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1	Empirical Analysis of the Nexus between Budget Implementation
2	and Economic Development in Nigeria
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7 Abstract

19

The study evaluated the effect of budget implementation on Nigeria?s economic growth. Gross 8 Domestic Product (GDP) was used as the explained variable while Public Recurrent 9 Expenditure (PRE), Public Capital expenditure, (PCE) and Public Debt Service (PDS) were 10 used as the explanatory variables of the study. Data on these variables were sourced from the 11 Central Bank of Nigeria statistical bulletin from 1986 to 2014. The study adopted Ordinary 12 Least Square (OLS), Co-integration and Error Correction Model (ECM) in analyzing 13 respectively the short and long-run effect of budget implementation on Nigeria?s economic 14 growth. The findings from the study revealed that in the short run, PRE will have a positive 15 relationship with GDP while PCE and PDS will have a negative relationship with GDP. In 16 the long run, there was a complete turn of relationship as to what was obtained in the short 17

¹⁸ run. In both the long run and short run, only PRE is statistically significant at 5

20 *Index terms*— budget, debt service, capital expenditure, recurrent expenditure, economic growth.

²¹ 1 Introduction

22 he word budget was derived from the word 'bourgettees' in 1633. The need to map out a national financial plan led to the development of budget. The importance of budget to the government and the nation at large cannot be 23 24 overemphasized as all futuristic financial activities of each level of government (local, state and federal) depends 25 largely on the budget. In other words, budget is an important instrument of governance in any modern state. It has the potential of aiding planning and contributing to development in an economy. Being a comprehensive 26 income statement of the government, it is regarded as an indispensable tool capable of inducing economic growth 27 and development. Ogujiuba and Ehigiamusoe (2013) posited that the national budget is the most important 28 economic policy instrument for a government and it reflects the government's priorities regarding social and 29 economic policy more than any other document. In other words, the budget is the principal instrument of fiscal 30 policy. Supporting the foregoing notion is Ohanele (2010) who further stressed that a well-functioning budget 31 system is vital for the formulation of sustainable fiscal policy and the facilitation of economic growth. Moreover, 32 the effectiveness of a budget irrespective of any country depends on the executive as well as the legislative arm 33 of government. 34 35 Basically in Nigeria, budget process includes budget preparation by the executive, legislative approval and 36 implementation by the different ministry, department and parastatal of the government. During the phase of 37 budget implementation, there are many possibilities for interventions and manipulations in view of the fact that officials have a great amount of discretionary power to decide which spending ministry or agency will be granted 38 spending authorization. In Nigeria, before ministries and spending agencies of the government can incur an 39 obligation to make expenditures, they must secure spending authorization from the Ministry of Finance through 40

41 the use of warrants. This warrant will authorize officers controlling votes to incur expenditure in accordance

42 with the approved estimates subject to any reserved items. In spite of the specific nature of appropriation laws,

43 the commitment phase of the expenditure process is a fertile ground for corrupt activities. If the Appropriation

44 Act has not come into operation at the beginning of the year, a provisional general warrant may be issued to 45 ensure continuity of the services of government at a level not exceeding those of the previous year. The length

of period of spending authorization is determined in functional cash flow forecast for the period when paymentsare anticipated.

Nigerian economy is faced with series of imbalances in economic policy formulation and implementation 48 respectively. The root of most problems in Nigeria is imbalances in budget formulation and implementation. As 49 noted by Ogujiuba and Ehigiamusoe (2013), it is supposed to be the most important economic policy instrument; 50 unfortunately, it is shrouded with a lot of myths and illusions which is still not contributing to the economic 51 growth and development of the country. It is important to stress that, Budgeting and its process in Nigeria 52 remains problematic both in the areas of preparation and implementation, hence, the need for adequate control 53 aimed at improving effective resources utilization at the budget implementation stage. A budget is designed 54 to arrest the declining growth in the production sector, check inflationary pressure, correct balance of payment 55 deficit and maintaining a reasonable foreign exchange reserve but these purposes has remained largely unachieved. 56 There are several factors that has brought about the issue of the budget not fully implemented in Nigeria. These 57 unfortunate delays and imbalances have become recurring events since 1999 and have painfully slowed Nigeria's 58 59 democratic journey to economic prosperity. Moreover, it must be noted that delays over the past years have 60 resulted in a low national budget performance and have limited the executive arm's ability to effectively execute 61 projects that would improve the living conditions of the citizenry (Ibrahim, 2011). Hence, the low level of budget implementation has been a consistent problem in Nigeria. Recently, the controversy of fall in world oil price 62 benchmark has been identified as one of those factors that brought about menace in the implementation of 63 budgeting policy in Nigeria. 64

None or partial implementation of the national budget is also traceable to the nation's debt properties. Nigeria 65 is a developing country which relies on external source of finance (debt financing). Unfortunately for the nation, 66 the amount of this debt has now become a burden. Nigeria's debt is obligated to be serviced back at an 67 agreed period of time Due to the implementation of the national budget, a sizeable chunk of the nation's hard 68 earned revenue (foreign earnings) has been appended on debt servicing which has caused some setbacks in the 69 development of the Nigerian economy. Going by the reason that debt service constitute an important item in the 70 national budget, it should be included as one of the variables which can significantly affect the nation's growth 71 in this study. It is therefore important to ascertain if the implementation of debt servicing has a significant 72 73 impact on Nigeria's economy. Previous researches on the subject matter "the evaluation of the impact of budget implementation on the growth of the Nigerian economy" such as the one carried out by Oke (2013) excluded debt 74 servicing as one of the key variable and proxy for budget implementation. This study will include debt service 75 as one of the variables to be used in this study. 76

Moreover, the implementation of the national budget means a corresponding implementation of debt servicing, 77 capital expenditure, recurrent expenditure, tax, subsidies among others in Nigeria since they are important 78 component of the national budget. Exclusively, three and half decades away from the first republic, there has 79 never been a year in which the capital budget attained 75% implementation (Ogujiuba & Ehigiamusoe, 2013). 80 Capital expenditure has been projected to significantly drop by 30.7% (about N487billion) from 2013. As a 81 percentage of aggregate expenditure, capital expenditure accounts for only 23.7%. This huge decrease is a 82 major setback in adequately funding ongoing infrastructure projects under the "Transformation Agenda" of the 83 government. Currently, there are several projects that are abandoned due to paucity of funds. Government 84 would then be faced with the alternative of more borrowing or reconsideration of fuel subsidy removal in order to 85 carry out infrastructure projects. It remains a fact that enormous investment is required for capital development 86 especially in the areas of infrastructure such as electricity, roads and so on, which are necessary for economic 87 growth and development. Though, it has been proved that capital expenditure contribute immensely to economic 88 growth. The more the government wish to implement capital expenditure results in the government borrowing 89 heavily which can adversely affect the country and if there is a shortage in capital expenditure, there would be 90 reduced infrastructure. It is therefore needed to subject capital expenditure to analytical test against economic 91 development. In light of this, ascertaining the impact of capital expenditure on Nigeria's economy becomes 92 imperative in this research. 93

