coefficient was relatively low, significant and appropriately signed. This reveals that changes in aggregate demand adjusted fairly to changes in the explanatory variables. All the workings are attached as appendixes A -C.

61 i. Examination of Key Determinants o f Aggregate

Demand in Nigeria from 1970 -2014 Some of the coefficients of the variables of interest have the expected signs while some do not. From the result, the accumulated (lag 1, 2 &3) values of aggregate demand were positively related with the current value and were all significant at 5% level. This means that there is a strong correlation between the dependent and independent variables. As stated earlier, 98.23% of the change in aggregate demand is explained by the variables -consumption spending, government spending, investment spending, net export spending and population.

62 ii. Aggregate Demand and Consumer Spending

The current consumer expenditure value is insignificant in explaining change in aggregate demand while the past (lag 1, 2, & 3) values of consumers expenditure were negatively related with aggregate demand. The apriori expectation was not met since economic theory has it that aggregate demand reflects a direct relationship with consumption expenditure and therefore it is expected that consumers will have a larger demand with a rise in disposable income, which increases with total national output. The negative spending of the public may be careless spending on unproductive goods and services such as ceremonies like birth day parties, etc. Such spending is geared towards moving the economy backward.

63 iii. Aggregate Demand and Net Export Spending

The past (lag 1,2 & 3) value of net export expenditure were positively related with aggregate demand and were significant at 5% level while current net export expenditure position also did not meet the apriori expectation since it negatively affected aggregate demand. This may be as a result of the disposition of an average Nigerian in his preference to foreign goods and services which he feels to have more value and quality than Nigerian products and services. We may also attribute this behaviour to our tax system which places 10% VAT on virtually every good and services produced in the country. Whereas goods smuggled into the country are not detected and taxed. The Custom and Exercise duties are seen as too high on Nigerian goods produced and consumed in the country.

64 iv. Aggregate Demand and Government Spending

The apriori expectation of current government expenditure on aggregate demand is met while the past (lag 1) value is negatively related with aggregate demand. It should be noted that the negative effect of government expenditure on aggregate demand may be as a result of careless spending on the part of government especially on unproductive activities such as West African Peace Keeping Mission in Liberia etc as well as Ghana must go bags of money given to political office holders such as legislators for inducement. Thus this result confirms the conclusions of many crosscountry studies conducted by Ram (1986) which finds a negative effect of public spending in some developing countries. Also, Amin (1998) finds a similar result for Cameroon.

65 v. Aggregate Demand And Investment Spending

The apriori expectation of both the current and the accumulated (lag 1&2) values of investment expenditure on aggregate demand were met since they were positively related to aggregate demand. This result indicates that the country is experiencing rising profits, increased sales and cash flow, and greater use of existing capacity. This usually implies that the country experienced a profit expectation and business confidence rise for the period under review. Although considerable efforts have been made by the immediate past and present administration to woo foreign investors to invest in the domestic economy, it is imperative that indigenous investors are also encouraged.

Since one of the fundamental challenges facing the Nigerian economy is how to attract foreign investment into the country, in order to achieve this, domestic investment must lead the way forward. Foreign investment is a very powerful mechanism for achieving technology transfer and must therefore be pursued vigorously.

66 vi. Aggregate Demand and Population Growth

The current and past (lag 1, 2 & 3) value of population were negatively related with aggregate demand . This may be a result of low per capita income, or/and the hyper inflationary trend in the economy. Population of a country is very important as it provides ready markets for goods and services produced by her citizens. Low capital income may be as a result of a greater number of the population being unproductive. Our youths are not interested in developing themselves and therefore are not ready to work but will like to consume every thing. Government spending on education has remained relatively constant over the years. Government policy statement on making education compulsory for all citizens will change the orientation of an average Nigerian.

67 vii. Other Findings that Affect Aggregate Demand

The overall regression of the above model was significant at 1%. The error correction coefficient was low and highly significant. Also, the R-squared statistics indicates that the model explains 98.23% of the variability of aggregate demand. All the variables have the expected negative sign at first and second difference.

The model did not explain 1.77% of the variability of aggregate demand. Other factors that affect the aggregate demand may be tax, etc. Company income tax if too high or low will affect the aggregate demand. Tax incentives may be granted to companies like tax rebates, tax holidays and the like, will in turn increase productivity and will also reduce prices of goods and services. Prices of goods and services are also strong determinants of aggregate demand.

The inclusion of dummy variable (DUM) is meant to capture the effects of policy changes on aggregate demand before and after the introduction of Structural Adjustment Programme (SAP). The programme entails deregulation of prices (interest rates and exchange rates), lowering external tariffs, liberalising imports and exports, and so on. The coefficient of dummy variable appears to be negative. Also, it shows a significant impact on aggregate demand. However, one can deduce from the foregoing that economic policy changes occasioned by SAP which started in 1986 might have had negative impart on aggregate demand, but was significant in explaining the change behaviour.

