POLITICAL REGIMES AND ECONOMIC FLUCTUATIONS IN NIGERIA

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BEING

A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTERS OF SCIENCE IN ECONOMICS

SUPERVISOR: DR. PHILIP O. ALEGE

JUNE 2013

ABSTRACT

This thesis tests the proposition that politicians are a potential source of economic fluctuations in Nigeria. As a result, underlying assumptions of existing political cycle theories are relaxed to test politically-determined cycles in a context where elections do not hold and where politicians' ideology are neither left nor right but are influenced by other institutional features peculiar to Nigeria's political structure. The results obtained from the study provide empirical support for the existence of political business cycles in Nigeria. In a novel manner, the study extends the political cycle literature by investigating the cyclical features of political cycles, using a dynamic factor model that extracts a one-step ahead political shock component. Result shows that shocks from political activities are only a small proportion of aggregate economic fluctuations in Nigeria.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Since the 1930s, era of the Great Depression, one primary concern of macroeconomists and policy makers has been, inquiring into the sources, nature and effects of macroeconomic fluctuations. Following growing research interest on economic fluctuations- defined as the periodic expansion and contraction in aggregate economic activity- the underlying sources of economic shocks identified were: the demand or supply shocks and the nominal or real shocks. By nature, these sources clearly typified the field of business cycles into different schools of thought. Also, for a long while, research on the phenomena 'economic fluctuations or business cycles' continued to be limited to developed economies only.

Following the markedly episodes of macroeconomic instability in the post war era, inquiry about business cycles in developed economies, became pertinent on two grounds. First, its occurrence was highly likely to impose costs on the economy, as recessions implied lost income and decline in society's welfare. The other reason was purely intellectual. Economic fluctuations or business cycles provided yet another field of intense scholarly learning, with its fascinating characteristics of boom and bust ( )

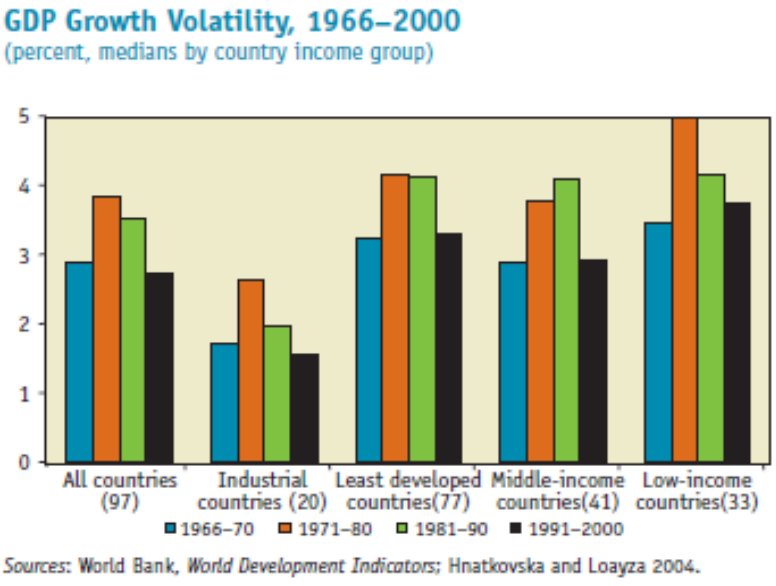
However, since the Great Moderation period-characterised by relative stability in the 1970s- it is noteworthy that research on business cycle has diminished along the scale of preference of several scholars in developed economies. Paradoxically, in the case of developing countries, it was not until the 1970s, that research on economic fluctuations began to surface.

Little, Cooper, Corden and Rajapatirana (1993, paraphrased) showed that:

> "Until the 1970s, research on developing countries was mainly concerned with longer run structural issues. However, with the harsh economic shocks of the 1980s and the ensuing debt crises in countries throughout the world, attention turned increasingly to macroeconomic policy and thus, to economic fluctuations..."