The effect of budget implementation on economic growth-a synergistic effect has previously been studied and 94 findings are personified. However, there are many research work conducted on the effect of budget implementation 95 on economic growth in Nigeria. To a proportional extent, the public sector is attributed to the fiscal and 96 monetary actions of government. These actions pressure purpose the need for effective allocation of resources, 97 sense of identity and fulfillment, social cohesion and fairness dealings with structural development at all unit 98 of the society. (Aregbeven, 2007) Over the last decade, the growth impact of fiscal policy has generated large 99 volume of both theoretical and empirical literature. However, most of these studies paid more attention to 100 developed economies and the inclusion of developing countries in case of cross-country studies were mainly to 101 generate enough degrees of freedom in the course of statistical analysis. Unfortunately, the case of public to 102 achieve efficiency and equity for the best interest of her citizens remains dismay. More also, previous studies and 103 findings carryout by various researcher to explore the relationship between the proxy of economic growth and 104 that of budget using the time-series annual data method (Ordinary Least Squares) which has only but reveal the 105 short-run relationship of the variables. 106

The impact of budget implementation on economic growth has generated large volume of empirical studies 107 with mixed findings using either ordinary least square, Pooled Least Square, simple percentage or chi square. 108 Oke (2013) conducted a study to theoretically and empirically explore the effect of budget implementation on the 109 Nigerian economic growth and provides a panacea to the problem of budget allocation and its implementation. 110 The study adopted the econometric model of ordinary least square (OLS) regression test for analysis and time 111 series data which spans from 1993 to 2010 was considered to capture the short run relationship between the 112 proxies of budget implementation and economic growth. However, few research work has been conducted to 113 explore the long run relationship between the variables of economic growth and that of budget. Hence, this study 114 however seeks to fill the above knowledge gap by adopting the co-integration and error correction mechanism 115 (ECM) to explore the long run effect between each of the economic variable as well as taking a cursory look at 116 loopholes that have been responsible for rendering the budget implementation ineffective, thereby not achieving 117 the desired objectives. 118

Furthermore, the 2014 budget is a relatively tight budget compared to 2013. The delay in the presentation of 119 the budget was avoidable and expectation is that the legislative arm will promptly pass the budget. As always, 120 the major task remains the implementation of the budget given that the 2013 budget was only 64% implemented 121 as at when the 2014 budget was presented. We hope that a better implementation of the 2014 budget will be 122 123 achieved (Pwc, 2014). So far, there has not been any research on the subject matter that is able to establish if the 124 2014 has been better implemented which necessitate carrying out this research using an up-to-date in its analysis 125 using 2014. Specifically, the coefficient of multiple determinants will be employed as the germane statistical technique in establishing the percentage at which the national budget has been established. In other words, the 126 study set out to achieve the current implication of budget implementation of Nigeria's economic growth. 127

The broad objective of this study is to evaluate the impact of budget implementation on the economic growth of Nigeria, while the specific objectives are to: i. identify the major factors hindering budget implementation in Nigeria. ii. determine the impact of the implementation of capital expenditure on the growth of the Nigerian economy. iii. investigate the impact of the implementation of recurrent expenditure on the growth of the Nigerian economy. iv. examine the impact of the implementation of debt servicing on the growth of the Nigerian economy. II.

¹³⁴ 2 Empirical Literature

Empirical literature on the evaluation of the impact of budget implementation on economic growth will be 135 reviewed based on researches conducted in other countries across the globe. Also, it is pertinent to state that 136 the cluster of this study will not go beyond the confines of the Nigerian economy in data usage which will be 137 used when carrying out analysis on the subject matter. The study will employ the use of secondary data that 138 spans from 1986 to 2014 for analytical purpose. The study carried out an up-to-date analysis which necessitate 139 the use of 2014 data in order to produce objective conclusion and recommendations based on the findings of the 140 study. This research work will help the following set of people such as the government, researchers, and readers 141 etc. The study will provide a clear insight for macroeconomic policy makers to know the implication of several 142 policies that pertains specifically to debt service, capital budget and recurrent budget on the nation's economy 143 through its findings. In other words, the study will provide policy recommendations based on its findings which 144 will serve as a reliable basis for the government to know the precise policies that is favorable to the country. 145 Thus, this study will be of great importance to government legislator and executive in their budget formulation 146 and implementation respectively defining the threshold at which to intervene in the management of the economy, 147 The study intends to serve as a knowledge widener which will be as a result of bridging the research gap left 148 out by the recent researches on the subject matter. In view of this, readers and students become exposed to a 149 broader knowledge on budget and the effect of its implementation on the economic growth of Nigeria. 150

¹⁵¹ **3 III.**

¹⁵² 4 Literature Review a) Concept of Government Budget

The concept of government budget from layman's perspective can be seen as an estimate of government income 153 and expenditure for a set period of time. It could also be regarded as a regular estimate of expenditure put 154 forward by a finance minister. This view seems narrow in explaining the concept of government budgeting. 155 Samuel and Wilfred (2009) provided a broader concept. They opined that budget is a comprehensive document 156 that outlines what economic and non-economic activities a government wants to undertake with special focus 157 on policies, objectives and strategies for accomplishment that are substantiated with revenue and expenditure 158 159 projections. From this definition, they put forward that government budgeting Smith and Thomas (2004) also 160 defined budget to be a plan for the accomplishment of program related to objectives and goals within a definite time period including an estimate of the resources required together with an estimate of resources available usually 161 compared with one or more past periods showing future requirements. In another related definition as given by 162 Omolehinwa (1989), it is a plan dominant individual in an organization expressed in monetary terms and subject 163 to the constraints imposed by the participants and the environments indicating how the available resources may 164 be utilized to achieve whatever the dominant individual agreed to be on the organization's priorities. 165

The impressive thing about this definition is that, it recognizes the constraint imposed on budget by other particulars that are to ensure that the objectives and targets enunciated in the budget are achieved.

Budgeting as a concept of authorization explains the original purpose of budgeting as a financial plan to provide money for government institution. Consequent upon this, the government institution carries out their activities usually a year as expected in quantitative terms ensuring effective and efficient mobilization of resources.

$_{171}$ 5 b) Budget Cycle

Budget cycle is used as an instrument for implementing development plans in regulating economics and therefore influencing the market in predetermined manner. Planning and control systems operate in a circle of which budgeting is an important point. The budgeting acts as a link between planning and control. The important component of the circle is shown in this chart.