68 IX.

69 Summary a) Summary of Findings

Three models were built and five independent variables were estimated for influencing Aggregate demand. In line with econometric time series modelling, unit root test for cointegration, and Error Correction Modelling (ECM) were used in analysing the data obtained.

In the process of carrying out the work, it was found that all the variables were integrated of order 1(1) except population which was integrated of order 1(2). The result from the study showed that all the variables are significant at first and second order.

The current consumer expenditure value is insignificant in explaining change in aggregate demand

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Volume XVII Issue III Version I Year ( ) while the past values of consumer's expenditure were negatively related with aggregated demand. This does not agree with aprori expectation since it is expected that increase in spending on consumption should bring about increase in total demand. This might be unconnected with autonomous Spending that may be of less value to the economy. The value of export expenditure was positively related with aggregate demand. Current export expenditure position also did not meet the apriori expectation since it negatively affected aggregate demand. The apriori expectation of current government expenditure on aggregate demand is met while the past value is negatively related with aggregate demand. It should be noted that the negative effect of government expenditure on aggregate demand may be as a result of careless spending on the part of government especially on unproductive activities. Thus this result confirms the conclusions of many crosscountry studies conducted by Ram (1986) which finds a negative effect of public spending in some developing countries.

The apriori expectation of investment expenditure was met since both the current and the accumulated values of investment expenditure were positively related to aggregate demand. The current and past values of population were negatively related with aggregate demand. This may be as a result of low per capita income, or/and the hyper inflationary trend experienced in the economy. The federal government should reposition itself in the area of foreign direct investment from the upstream sector to the downstream sector of oil to agricultural and allied industries. The export of manufactured goods and primary products should be encouraged. If Nigeria increases the exports of primary commodities and manufactured goods; and reduces the importation of some consumer goods such as beans, rice, textiles, beverages etc, that can be produced locally, the net export spending will improve.

71 X.

72 Recommendations

The act of recommendation involves a process of proffering solutions to the already known problems by also taking cognizance of the environment or institution.

From the regression result, government spending variable was significant and with high magnitude. The study recommends that government spending should be geared toward expanding and improving infrastructure, in order to create the necessary and enabling environment for private sector growth and hence economic growth. Emphasis should be placed on capital spending to improve and expand infrastructure such as uninterrupted electricity generation and supply, provision of good water supply, communication network, good medical care, education etc that increases aggregate demand and eventual growth of the economy.

Investment spending from the result is statistically significant and large in size. Effort should be made to encourage domestic investment in order to increase output. Foreign direct investment that could transfer technology should be encouraged. South African economy as we see in literatures and national dailies has improved tremendously as a result of foreign direct investment from developed countries like, USA, Britain and Japan just to mention but a few. Adequate monetary policy measure to lower interest rate should be pursued in order to increase investment in real sector. Tax policy should be such that can encourage domestic investment.

73 a) Other Recommendations

One of the major impediments to the attainment of macroeconomic stability and sustainable growth, especially during the military era, has been reliance by the Federal Government on borrowing from the banking system, particularly the Central Bank of Nigeria (CBN), with the attendant negative macroeconomic consequences. This type of deficit financing can be minimized and a certain measure of fiscal discipline in the conduct of public affairs be adopted.

The debt overhang whereby Nigeria is unable to meet her external debt service obligation as been recognized as a major constraint to the use of tax and spending policy to "fine tune" the economy; hence, the non influx of fresh foreign investment into the country. A substantial and sustained reduction of the external debt service burden, on a cash basis, would speed up a return to a viable and stable macroeconomic framework in Nigeria. Made in Nigeria goods be patronized than Given the fact that the population variable is significant, the study recommends that government policies should be geared towards improving the quality of the population to ensure increase in productivity. That is, there should be efforts to encourage capacity building in order to transform the high population to a very productive one. This will not only increase production and output, it will increase income and reduce inflation. Also, the population of Nigeria can be checked by enacting laws and definite policies to check population explosion without a corresponding productive labour. Given a growth of 3.2%, Nigeria could double her present population in two decades. This is unhealthy for the nation in the face of dwindling and depleting resources, unimproved infrastructure etc. In growth. Laws enacted countries with large population such as India and China include inter alia, removal of maternity leave, stipulating the number of children for a family, encouragement of celibacy, late marriages, legalisation of abortion, training of female children and birth control measures. Nigeria may also consider adoption of some of these policies. order to check population explosion, the government should enact enabling laws to control population foreign goods so that our net export spending shall be favourable at all times.