Up until now, inquiry into the sources and nature of economic fluctuations in developing countries, remain germane. This is stemming from the fact that these countries have more volatile economies than industrialized economies. The first reason for the high volatility is that developing countries experience frequent 'incoherent' swings in major economic outcomes. Another reason for the high volatility in developing economies relative developed ones, stems from the presence of an unstable development process, coupled with self-inflicted policy mistakes (World Bank, 2008).

Figure 1.1: Comparing GDP growth Volatility in developed and developing countries



The figure above shows comparative economic volatility over the period 1960-2010. With reference to the second and third bars, economic fluctuation is confirmed to be more pronounced in developing (LDCs) than developed countries.

Despite that economic variability with its attendant cost, poses a major concern to developing countries, it is seen that sparse literature in this area exist. This realisation becomes more evident in case studies on Sub Saharan Africa (SSA). For example while writing on business cycle fluctuations in Nigeria, Alege (2008) identified the dearth of business cycle literature in SSA and Nigeria.

Transiting to the core issue of economic fluctuations, one may observe that economic shocks in developing economies are attributed to either domestic or external factors. For example, the small size of many of these economies renders them vulnerable to external shocks. On the other hand, the World Bank notes that an unstable development process, coupled with self-inflicted policy mistakes are also major sources of shocks in developing countries. Thus, in this study, of the two sources of shocks- domestic and external- in developing countries, the domestic sources of economic shocks are emphasised.

Upon realisation of the importance of domestic sources of shocks and its attendant economic costs, one finds that policy makers in less developed countries are faced with proposing measures to mitigate the magnitude and effects of these shocks. For example, in a bid to combat the economic fluctuations in Nigeria, a core objective of the Nigerian Vision 2020 is engendering macroeconomic stability.

Conversely, this work argues that even though economic fluctuations is one pervasive phenomenon that policymakers in developing economies seek to curtail. It happens that by outright policy mistakes and vested self-interest, politicians/policymakers can be a source of economic fluctuations. This is particularly likely in a poorly-developed political environment,

where politicians face little or no constraints on their decision making power (Acemoglu, Johnson, Robinson & Thiaicharoen, 2002). With little or no constrain on decision making power, binding rules that constrain politicians from adopting self-seeking economic policies are missing. Once missing, politicians are incentivised to change economic policies at will, such that every new government in power discontinues with his predecessor's policies (Little et al, 1993). Then, it happens that through frequent changes in policies, economic fluctuations are likely to be induced.

However, as important as policymakers/ politicians are to potentially inducing, exacerbating and/or steadying macroeconomic variability, it was not until the 1970s, with the works of Nordhaus (1975) and Hibbs (1977), that this phenomenon -that politicians might be potential sources of economic fluctuations- became formalized. This phenomenon 'political business cycle', puts forward that an economy shifts or fluctuates as power is transferred from President to President (Bloomberg and Hess, 2000).

While the central argument of Nordhaus (1975) was that an economy cycles because an opportunist incumbent wishing to be re-elected implements expansionary economic policies before elections, so as to woo voters and contraction policies after; Hibbs' (1977) idea was that politicians possessing different ideologies and macroeconomic objectives are the impulse to economic fluctuations.

In the case of Less Developed Countries, especially Sub-Saharan Africa, the large presence of government as reflected in government spending as a proportion of GDP presents the continent as a fertile case study of the political cycle phenomena central to this work. For example, Nigeria is a fertile case study for the study of political cycles, as she possesses an active government **(%)**. Another reason is that the discretion afforded to incumbents in many sub-

Saharan African countries makes this part of the world a particularly good place to test hypotheses about... political business cycles **(**Block, Feree and Singh, 2003**)**

1.2 Statement of Research Problems

Indeed, from the preceding paragraph, Sub-Saharan Africa economies present a veritable case for the study of the existence of political cycles. However, existing political business cycle theories that can be used to study politically-induced fluctuations might not be readily applicable to developing countries. This is because these theories are grounded in stylized democratic political structures typical of developed countries only.