176 Source: ??wabundo (2010) i. Mission and Objective: This gives the direction and aspiration of the government 177 in the next three to five years. ii. Planning: What to do, how and when to do them is mapped out within the framework of the national development plan. The values of revenue obtainable from all sources have to be stated 178 for each year of the planned period. iii. Budgeting: When decisions about what to accomplish in each year 179 had been taken and expressed in monetary terms in the budget, planned expenditure for each year must be 180 matched with expected income. iv. Implementation: When budget is finally approved, it authorizes expenditure 181 and communicates the plan to all ministries, states and all budget holders. Budget also is an important tool 182 in governance and most relevant to the economic policy. It is the second most important document after the 183 constitution in any country of the world (Samuel & Wilfred, 2009). It signifies that the budget is an expression of 184 the constitution and statutes of a government which endow the executive and legislature with designated financial 185 and managerial responsibilities. Budget has been classified into different types. They are: i. Surplus Budget: It 186 refers to as a situation where the expected revenue surpasses the expenditure. This has been the dream of every 187 government. ii. Balanced Budget: This occurs the moment the proposed expenditure is equaled to the expected 188 revenue. This situation, however, is always difficult to attain. In fact, it requires a high financial prudence and 189 acumen to accomplish. iii. Deficit Budget: The expenditure is higher than the projected revenue in this type 190 of budget. This is where government spent more than it earned. It came with the need to finance government 191 projects despite the non-availability of funds. iv. Supplementary Budget: As the name implies, it means the 192 budget made or initiated after the main budget is passed. This type of budget is necessary if it is discovered 193 that the earlier amount appropriated by the by the Appropriation Act for any purpose is insufficient; or there is 194 need for expenditure on a purpose for which no amount has been earlier appropriated. v. Development Budget: 195 It refers to a budget plan over a long period of time. It is usually incorporated as part of development plan. 196

¹⁹⁷ 6 d) Factors that Hinders Budgeting in Nigeria

According to Eze and Ani (1999) Budgeting is a great management tool. Its effectiveness will however depend 198 on how these limiting factors are handled in relation to the various sectional budgets and the master budgets 199 usually when plans are being formulated, there are variations. Onaolapo and Olaoye, (2013) were of the opinion 200 that practical problems of budget implementation include: first, corruption, this is one of the setbacks of fruitful 201 budgeting process. Evidences are bound in records of Economic and Financial Crime Commission. Corruption 202 is quite endemic. Second, fluctuating revenue and over-dependence on oil revenue. Third. unstable economic 203 parameters such as price level, unemployment etc affect budgetary effectiveness. Fouth, poor conception of 204 people toward budget. What definition does the people in the ministries, departments and legislative arm give 205 to budget? May be: national cake, annual rituals or paddble document and the like. Fifth, Unstable government 206 policies from one fiscal year to another. Sixth, inadequate finance. Seventh, lack of qualified manpower. Others 207 incude: lack of qualified manpower; paucity of data, lack of effective budget monitoring i.e. the execution of the 208 budget, delay in approval of project proposal by the ministry and the legislature and lack of specialization or 209 skill on the part of the budget officers who are saddled with the responsibility of implementing budget. 210

²¹¹ 7 e) Budget Implementation and Economic Growth

The impact of budget implementation and economic growth has generated large volume of empirical studies with mixed findings using cross sectional, time series and panel data. Appropriate budget implementation is generally believed to be associated with growth, or more precisely, it is held that appropriate fiscal measures in particular circumstances can be used to stimulate economic growth and development (Onaolapo & Olaoye, 2013).

The role of economic policy in the achievement of macroeconomic objectives has been extensively dealt with in Keynesian analysis of an activist macroeconomic policy. The Keynesian analysis leads to the conclusion that demand management policies can and should be used to improve macroeconomic performance. A basic premise of Keynesian economics is that the private sector is inherently unstable. It is subject to frequent and quantitatively important disturbances in the components of aggregate demand. It is the task of counter cyclical or stabilization policies to offset these private sector disturbances and so keep real output close to its market -clearing equilibrium time path (Omitogun & Ayinla, 2007).

223 IV.

224 8 Theoretical Framework

This section highlights some basic theories that have been used to support the effects of budget implementation on economic growth. Such theories amongst others are:

227 9 a) Musgrave Theory of Public Expenditure Growth

This theory was propounded by Musgrave as he found changes in the income elasticity of demand for public 228 services in three ranges of per capita income. He posits that at low levels of per capita income, demand for 229 public services tends to be very low, this is so because according to him such income is devoted to satisfying 230 primary needs and that when per capita income starts to rise above these levels of low income, the demand for 231 services supplied by the public sector such as health, education and transport starts to rise, b) The Wagner's 232 Law/ Theory of increasing State Activities Wagner's law is a principle named after the German economist Adolph 233 Wagner (1835-1917). Wagner advanced his 'law of rising public expenditures' by analyzing trends in the growth of 234 public expenditure and in the size of public sector. Wagner's law postulates that: (i) the extension of the functions 235 of the states leads to an increase in public expenditure on administration and regulation of the economy; (ii) the 236 237 development of modern industrial society would give rise to increasing political pressure for social progress and 238 call for increased allowance for social consideration in the conduct of industry (iii) the rise in public expenditure will be more than proportional increase in the national income (income elastic wants) and will thus result in a 239 relative expansion of the public sector. Musgrave and Musgrave (1988), in support of Wagner's law, opined that 240 as progressive nations industrialize, the share of the public sector in the national economy grows continually. 241

²⁴² 10 c) The Solow's Theory

Robert Solow and T.W. Swan introduced the Solow's model in 1956. Their model is also known as Solow-Swan model or simply Solow model. In Solow's model, other things being equal, saving/investment and population growth rates are important determinants of economic growth. Higher saving/investment rates lead to accumulation of more capital per worker and hence more output per worker. On the other hand, high population growth has a negative effect on economic growth simply because a higher fraction of saving in economies with high population growth has to go to keep the capital-labour ratio constant. In the absence of technological change & innovation, an increase in capital per worker would not be matched by a proportional increase in output per worker because of diminiching rotume. Hence applied down in the absence of rotum on capital

worker because of diminishing returns. Hence capital deepening would lower the rate of return on capital.

²⁵¹ 11 d) Theoretical Underpinning

Keynes theory on public expenditure and economic growth was among the most noted with his apparently contrasting view point on this relation. Keynes regards public expenditures as an exogenous factor which can be utilized as a policy instruments promote economic growth. From the Keynesian's point of view, public expenditure can contribute positively to economic growth. Hence, an increase in the government consumption is likely to lead to an increase in employment, profitability and investment through multiplier effects on aggregate demand. As a result, government expenditure augments the aggregate demand, which provokes an increased output depending on expenditure multipliers.

²⁵⁹ 12 e) Review of Related Empirical Studies

Various empirical studies have been conducted to validate whether budget implementation has a favorable impact or otherwise. Evidences from various researchers are thoroughly reviewed in this sub-chapter in order to get an adequate knowledge of the effect of budget implementation globally.