There is also the need for good governance which relates to transparency in the handling of the set of principles and decisions of government in setting the level of public expenditure and how that expenditure is funded. Good governance is an important aspect of economic growth and development. When good government handles fiscal and monetary policies which are macroeconomic tools that governments have at their disposal to manage the economy, there will be growth. Good governance is therefore, a matter of the efficient and effective use of resources to ensure improved living standards. Efficiency and effectiveness in economic management imply the optimal use of resources to reduce the macroeconomic imbalances arising from deficit financing. This means that the choice of policy instruments that are less destabilizing to the economy should be welcomed at all times.

Government (at all tiers) should design unemployment insurance schemes, on which she should spend more during recessions (when the unemployment rate is high), as an example of an automatic stabilizer.

Government should ensure price stability of goods and services; in order to attain full employment and economic growth. Efficient Price Control Boards should be set up to fix prices of goods and ensure strict compliance.

Successive Governments should not abandon projects in favour of their own proposed projects, but rather should continue with existing ones and if the need arises, amendments should be made. Wasteful and extravagant projects should be avoided in the interest of our nation.

74 b) Further Studies

No amount of a single study is ever detail enough to embrace all variables required to explain a given phenomenon. Our study is not devoid of such shortcoming. The study considered the determinant factors of aggregate demand in Nigeria from 1970 to 2014 with such variables as consumption spending, investment spending, government spending, net export spending, population growth, price and interest rate. These factors are not the only

determinant variables. Other variables such as inflation rate, tax rate, tariff, exchange rate, foreign direct investment spending, political stability, etc if added as variables will help not only to enlarge the scope of the work, but also assist in further search for knowledge in this area of study.

It is further suggested that, in view of the present changing world with new discoveries of new theories, further studies be carried out in this field of study.

75 XI.

76 Conclusions

For many years, the federal government had incurred fiscal deficits which were financed through borrowing from the banking system, particularly the CBN as contained in her 2003 Contemporary Economic policy book. This practice has had an adverse effect on domestic price and exchange rate stability. Other issues include: a high debt burden, low output, and a high unemployment rate. Also, the poor state of infrastructure, such as electricity and roads, has impacted negatively on the production costs of goods and services in the economy. Nonetheless, a large population of the economy has refused to work but rather engages themselves in cult groups to threaten the various tiers of Governments and business organisations; to violently resort to extorting money from them by force of arms. They are not gainfully employed and do not contribute to the growth of the economy. This part of the population is not productive but rather a burden on the economy. The youths being the majority of the unproductive population should be rehabilitated. Other problems which have constrained the growth and development of the economy are dearth of long-run loanable funds from the deposit money banks and an underdeveloped indigenous technology. These factors, among others, have been unhelpful in promoting the overall economic growth and development of the country.

Consequently, all the major problems highlighted above call for drastic measures to address them, so that the desired level of economic growth and development can be realized.

It is in this context that the issues covered in this study become significant, relevant and timely. Despite the fact that the country is endowed with huge human and material resources, economic growth and development have remained below expectations for too long. The aspiration of every patriotic Nigerian is that the economy experience significant growth and development in the third millennium with goods and services in abundance at affordable prices. It is, therefore, necessary that contemporary economic issues be examined and appropriate strategies mapped out to address the problems inhibiting growth and development.

77 XII. Contribution to Knowledge

1. The study is able to establish that there exist a strong relationship between aggregate demand and population, government spending and investment spending. Therefore, population, government spending, and investment spending were found to be strong determinants of aggregate demand. 2. The result of the error correction model indicates a long-run and stable relationship between aggregate demand and the explanatory variables. 3. The result also confirms the conclusions of many cross-country studies especially the ones conducted by Ram (1986) which finds a negative effect of public spending in some developing countries; and that of Amin (1998)'s similar result for Cameroon. That Nigeria has over the years been operating fiscal policies without adequate precautionary measures. [1] [2] [3]

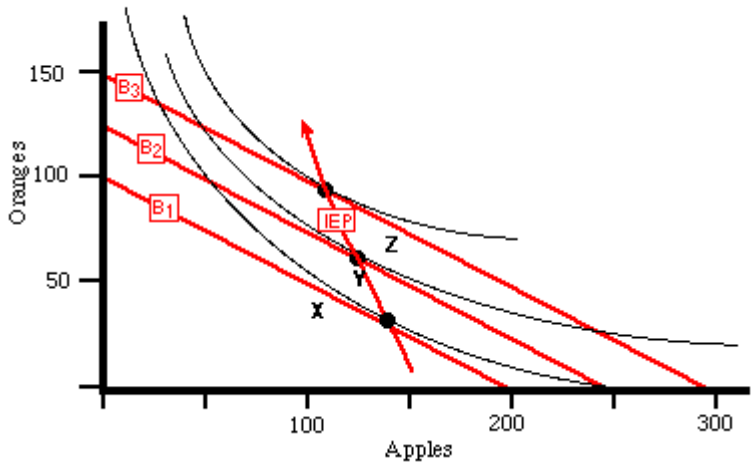

Figure 1:

5

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	15004.17	214039.1	0.070100	0.9446
CS	-0.062844	0.049936	-1.258479	0.2186
ES	-0.083144	0.042913	-1.937497	0.0628
GS	0.613271	0.465758	1.316715	0.1986
IS	5.712912	5.497116	1.039256	0.3076
PP	-0.000365	0.004093	-0.089205	0.9296
PX	244.1122	80.14541	3.045866	0.0050
IR	-827.2422	8934.104	-0.092594	0.9269
R-squared	0.853103	Mean dependent var		178572.3
Adjusted R-squared	0.816379	S.D. dependent var		298365.7
S.E. of regression	127852.7	Akaike info criterion		26.54828
Sum squared resid	4.58E+11	Schwarz criterion		26.90017
Log likelihood	-469.8690	F-statistic		23.23000
Durbin-Watson stat	2.144060	Prob(F-statistic)		0.000000

Figure 2: Table 5 .

52

Figure 3: Table 5 . 2 :

55

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.511623	1.080057	2.325453	0.0530
D(LOG(AD(-1)))	-0.436091	0.364644	-1.195939	0.2707
D(LOG(AD(-2)))	-0.427084	0.234584	-1.820599	0.1115
D(LOG(CS))	0.034953	0.361961	0.096566	0.9258
D(LOG(CS(-2)))	-0.551097	0.467363	-1.179162	0.2769
D(LOG(ES))	-0.035041	0.114870	-0.305051	0.7692
D(LOG(ES(-1)))	0.254334	0.125055	2.033773	0.0815
D(LOG(ES(-2)))	0.152242	0.136603	1.114488	0.3019
D(LOG(GS))	0.270053	0.058377	4.625994	0.0024
D(LOG(GS(-1)))	0.348688	0.176618	1.974251	0.0889
D(LOG(GS(-2)))	0.341148	0.172761	1.974685	0.0889
D(LOG(IS))	-0.016690	0.054519	-0.306140	0.7684
D(LOG(IS(-1)))	-0.088596	0.040953	-2.163376	0.0673
D(LOG(IS(-2)))	-0.022877	0.043721	-0.523242	0.6170
D(LOG(PP))	-87.54700	36.87534	-2.374134	0.0493
D(LOG(IR))	0.292087	0.459766	0.635295	0.5454
D(LOG(IR(-1)))	0.723711	0.423373	1.709392	0.1311
D(LOG(IR(-2)))	0.698009	0.450588	1.549108	0.1653
D(LOG(PX))	-3.878380	0.583031	-6.652102	0.0003
D(LOG(PX(-1)))	3.554951	1.080786	3.289228	0.0133
D(LOG(PX(-2)))	1.261844	1.483034	0.850853	0.4230
ECM(-1)	-0.029694	0.347327	-0.085493	0.0943
R-squared	0.982344	Mean dependent var		0.166472
Adjusted R-squared	0.929376	S.D. dependent var		0.714241
S.E. of regression	0.189812	Akaike info criterion		-0.389714
Sum squared resid	0.252199	Schwarz criterion		0.647545
Log likelihood	27.65085	F-statistic		18.54586
Durbin-Watson stat	2.546925	Prob(F-statistic)		0.000303

Source: Researcher's Computation

Figure 4: Table 5 . 5 :

[1]( ) 2017 © 2017 Global Journals Inc. (US) 1
[2]© 2017 Global Journals Inc. (US)
[3]© 2017 Global Journals Inc. (US) 1

Running Agumented Dickey Fuller (ADF) test as shown in table **??**.3 indicates that all the variables were integrated of order one (1(1)) except population which is integrated of order two (1(2)) at 1% level of significance. That is, all the variables were stationary at first difference but only population was stationary at second difference to attain stationarity.

.1 b) Cointegration Test Result

We now turn to determine the existence of long run equilibrium relationship between our variables. As indicated earlier, non-stationary time-series can be cointegrated if there is a linear combination of them that is stationary, that is, the combination does not have a stochastic trend. The linear combination is the cointegration equation.

The cointegration tests are based on the Johansen and Juselius (1989) test. Tables 5. 4 present the cointegration test results. We therefore proceed to estimate our error correction model, in the most parsimonious specification.

.2 c) Error Correction Model

The confirmation of the existence of a cointegrating vector among our series gives us enough background for carrying out short run dynamic adjustment. Therefore adopting the general-to-specific framework, we proceed to estimate an overparameterized error correction model from where a parsimonious error correction model is obtained as shown in tables 5.5.

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