Democratic political structures in developed countries differ from those obtainable in less developed countries on the grounds that they are embedded in strong political institutions where the rule of law holds and transparency pervades with checks and balances that make it difficult for politicians to manipulate existing political economic structures. Conversely, the nascent democracies of developing countries characterised by weak institutions presents incentives that encourage politicians to engage in manipulative political activities.

Therefore, as to the weak institutional structures in developing countries, existing political cycle models may fail to account for economic fluctuations if some underlying assumptions of these theories are not relaxed. Despite this, the application of Political business cycles theories to developing countries show that on the contrary, political cycles are more pronounced in developing countries than in developed countries ((Schuknecht (1996); Gonzalez (2002); Svensson and Shi (2000) as cited from (Drazen, 2000b)). For these authors, varying factors such as access to economic rents, lack of transparency are among the several reasons for the surprising presence of political cycles in developing countries.

Furthermore, upon reviewing the application of existing political business cycle models to authoritarian regimes, it is discovered that existing models have not been applied to societies

where elections do not hold. A glaring reason is that present political business cycle theories are based on the notion that elections are held. Therefore, can political business cycles-in the sense that the economy cycles as leaders change -exist in countries where elections do not hold?

The above question becomes important in light of applying PBCs theories to the Nigerian economy. Since 1960, Nigeria has had 14 political regimes, of which 8 are military while only 6 are democracies. Therefore, Nigeria's political history serves a fascinating case to political cycle literature on the grounds that the country has had both authoritarian regimes where elections did not hold and at present, possesses a nascent democracy.

Then, the first research gap of this study is applying PBCs theories to Nigeria with a mix of authoritarian and democratic regimes. To the best of the author's knowledge, few or no study has investigated the existence of political cycles in a mix of authoritarian and democratic regimes. For illustration, the author finds Tarawalie, Ahortor, Adenekan and Comte (undated) as the only existing political cycle study on Nigeria. Tarawalie et al (undated) tests for evidence of political business cycles in Nigeria using annual data on real GDP growth, inflation rate, government expenditure, money growth and money-GDP ratio, over the period 1999 to 2007; and find empirical support for political cycle**.** Albeit, this study differs from Tarawalie et al (undated) on grounds that a longer time frame is used (capturing both democratic and military regimes), as 1999 to 2007 (only democratic regimes) presents a short time frame to make any meaningful statistical conclusion.

The second research gap to be addressed is characterizing the dynamic properties of political cycles. Some underlying benefits of characterising these politically-induced fluctuations are: First, to establish stylized facts; then, to create solid empirical basis on which policy recommendations can be made. Finally, one can quantify the impact of political shocks on

Nigeria's macro economy. To the best of author's knowledge no study has explained the cyclical properties of political cycle.

Therefore this study aims to address the identified research gaps, using the appropriate research questions, objectives and strategies.

1.3 Scope of the Study

This study explores the possibility that Political business cycles are applicable to a mix of nascent democracy and authoritarian regimes (with no elections). Asides the intellectual purpose of this work, a mix of democracy and authoritarian regimes is being studied to provide econometrically adequate sample size. This is because of the 13 political regimes in Nigeria, 8 are authoritarian and 5 democratic. Analysing only 5 democratic regimes provides a small sample size on which no meaningful generalisations can be made

Moreover, this work tests the existence and examines the nature of political cycles in Nigeria for the period 1960-2010. This study period is selected since it captures the various political regimes (both authoritarian and democratic) in post-colonial Nigeria.

1.4 Research Questions

With reference to the above stated research problem and in order to examine economic fluctuations as induced by successive political regimes (autocratic and democratic) in Nigeria, this study seeks to answer the following:

1. What evidence of political cycle exists in Nigeria? Such that as political power changes from one person (regime) to another, the economy fluctuates?