²⁶³ 13 f) Evidences from Developed Countries

Loizides and Vamvouks (2005) employed the causality test to examine the relationship between public expenditure 264 and economic growth, using data set on Greece, United Kingdom, and Ireland. The authors found that 265 government size Granger causes economic growth in all the countries they studied. The results also indicated 266 that economic growth Granger causes public expenditure for Greece and United KingdoVerma and Arora (2010) 267 examined the validity of Wagner's law in India over the period from 1951 to 2008. Empirical evidences 268 regarding short-run dynamics refuted the existence of any relationship between Developing Country Studies 269 www.iiste.org economic growth and the size of the government expenditure. Afzal and Abbas (2012) reinvestigated 270 271 the application of the Wagner's hypothesis to Pakistan over the period from 1960 to 2007 using time series 272 econometrics techniques. The study found that Wagner's hypothesis does not hold for aggregate public spending 273 and income for three periods ??1961-2007, 1973-1990, and 1991-2007) while it holds only for the period from 274 1981 to 1991. However, when fiscal deficit is included, the results supported the existence of Keynesian views about public spending and growth. 275

276 Zheng (2010) studied the empirical analysis on the relationship between the sizes of Chinese government, as 277 measured by its annual spending, and the growth rate of the economy. More specifically, it designed to examine 278 the applicability of Wagner's law to the Chinese economy. The statistics used in this research is annual time series 279 data on total government spending and gross domestic product covering the period from 1952 to 2007. Empirical

results showed no strong evidence in support of the validity of Wagner's law for Chinese economy. ??lomola 280 (2004) confirmed the Wagner's hypothesis both in short run and in the long run inNigeria for the period from 281 1970 to 2001.

282

g) Evidences from Developing Countries 14 283

Dogan (2006) investigated the relationship between national income and public expenditures for Indonesia, 284 Malaysia, Philippines, Singapore, and Thailand. Granger causality tests were used to investigate the causal links 285 between the two variables. The result of Granger causality revealed that causality runs from public expenditures 286 to national income only in the case of Philippines, and there was no evidence for other countries. Komain and 287 288 Brahmasrene (2007) examined the relationship between public expenditure and economic growth in Thailand, 289 by employing the Granger causality test. The results revealed that public expenditure and economic growth are 290 not co-integrated, but there exists a significant positive effect of public expenditure on economic growth.

Bingxin, Fan and Saurkar, (2009) assessed the impact of the composition of public expenditure on economic 291 growth in developing countries. They used a dynamic generalized method of moment (GMM) model and a 292 panel data set for 44 developing countries between 1980 and 2004. The results indicated that the various types of 293 government spending had different impact on economic growth. In Africa, human capital expenditure contributes 294 to economic growth whereas, in Asia, capital formation, agriculture, and education expenditure had strong growth 295 promoting effect. 296

h) Evidences from Nigeria 15297

Abu and Abdullah (2010) investigates the relationship between government expenditure and economic growth in 298 Nigeria from the period ranging from 1970 to 2008. They used disaggregated analysis in an attempt to unravel 299 the impact of government expenditure on economic growth. Their results reveal that government total capital 300 301 expenditure, total recurrent expenditure and Education have negative effect on economic growth. On the contrary, 302 government expenditure on transport, communication and health result in an increase in economic growth. They recommend that government should increase both capital expenditure and recurrent expenditure including 303 expenditure on education as well as ensure that funds meant for development on these sectors are properly 304 utilized. They also recommend that government should encourage and increase the funding of anti-corruption 305 agencies in order to tackle the high level of corruption found in public offices in Nigeria. 306

Nurudeen and Usman (2010) investigated the effect of government expenditure on economic growth with 307 disaggregated expenditure data from 1979 to 2007. The results reveal that government total capital expenditure, 308 309 total recurrent expenditures, and government expenditure on education have negative effect on economic growth. 310 While the foregoing studies focused on the Keynesian model which stipulates that expansion of government 311 expenditure accelerates economic growth.

312 Ighodaro, Clement and Dickson (2010). In addition to total government expenditure they used a disaggregated government expenditure data from 1961-2007, specifically; expenditure on general administration and that of 313 community and social services to determine the specific government expenditure that economic growth may have 314 significant impact on. Other variables reflecting fiscal policy changes and political freedom were also included in 315 the model to augment the functional form of Wagner's law. All the variables used were found to be I(1) and long 316 run relationship exist between the dependent and the independent variables except in the case where only GDP 317 was used as the independent variable. Wagner's hypothesis did not hold in all the estimations rather Keynesian 318 hypothesis was validated. 319

Oke (2013) conducted a study to theoretically and empirically explore the effect of budget implementation on 320 321 the Nigerian economic growth and provides a panacea to the problem of budget allocation and its implementation. The study the adopted the econometric model of ordinary least square (OLS) regression test for analysis and 322 time series data span from 1993 to 2010 was considered to capture the short run relationship between the proxies 323 of budget implementation and economic growth. The study revealed that implementation has a positive effect 324 impact on Nigeria economic growth. The study further showed a positive relationship between GDP and public 325 total expenditure (PEX), public recurrent expenditure (PRE), public capital expenditure, external debt (EXD), 326 while public capital expenditure (PCE) shows a negative relationship to GDP. 327

Patricia and Izuchukwu (2013) investigates the effect of government expenditure in education on economic 328 growth in Nigeria over a period from 1977 to 2012, the study adopted the Error Correction Model (ECM) 329 to achieve its objectives. The study used Ex-post facto research design and applied time series econometrics 330 331 technique to examine the long and short run effects of public expenditure and economic growth in Nigeria. 332 The study revealed that Total Expenditure Education is highly and statistically significant and have positive 333 relationship on economic growth in Nigeria in the long run. The result has more implication in terms of policy 334 and budget implementation in Nigerian.

Onaolapo and Olaoye (2013) conducted a study on the appraisal of the factors contributing disparity in 335 budget proposal and implementation. The main thrust of this paper was to examine the behavioral aspect 336 of budget implementation disparity. Two hypotheses were set forth and tested using two ministries namely: 337 education and finance in the Ekiti State of Nigeria. The study was analyzed using the primary data of analysis. 338 Thirty high ranking staff involved in budget preparation and implementation out of thirty-five administered with 339

questionnaires responded to time. Their findings revealed that government ministries always meet their budget target and the ministries have adequate measures to curb budget variances.

342 16 Methodology

The design of this research is the ex-post facto research design" which is a quasi-experimental study examining how independent variables prior to the study affects the dependent variable. Ex-post facto is also referred to as "after the fact research design" in which the investigation is conducted without interference from the research.