2. What are the statistical properties of the political cycles derived from question 1?

1.5 Research Objectives

The main objective of this study is to examine politically-induced fluctuations in the context that changes in government over time has induced economic fluctuations in the Nigerian economy. Therefore, the specific objectives to be examined in this work are:

1. To test for the existence of political cycles in Nigeria
2. To characterize the business cycle nature of political cycles in Nigeria

1.6 Research Hypothesis

Using relevant empirical data, the research hypothesis to be tested in this study include:

1. H_0 : No Politically-induced fluctuation exist in the Nigerian economy between 1960 and 2010

   H_1 : Politically-induced fluctuations exist in the Nigerian economy between 1960 and 2010.

1.7 Significance of Study

The study of the effect of political regimes on economic fluctuations in developing economies and in particular, Nigeria is considered germane on three grounds. First it presents the opportunity to contribute to the relatively unexplored territory of Political business cycle studies on Nigeria. To the best of the author's knowledge, Tarawalie et al (undated) remains the only country-specific study on Nigeria.

Secondly, the study is relevant in validating the political cycle theory and in establishing cyclical patterns of politically-determined economic outcomes. This is for the purpose of establishing stylized facts on the political economy of Nigeria.

On the policy making front, results from this study holds implication for objectively rating the impact of government varying macroeconomic policies on Nigeria's economy in the short run, for the observed study period. In another vein, the study also holds implication for quantifying the contribution of political shocks to aggregate economic fluctuations in Nigeria

1.8 Research Methods

To answer the research questions in this study, the research method to be used is mapped as:

1. The study will employ and adapt existing political business cycle model to Nigeria. In effect, existing theories are to be used to test a combination of military and civilian regimes. To successfully achieve this, certain assumption of existing theories are likely to be relaxed and new assumptions taken.

2. Once the appropriate model has been put in place, atheoretical estimation methods will be used to test the existence of political cycles for the peculiar case of Nigeria. The Univariate ARMAX model, typifying the Box-Tiao Intervention analysis will be used. Furthermore, a Multivariate, dynamic factor technique will also be employed. In both techniques, macroeconomic variables are to be regressed on lagged macroeconomic variable and political dummies.

   Once political cycle have been detected, it is necessary to analyze the behavior of economic fluctuations found. The Multivariate technique provides an avenue to characterize the cyclical nature of the political cycle detected.

1.9 Organisation of the Study

For analytical purposes, this work has been divided into six chapters. Chapter one introduces the subject matter, in it the research problem is defined, questions of the thesis and strategies to answering these questions are introduced. Chapter two reviews the political cycle literature. In this chapter, theoretical, methodological and empirical reviews are presented; research gaps stemming from literature are also identified. In chapter three, some stylized facts on the interaction between politics and economic fluctuations are illustrated, both globally and for Nigeria. The study's theoretical framework and methodology makes up chapter four, while the estimation results are presented in Chapter five and finally, conclusions, policy implication of findings and recommendations are made in Chapter six.

1.10 Definition of Key terms

1. Political Regime:

Fishman (1990) as cited by Ploberger (2012) defines political regimes as the formal or informal organisations at the centre of political power determining who has access to political power.

It can also be regarded as form of government or political institution inherent in a society. In this study, political regime is primarily defined as the individual head of government per time. For instance, if Persons A and B are heads of government in different period, then the period in which A was head of government is referred as A's regime. In the same vein, the period Person B was head of government is referred as B's regime

2. Economic Fluctuations:

It is the periodic expansion (growth) and contraction (recession) in aggregate economic activity and other relevant macroeconomic variables, around a long-term growth trend. Other related words are business cycles.

a. Economic Shock: Is an unpredictable and unexpected event that spurs economic fluctuations (negative/positive)
b. Economic Volatility: Is a measure of fluctuation or variation in economic variables

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction.

This Chapter provides a comprehensive outline of developments in the political business cycle literature. It is divided into main three sections: Theoretical, Methodological and Empirical. Nevertheless, for conciseness, the review centres on the first objective of the study: existence of political cycle. In the theoretical review, main theories of political business cycle are outlined and critiqued. In the methodological review, techniques used to estimate and detect political cycles are mentioned and finally, several empirical findings are enumerated in the empirical review.

Then, the chapter is divided into five sections. Apart from section 2.1, in section two, three and four, the theoretical, methodological and empirical reviews are presented. Concluding remarks are made in section five.

2.2 Theoretical Review of the Literature

Political business cycle is the phenomena that politicians by their actions, induce economic fluctuations, for the purpose of re-election or because they possess differing ideologies. By this definition, theories of politically-induced fluctuations are: (1.) The opportunistic cycle; (2.) The partisan cycle.

The works of Kalecki (1943) and Downs (1957) are believed to have provided the philosophical base on which the two strands of political business cycle theories stand. In his paper 'Political Aspects of Full employment', Kalecki (1943) expounded how and why business class individuals oppose full-employment policy measures, as proposed by government. According to Kalecki, The business class individuals object to full-employment, even though it is economically beneficial to both the business class and working class

individuals, due to political reasons. These reasons include the case where entrepreneurs are wary of socio-economic order changes, because they believe it makes workers 'get out of hand'. Another reason for opposing government's full employment policy is because it leads to inflationary trends which erode political rentiers. As a result of the implication of full employment policies to their self-interests, politicians and big businesses pressure an incumbent to take up austere measures. Consequently, by the time the austere measure slides the economy into a recession, government is bound to implement full-employment policies to combat resulting recession. Therefore, the alternation between austere measures (pressure from big businesses) and full employment policies induce economic fluctuations.

From another angle, Anthony Downs (1957) in 'An Economic Theory of Democracy' posited that politicians and political parties alike, propose economic policies to win elections, not win elections to implement policies. As a result, Downs formalised the Median Voters Theorem which depicts that in a two-party system, irrespective of the original divergences of political ideologies, the policies of political parties tend to converge, such that both parties in the two-party system pursue the same policy when in office (Alesina, 1988; paraphrased).

Stemming from these philosophical bases, Nordhaus (1975) formalised the idea that politicians induce economic fluctuations, in his opportunistic political cycle. The opportunistic cycle explains economic fluctuations as originating from the re-election motive of an incumbent politician. In order to maximise his chances of re-election, an incumbent politician is pressured to 'manipulate' policies by implementing expansionary policy-reduce unemployment-prior to election and then austere policy measures, after elections.

In a different dimension, the idea that parties have electoral ambitions that influence them to implement policies favouring their core constituencies (Hibbs, 1992) culminated into the Hibbs (1977) partisan or ideological cycle model. In this model, politicians or political parties are

either left wing or right wing. While the left wing politician affiliates with the working class and proposes expansionary policies, the right wing politicians align with the interest of business class individuals and propose anti-inflationary measures. Economic fluctuations are therefore, induced by the alternation of power between the left wing and right wing politician. The underlying prediction of the Partisan model is that macroeconomic policy will be expansionary (reduce unemployment, increase output and inflation) under left wing politicians than right wing ones. Except that politicians have ideological preferences, basic assumptions of the opportunistic model also apply to the partisan model.

The Opportunistic model and its partisan variant alike have been subject to criticisms. Hibbs (1992) summarises the central theoretical critiques of these models as:

a. Both models are premised upon an exploitable Philips curve, which depicts trade-off between unemployment and inflation. This implies that parties can pick their preferred point in the inflation-unemployment trade-off space. Albeit, the underlying theoretical assumption of these models was attacked through the Lucas critique of the policy ineffectiveness of the Philip's curve, upon which both models are developed**.** Gautier (2003) notes that later theoretical endeavours such as those by Rogoff (1990) and Cukierman & Meltzer (1986) addressed this point by considering a government budget instead of a Phillips curve in the opportunistic theoretical framework

b. Voters are non-rational, such that they form expectations in a retrospective manner and are naive or ignorant of the workings of the economy. This notion was criticised on the reality that voters over time (no matter how naive) can see through the manipulative actions of politicians.