In specifying the model for this study, the above model will be modified by removing public total expenditure (PEX) variable to suit the Nigerian situation. This variable is removed to avoid the violation of the ordinary least square principle which is referred to as multicollinearity. The model is specified as follows: ??———

It is essential to log-linearize the data on each variable to avoid spuriousity in estimation. Therefore, 352 the above equation is presented in its log-linearized form in Eqn 3.4 ??-To test for the 353 existence of long run equilibrium relationship, the error correction model i.e. equation 3.6 can be conducted by 354 placing some restrictions on estimated long run coefficient of variables. Therefore, the hypothesis for the test 355 is formulated as follows: GDP = f (PRE, PCE, PDS) -Log(GDP) = ? 0 + ? 1 Log(PRE) + ? 2 Log(PCE)356 + ? $3 \text{ Log(PDS)} + \mu$ -Log(GDP) t = ? 0 + ? 1 Log(PRE) t + ? 2 Log(PCE) t + ? 3 Log(PDS) t + μ 357 H 0: ? 1 = ? 2 = ? 3 = 0 (absence of long run relationship or co-integration) H 1 358 : ? 1 ? ? 2 ? ? 3 ? 0 (existence of long run relationship or co-integration) 359

Centered on the results of previous empirical studies, this study hypothesizes certain relationships between the

³⁶¹ budget implementation variables and the economic growth in Nigeria as: ???????? ??PRE <0. The relationship
³⁶² between GDP and public recurrent expenditure is expected to be negative. The inverse relationship signifies that
³⁶³ a unit increase in the public recurrent expenditure will bring about a decline in the Gross Domestic Product.
³⁶⁴ The relationship can be expressed mathematically as; f' (PRE) < 0.

365 17 ????????????PCE

>0. The study also expects that there will be a positive relationship between GDP and public capital expenditures. This can be expressed mathematically as f' (PCE) > 0. This therefore implies that a unit increase in the public capital expenditure will heighten their level of economic growth measured by Gross Domestic Product.

370 18 ????????????PDS

³⁷¹ 19 <0. The relationship between GDP and public debt

servicing is expected to be negative. The inverse relationship signifies that a unit increase in the public debt service will bring about a decline in the Gross Domestic Product. The relationship can be expressed mathematically as; f'(PDS) < 0.

The model is estimated using time series annual data for the period 1986 -2014. The data needed for the study are secondary in nature; implying data will be obtained from published sources. Sources of these data include:

i The Unit root is a standard approach in cointegration analysis used for determining the stationarity of time series data. It can either by performed using the Augmented Dickey Fuller (ADF) or the Philip Perron test but this study will use augmented dickey fuller to test the stationarity of data.

380 b

³⁸¹ 20 . Johansen Co-Integration Test (JCT)

The Johansen's co-integration test is adopted in this study and it shows the long-run relationship subsisting between the dependent and the independent variables. This is done by evaluating both the trace and maximum Figure statistics to determine the cointegration reak

Eigen statistics to determine the cointegration rank.

Also some statistical tests would also be conducted in the study. They are given below as: c.

386 21 Standard Error Test (SET)

The standard error test is done to determine the significance of each independent variable in the explanation of the behaviour of the dependent variable. It is done using the standard error statistics obtained from the co-integration equation of the co-integration test.

$_{390}$ 22 d. Coefficient of Multiple Determinations (R 2)

The coefficient of multiple determinations is used to measure the rate at which the behavior of the dependent variable is explained by the independent variables. It also takes into account the measurement of the behavior that is not explained by the medal (Error Term)

³⁹³ that is not explained by the model (Error Term).

e

³⁹⁵ 23 . Overall Significance of the Model (F-Test)

The F-test is used to show if the model adopted is statistically significant. This is done on a tail test with the comparison of the table value to the estimated value of F statistics.

398 f. Durbin Watson Test (DW Test)

The DW-test is used to determine the presence of Autocorrelation in a model. It could either show positive, negative or no autocorrelation, depending on the region which the DW statistical value falls.

401 **24 VI.**

402 25 Analysis and Interpretation of Results

403 The results of all analytical technique mentioned earlier is presented and interpreted below.

⁴⁰⁴ 26 a) Presentation of Ordinary Least Square Result

The study used Econometric View (Version 3.1) to analyze data which were extracted on the subject matter. The results from this computation are presented in its raw form in the appendix and interpreted below. In consonance with the identified research gap of ascertaining the short run and long run relationship between the variables, the ordinary least square result showing the short run relationship is presented in the table below: The coefficient of estimates in the OLS result computed above can be expressed mathematically below: GDP=10.62513+0.303291 PRE -0.094486 PCE -0.025217 PDS

⁴¹¹ 27 b) Interpretation of Ordinary Least Square Result

The result above shows that the constant parameter is positively related with gross domestic product. It has 412 a positive coefficient of 10.62513 which implies that if all explanatory variables are held constant in the short-413 run gross domestic product will increase by 10.62513 units Meanwhile, public recurrent expenditure (PRE) 414 showed a positive coefficient of 0.303291 which implies that a unit increase in the level of public recurrent 415 expenditure will result in a 0.303291 increase in the gross domestic product. Conversely, the coefficient of the 416 public capital expenditure (PCE) showed a figure-0.094486 which implies a negative relationship between public 417 capital expenditure and gross domestic product, therefore, a unit increase in public capital expenditure will lead 418 to a 0.094486 unit decrease in the gross domestic product. In the same vein, the coefficient of public debt service 419 shows a figure of -0.025217 meaning that a unit increase in public debt service will result in a 0.025217 decrease 420 in Nigeria's gross domestic product. 421

Only an explanatory variable (public debt service) is in conformity with the prior expectation in the short-run as it shows same relationship with the result in the analysis. Meanwhile, the coefficient of multiple determinants (R 2) showed a coefficient of 0.910200 which implies a 91.02% explanation of the behaviour of gross domestic product by the totality of the explanatory variables (PRE, PCE and PDS) on the short-run. The Adjusted R further prove this with the adjusted value of 0.899424 which implies an 89.94% explanation of the behaviour of gross domestic product by the totality of the explanatory variables with the remaining 10.06% behaviour attributed to other variables outside the model otherwise referred to as the stochastic variables.