Alesina (1988) notes that theoretical literature on political business cycles made essentially no progress after Nordhaus (1975) and McRae (1977) for several years, because of the (presumed)

devastating effect of the rational expectation critique. However, by the mid-eighties, political cycle theories which addressed the dual critique above were introduced, thus reviving the political cycle literature.

Based on the New Classical macroeconomic framework, the newly introduced theories adopted the assumption of rational forward-looking voters, and were based in a general equilibrium framework. The models include: the Rational Opportunistic model (Rogoff (1988); Rogoff and Sibert (1990), Persson and Tabellini (1990) and the Rational Partisan model (Alesina, 1988; Chappell and Keech (1986, 1988)).

Specifically, the Rational Opportunistic model maintains the basic assumptions of the pre-rational models. Except that, voters are now forward looking and can evaluate economic performance since they have a working knowledge of the economy. In this model, forward looking voters make political decisions using incumbent politicians' competence- ability to provide visible public goods at less tax cost. Gautier (2003) argues the assumption of a competent politician behaving opportunistically in the rational opportunistic model is counter intuitive as competent candidates are the ones to take advantage of the opportunistic behaviour to get re-elected. For Gautier (2003), this behaviour, however, does not resemble a competent candidate in that she does not show any capability in terms of managing the economy efficiently.

In the same vein, the rational partisan model extends the partisan model unto the rational framework. Alesina, Roubini and Cohen (1997) as reviewed by Franzese (1999) states that in non-Rational Expectation partisan theory, left policymakers target expansionary outcomes than the right, with exploitable Phillips curve, they use their policy control to shift economic outcomes in these directions over their term. In Rational Expectation partisan theory, only unexpected monetary and fiscal policies can create such real-economic effects, so when left

(right) governments are elected, to the degree this was not completely foreseen, inflation is higher (lower) and growth, employment, and inflation rise (fall)... Thus, the primary differences between the Rational Expectation and non-Rational Expectation versions of partisan theory are whether the real effects of partisan shifts in government persist or fade over the term of the government. However, Gautier (2003) questions the plausibility of the wage-contract assumption which allows labour unions to adjust for inflation variations after the election period in the rational partisan model

Overall, the rational-based models are criticized on the following grounds:

a. Nordhaus (1989) tests the assumption of rational voters and finds no empirical support for its existence.
b. Another drawback of rational models is that they rely on timing assumptions to obtain information asymmetries among players which in turn create a cycle. Timing assumptions are somewhat troublesome in that they are arbitrarily set, and without them the model's result might not hold.

The theoretical literature on political cycle is extended by a model that unifies the opportunistic and partisan models within a single framework. This unified Opportunistic-Partisan model is posited by Frey and Schneider (1978) based on the notion that partisan politicians, in a bid to be re-elected can resort to opportunistic policies. Frey and Schneider (1978) as cited from Tiganas and Peptine (undated) highlights the existence of a popularity function and one of adopted policies. For them, whether a partisan politician becomes opportunistic prior to election depends inversely on his popularity, as a less popular ideological incumbent is most likely to resort to opportunistic motives before elections. Hibbs (1992) however criticises this model for focusing only on fiscal policy and did not incorporate explicitly persistent cleavages distinguishing the United States parties.

However, Sieg (undated) applies the Frey and Schneider ideas to the rational platform. Sieg (undated) unifies the rational opportunistic and rational partisan models in a single framework. He states that a pre-election business cycle occurs due to signalling of competence and a post-election political business cycle occurs due to uncertainty of the election's winner and due to uncertainty of the pre-election monetary policy.