⁴²⁹ 28 c) Tests of Stationarity of Variable (Unit Root Test)

Performing a unit root test for time series model is considered mandatory to establish the stationarity of the
variables in such model. This is more reason why this study considers it necessary to test for the stationarity of
the variables in this model based on the following hypothesis. H 0: -X t has a unit root i.e. data is non-stationary
H 1: -X t has no unit root i.e. data is stationary

434 29 d) Decision Rule

If the Augmented Dickey Fuller (ADF) statistics is greater than 5% Mackinnon critical value (in absolute terms), 435 X t is stationary, we accept the alternate hypothesis (H 1) and reject the null hypothesis (H 0). The Augmented 436 Dickey Fuller as duly presented in The table above shows that all variables are non-stationary before differencing. 437 The ADF statistics of Terms of Trade (TOT) only shows a value lesser than 5% Mackinnon critical value (at 438 439 absolute value) therefore, we reject the alternate hypothesis (H 1) all the variables and accept the Null hypothesis 440 $(H \ 0)$. In order to ensure the stationarity of data for the remaining variables found to be non-stationary at 441 level, we proceed to test for stationarity at first difference. The result of the first differencing as duly presented in the appendix C is summarized below. 4.3 above shows that all variables except GDP are stationary at first 442 difference. This is proven by the ADF statistics of each variable (PRE, PCE and PDS) that shows a value greater 443 than the 5% Mackinnon critical values respectively. Hence, we reject their respective null hypothesis (H 0) and 444 accept their alternate hypothesis (H 1). In order to ensure the stationarity of data for the last variable found 445 to be non-stationary at level and first differencing we proceed to test for stationarity at second difference. 4.4 446 above shows that the last variable is stationary at second difference. This is proven by the ADF statistics of the 447

³⁹⁴

variable (GDP) that shows a value greater than the 5% Mackinnon critical values respectively. Hence, we reject
 their respective null hypothesis (H 0) and accept their alternate hypothesis (H 1).

450 **30** e) Summary of Order of Integration

451 The summary of the Augmented Dickey Fuller (ADF) test of the unit root is presented in Table 4

452 **31** f) The Augmented Dickey Fuller Test Equations

The result of the ADF test equation carried out on each of the variables is presented in Table 4.7 alongside their respective level of stationarity and lagged period and the corresponding co-efficient of multiple determination (R 2).

456 **32** Source: Author's compilation

The co-integration test is used in the determination of the long-run relationship that exists between variables. It 457 is in line with the proposition of the Johansen in 1991. Decision rule: -If the trace statistics (Likelihood ratio) is 458 greater than the 5% critical value at none ** , we reject the Null hypothesis (H 1) which says that there is no 459 longrun relationship and accept the Alternate hypothesis (H 1) which says that there is long-run relationship 460 between the variables. The table below shows the result of the Johansen co-integration test obtained from the 461 cointegration result as duly presented in the appendix. The table above shows that long-run relationship (co-462 integration) exist Gross Domestic Product (GDP) and the explanatory variables; Public Recurrent Expenditure 463 (PRE), Public Capital Expenditure (PCE) and Public Debt Service (PDS). This is reflected in the likelihood 464 ratio of the first row of the second column of the table that shows a value greater than that of the 5% critical 465 value in the first row of the third column. Hence, the hypothesis of no co-integration (H 0) is rejected and that 466 of presence of co-integration (H 1) is upheld. 467

468 **33** g) Long-Run Model

From the co-integration result in the Johansen co-integration test above, it could be inferred that there is long-run 469 relationship among the dependent and the explanatory variables. This prompted the need for the establishment 470 of a co-integration model. This is derived from the Johansen co-integration result from which the equation with 471 the lowest log-likelihood ratio is chosen. From the above long-run equation, public recurrent expenditure showed 472 a negative relationship with gross domestic product on the long-run while the remaining two variables (PCE 473 and PDS) showed a positive relationship with gross domestic product. The constant parameter maintained a 474 negative value of 14.18768 implying that if all explanatory variables are held constant, gross domestic product will 475 increase by 14.18768 units on the long-run. There are several reason in literature which results in public capital 476 expenditure yielding a positive result on gross domestic product, one of the likely reason is that as time goes on 477 478 if government keeps investing in public infrastructure, foreign firms can be motivated to invest in Nigeria since infrastructures such as electricity, good roads are in place. Also, only a thriving economy as well as government 479 can service its loan at maturity, a long run thriving economy is a good impetus for foreign inflow of foreign capital. 480 While public recurrent expenditure can only have a short run effect. For example, the payment of administrative 481 salaries and wages can only encourage workers to be productive for just a little period of time. 482

Meanwhile, none of the variables gave the same effect on gross domestic product in the long run as in the short-run while the constant parameter shows the same effect in the long run and the short-run.

485 34 h) Error Correction Mechanism

An over-parametized error correction model is required in this analysis and was obtained by using the lag 486 length to ensure that the dynamics of the model is not compromised and properly captured. The result of the 487 over-parametized error correction model (ECM1) is presented in table 4.9 below: The summary of the over-488 parametized ECM above shows that the coefficient of the ECM is significant with the negative sign (-). It implies 489 it effectiveness in the correction of any deviation that may occur in the long-run. The coefficient is -0.089651 490 which implies a sharp adjustment rate of approximately 0.09unit to any changes that may occur on the long-run 491 and rate of correction of past deviation in the present period. These means that the present value of GDP adjust 492 very sharply to changes in PRE, PCE and PDS. 493

In order to attain effectiveness of the model, there is the need to simplify the model to a more parsimonious 494 495 model. The parsimonious model would be gotten by estimating the equation of only those variables that appear 496 significant in the over-parametized ECM. The table below shows the result of the parsimonious model estimated. 497 From the result above, the coefficient of the ECM is further proven significant with its conformity to the overparametized ECM. The value of the ECM shows a negative of -0.090423. This coefficient in it negative form 498 implies that the speed of adjustment of any past deviation to long-run equilibrium in present period. It therefore 499 indicates that the value of the GDP adjust more sharply to changes in the explanatory variables than it was in 500 the over-parametized model. 501

However, the parsimonious model shows only a variable (PDS) is significant while the remaining variables proved insignificant. This is determined by the evaluation of the probability value of each variable. The corresponding probability of a variable must be less than 10% before it is said to be significant. therefore, it can
 be deduced from the parsimonious model above that changes in the dependent variable (GDP) is determined by
 PRE in the short-run while other PDS determines this changes in the long-run.

Furthermore, the table also reveals that PRE is inversely related with GDP with a negative coefficient of 0.000400, which implies that a unit increase in public recurrent expenditure will result in a 0.000400 decrease in GDP while the remaining two variables (PCE and PDS) maintained a positive relationship with GDP with their respective coefficients given as; 0.014107, and 0.014384. These therefore implies that a unit increase in any of the PCE and PDS in the long-run will result into a increase in the value of gross domestic product (GDP) by 0.014107 and 0.014384 respectively.

The coefficient of multiple determinants (R 2) showed an approximate value of 0.439115 which implies that the variables that makes up the model can account for approximately 44% of the behaviour of gross domestic product (GDP). The remaining 56% can be linked to white noise which is usually captured by other variables not present in the model.

⁵¹⁷ 35 i) Tests for the Statistical Significance of Parameters

In testing for the statistical significance of each variable, the standard error test is usually employed in long-run 518 analysis. This is done by comparing the standard error statistics with half the coefficient of each variable as 519 given in the Johansen co-integration result in absolute terms. The table below displays the test accordingly in 520 there absolute terms respectively. The table above indicates both PCE and PDS are statistically insignificant 521 while GDP is statistically significant. This implies that only public recurrent expenditure (PRE) can significantly 522 explain Gross domestic product (GDP) in the long run. This is also supported in the short run by the probability 523 value of PRE lesser than 5%. On this note, the only statistically significant variable in the short and long run is 524 PRE. i.e. only PRE can significantly explain the variation in GDP. 525

526 **36** VII.

527 37 Implication of Findings

The compass of this study is focused on the impact of budget implementation on Nigeria's economic growth. 528 A radical analysis of the subject matter revealed that in the long run, public recurrent expenditure and public 529 capital expenditure will have a negative and positive relationship respectively with gross domestic product of the 530 country which is in conformity with the 'a prior' expectation, only public debt service does not conform with 531 prior expectation. This is to say that as the Nigerian government keeps implementing recurrent expenditure its 532 positive effect can only be felt for a short period of time afterwards, a negative effect will emerge. The study 533 also reveals that implementing capital expenditure in the national budget cannot yield any form of immediate 534 economic growth, only a sustainable and continuous capital expenditure project such as electricity, good transport 535 system among others within the country will serve a good investment ground thereby encouraging foreign 536 537 firms to patronize the country. The over-parametrized and parsimonious ECM also shows the lead value of the variables used in the study i.e it shows the relationship which each variables of subsequent years have with gross 538 domestic product. The result of the oveparametrized and parsimonious ECM also conforms with that of the 539 Johanson cointegration which suggest that the implementation of the national budget which is equivalent to the 540 implementation of public recurrent expenditure, public capital expenditure and public debt will yield positive 541 effect on gross domestic product of Nigeria in the longrun. The short run result reveals that the national budget 542 has only be implemented up to 91%. 543

There is the need to link the findings in this study with the findings of other researchers on the subject 544 matter. Though, there are several researchers who worked on the subject matter but Oke (2013) remains the 545 only researcher that applied the same methodology as the one used in this study. Therefore the findings of Oke 546 (2013) will serve as the basis for comparison in this research. Findings of Oke (2013) was able to reveal the same 547 result using Ordinary Least Square Methodology as the result obtained in this study. The short run findings in 548 this study reveals that in a short while the implementation of the public recurrent expenditure which encompasses 549 the payment of salaries and wages will lead to productive workers who will give economic productions their best 550 shot, this means economic development can be ensued in the short run. While implementing capital expenditure 551 contribute to economic development but not in the short run. In short the analysis conducted shows that if 552 proper care is not taken, the effect of capital expenditure on the economy can be adverse within a short period 553 of time. 554

555 **38 VIII.**

⁵⁵⁶ 39 Summary, Conclusion and Recommendation

Investigation into the subject matter was conducted on the basis of empirical, theoretical and analytical investigation done as objectively as possible. Plethora of researches that have evolved over the years relating to this study (empirical review) were given adequate consideration in other to provide an effective benchmark and platform upon which this study is based. The study also carefully diagnosed the variously examined areas

of past research works on the subject matter in other parts of Nigeria to objectively establish the most reliable 561 result and conclusion possible. However, the study carefully reviewed theories and empirical studies that relates 562 to the subject matter in order to critically evaluate the problems inherent in previous related study which serves 563 as the research gap which were extensively bridged.. The analysis conducted in this study is categorized into the 564 short run and the long run which is carried out using the Ordinary Least Square (OLS) and the Johanson Co-565 integration (JCI) analytical technique. The study also included other analysis such as the overparametized and 566 parsimonious error correction model. The result of the short run analysis indicated an insignificant and negative 567 relationship between Public Capital Expenditure (PCE) and Gross Domestic Product (GDP) applicable to Public 568 Debt Service (PDS) and Gross Domestic Product (GDP). While Public Recurrent Expenditure (PRE) showed a 569 significant and positive relationship with the gross domestic product in the short run. Meanwhile, the long run 570 analysis reveals a positive relationship between Public Capital Expenditure (PCE) and Gross Domestic Product 571 (GDP) and Public Capital Expenditure (PCE) and Gross Domestic Product (GDP). While Public Recurrent 572 Expenditure (PRE) showed a negative relationship with gross domestic product (GDP). The Ftest revealed that 573 the overall model is statistically significant in the explanation of the subject matter. The Durbin Watson graph 574 shows that there is absence of serial correlation in the model adopted for the study. Lastly, the goodness of fit of 575 the model (co-efficient of multiple determinant) showed a statistical value of 0.910200 in the short-run indicating 576 577 that the explanatory variables in the short-run can account for 91.02% changes that occur in Gross Domestic 578 Product (GDP) while the long-run model showed a statistical value of 0.439115 indicating that the explanatory 579 variables can only account for approximately 44% behaviour of Gross Domestic Product (GDP) on the long-run while other variables outside the model (stochastic variables) accounts for the remaining approximately 56%. 580

It can be generally concluded that as the Nigerian government keeps implementing recurrent expenditure, its 581 positive effect can only be felt for a short period of time afterwards, a negative effect will emerge. The study 582 also reveals that by implementing capital expenditure in the national budget cannot yield any form of immediate 583 economic growth, only a sustainable capital expenditure project such as electricity, good transport system among 584 others within the country will encourage foreign firms to patronize the country as a good investment ground. 585 It can be concluded that in the short run, the implementation of all items in the budget will largely contribute 586 to the development of the Nigerian economy. In the long run, it can be inferred from the analysis that the 587 implementation of all items in the budget will average impact the Nigerian economy. From the foregoing, it can 588 be finalized that other economic factors helps in developing the economy in the long run. Sequel to the findings 589 of the research, the following recommendations are hereby presented for the benefit of researchers, Nigerian 590 591 government and policy makers:

i. On the note of the analysis conducted in this study, it is recommended that for the Nigerian government to 592 achieve all round sectorial and economic growth, public capital expenditure and debt servicing should not be taken 593 with levity as their implementation can strongly boost economic growth and development. ii. Recommendation 594 for further studies is that upcoming researches should employ the use of more variables in order to boost the 595 coefficient of multiple determination (R 2) in the long run. iii. The government of the country should not 596 see implementing recurrent expenditure as a strategy for achieving a long run development. iv. On the basis 597 of testing the significance of all the variables, only public recurrent expenditure can be relied upon as being 598 significance, therefore, its effect must be checked mate in the future. The study reveals a negative effect on gross 599 domestic product in the long run. 600

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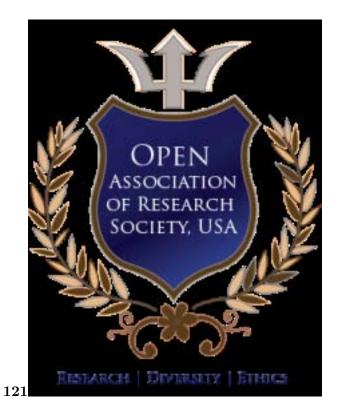


Figure 1: 12 Global 1 D

41

: Ordinary Least Square (OLS) Result							
DEPENDENT VARIA	BLE COEFFICIENT C	OF ESTIMATES	Т-	PROBABILITY			
			STATISTICS	VALUE			
\mathbf{C}	10.62513		54.64034	0.0000			
PRE	0.303291		4.578548	0.0001			
PCE	-0.094486		-1.878675	0.0720			
PDS	-0.025217		-0.463320	0.6471			
R 2 = 0.910200	Adjusted R $2 = 0.899424$	F-	DW-STAT=				
		STAT	0.564577				
		=					
		84.46567					
	1 (0 A 1 TT)						

Source: -Computed Result (See Appendix III)

Figure 2: Table 4 . 1

	ADF	MACKINNO			
VARIABLES	STATISTICS	CRITICAL	H 0	H 1	REMARKS
	VALUE	VALUE $@5\%$			
GDP	0.965604	-2.9750	Accept	Reject	NON-
					STATIONARY
\mathbf{PRE}	-2.175756	-2.9750	Accept	Reject	NON-
					STATIONARY
PCE	-2.936203	-2.9750	Accept	Reject	NON-
					STATIONARY
PDS	-2.313260	-2.9750	Accept	Reject	NON-
					STATIONARY

Source: Author's compilation

Figure 3:

43

	ADF	MACKINNO			
VARIABLES	STATISTICS	CRITICAL	H 0	H 1	REMARKS
	VALUE	VALUE $@5\%$			
GDP	-2.134451	-2.9798	Accept	Reject	NON-
					STATIONARY
PRE	-4.129339	-2.9798	Reject	Accept	STATIONARY
PCE	-3.142752	-2.9798	Reject	Accept	STATIONARY
PDS*****	-2.313260	-2.9798	Reject	Accept	STATIONARY
Source: Author's compilation					
Table					

Figure 4: Table 4 . 3:

 $\mathbf{42}$

Figure 5: Table 4 . 2 :

44

	ADF	MACKINNO			
VARIABLES	STATISTICS	CRITICAL	H 0	H 1	REMARKS
	VALUE	VALUE $@5\%$			
GDP	-4.328269	-2.9850	Accept	Reject	STATIONARY
Source: Author's compilati	lon				
Table					

Figure 6: Table 4 . 4 :

 $\mathbf{45}$

.6

Figure 7: Table 4 . 5:

 $\mathbf{4}$

		6 : ADF Test Equa	tion		
Variables	Coefficients	Standard Error	T -Statistics	Probability	R 2
D(GDP(-1),2)	-1.436506	0.331889	-4.328269	0.0003	
D(GDP(-1),3)	-0.031733	$0.182405 \ 0.005284$	-0.173968	0.8635	0.736869
\mathbf{C}	-0.001098		-0.207855	0.8373	
D(PRE(-1))	-1.407478	0.340848	-4.129339	0.0004	
D(PRE(-1),2)	0.010129	$0.199193 \ 0.091366$	0.050849	0.9899	0.691737
С	0.285648		3.126421	0.0047	
D(PCE(-1))	-0.956775	0.304439	-3.142752	0.0046	
D(PCE(-1),2)	-0.116667	0.200527	-0.581800	0.5664	0.547380
С	0.174087	0.085942	2.025631	0.0546	
D(PDS(-1))	-0.152233	0.065809	-2.313260	0.0296	
D(PDS(-1),2)	-0.311112	0.173327	-1.794947	0.0853	0.244765
С	2.015285	0.767767	2.624867	0.0148	

Figure 8: Table 4 .

 $\mathbf{47}$

EIGEN VALUE	LIKELIH(06%	1%	HYPOTHESISED		
	RATIO	CRIT-	CRIT-	NO OF		
		ICAL	ICAL	(CE S)		
		VALUE	VALUE			
0.617830	48.00603	47.21	54.46	None *		
0.467429	22.03503	29.68	35.65	At most 1		
0.167638	5.023977	15.41	20.04	At most 2 $*$		
0.002582	0.069800	3.76	6.65	At most 3		
(**) denotes rejection of hypothesis @ 5%(1%) Significant level respectively						
L.R. test indicates $3(2)$ co-integrating equation @ 5% (1%) significant level						
Source: -Computed Result (See Appendix)						

Figure 9: Table 4 . 7 :

It is therefore presented as:

 $\begin{array}{ll} \text{GDP} = -1.080311 \ \text{PRE} + 0.445605 \ \text{PCE} + 0.826388 \ \text{PDS} \ -14.18768 \\ (0.46272) & (0.23033) & (0.46883) \\ \text{Source: See Johansen Co-integration result in the appendix III} \\ \text{Note: Standard error statistics are given in parenthesis} \\ \end{array}$

Figure 10:

 $\mathbf{4}$

8 : Over-Parametized Model (Ecm1)					
	Dependent Variable = D (GD	P, 2)			
VARIABLES	COEFFICIENTS	STANDARD	Т-	PROB	
		ERROR	STATISTICS	VALUE	
D(GDP(-1),2)	-0.454883	0.188422	-2.414170	0.0266	
D(PRE,2)	-0.001079	0.022308	-0.048352	0.9620	
D(PRE(-1),2)	-0.000284	0.018886	-0.015035	0.9882	
D(PCE,2)	0.016206	0.022105	0.733108	0.4729	
D(PCE(-1),2)	0.002653	0.016442	0.161326	0.8736	

Figure 11: Table 4 .

 $\mathbf{4}$

9 : Dependent Variables = $D(GDP, 2)$ Parsimonious Model (Ecm 2)							
VARIABLES	COEFFICIENTS	STANDAR	D T-	PROB			
		ERROR	STATISTICS	VALUE			
D(GDP(-1),2)	-0.445891	0.149235	-2.987848	0.0070			
D(PRE,2)	-0.000400	0.013703	-0.029158	0.9770			
D(PCE,2)	0.014107	0.014142	0.997504	0.3299			
D(PDS,2)	0.014384	0.007370	1.951841	0.0644			
ECM(-1)	-0.090423	0.045346	-1.994065	0.0593			
R 2 = 0.712104	DW-STATISTICS = 2.014767						
Source: Author's compilation							

Figure 12: Table 4 .

410

VARIABL		COEFFICIENT/2	STANDARD	DECISION
			ERROR	
PRE	-1.080311	0.5401555	0.46272	Significant
PCE	0.445605	0.2228025	0.23033	Insignificant
PDS	0.826388	0.413194	0.46883	Insignificant

Figure 13: Table 4 . 10 :

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