Later on, in a different but complementary manner, political cycle models addressing country-specific or context-specific issues have also been developed. For Ito (1989), Most of the works on political cycles have been conducted in the framework of the U.S. presidential system, in which elections come once every four years. Careful applications of the idea to other countries, taking into account a different political system, are scarce. As a result Ito (1989) builds a theoretical model for Japan's parliamentary system. In this model, unlike the conventional models, timing of election is not fixed, but subject to the discretion of a Prime Minister. Instead of manipulating an economy in an attempt to line up the peak of business cycles to the fixed election timing, the incumbent party may opportunistically wait for a business cycle peak which is generated by autonomous forces of private sectors. Specifically, in Ito (1989), elections are no longer regarded as exogenous but endogenous variables.

In the most recent theoretical developments in this research area, ad-hoc models which build upon existing theories are developed to explain political cycle within a specific setting. An example is Bloomberg and Hess (2000) build a dynamic general equilibrium model where politics is factored in. The paper constructs and examines a macroeconomic model which combines features from both real and political business cycle models. We augment a standard real business cycle tax model by allowing for varying levels of government partisanship and competence

Then, are there remedies to politically-induced fluctuations? Nordhaus (1975) offers some suggestions. Some of them include:

a. Improve the information available to voters so that they can judge and condemn the partisan nature of myopic policies. In this regard non-rational naive voters should be duly informed about the working of the economy. In direct application to the rational-based model, information available to voters can be improved through a reduction to the barest minimum in information cost
b. Encouraging participatory government improves politicians and voters access to collective decision making, so that incumbent politician cannot easily manipulate economic policies

Yet another remedy suggested is the imposition of policy rules that serves as checks and balance on politicians' decision making.

The next section presents the methodological developments in the political cycle literature.

2.3 Methodological Review of the Literature

Atheoretical and Theoretical methods alike have been employed by existing studies, to derive empirical evidence for politically-determined cycles in the political cycle literature. In this review, the atheoretical method is emphasised, as it is used by more studies. A central reason for its preference among scholars is its simplicity and convenience over the theoretical method

2.3.1 Atheoretical Method:

By atheoretical, it means that estimation techniques employed are void of any apriori economic theory. This methods used by existing studies in this class have either been univariate or multivariate-based.

For the univariate methods, existing political cycle studies test for politically-determined fluctuations using single equations. For example, Krause and Mendez (2004) sum the most common test...to be, running an econometric autoregression of a macroeconomic variable (e.g; unemployment, output growth or inflation) on itself, other economic variables and a political dummy (for electoral years or the type). These single equations can be applied to country-specific studies or cross-country panel studies. In the case of panel studies, variables capturing common fixed-effects are usually added to the single-equations

Despite the popularity of these Autoregressive equations, Nordhaus (1975), the first study to provide empirical evidence on the existence of political cycles employed a non-parametric binomial probability technique. He tested 9 countries using annual unemployment and national election data, to calculate the probability that either unemployment rate rising or falling in any period is one-half, based on the assumption that successive occurrences are independent. First, since data on national election is non-quantifiable in the sense of economic time series, then the binomial probability are applicable. However, comparing non-parametric techniques with parametric ones, the conclusion derived from this study may not be as powerful as those from parametric methods. Another possible drawback in this study is that cyclical components of unemployment data was not extracted and analysed, as expected in cyclical studies.

However, Hibbs (1977) is one of the first papers to have employed the formal atheoretical univariate technique as described initially. In his paper, Hibbs (1977) utilized the Box-Tiao intervention analysis to test partisan cycle using quarterly unemployment data for the United

States and Britain, over the period 1948:1 to 1972:4. Hibbs corrects for one of the drawbacks in Nordhaus (1975) by estimating an ARMA model where cyclical unemployment data are regressed on intervention variables.

In the same vein, McCallum (1978) as cited from Allen, Sulock and Sabo (1988) test annual unemployment data for the United States in an Autoregressive Model with six political variables.Autoregressive models have continued to be used as a method providing empirical evidence of political cycle- either of Autoregressive Distributed Lags (ADL) or the Autoregressive Moving Average (ARMA) are employed.

In a recent paper, Grier (2007) employs this technique to test opportunistic cycle in United States using quarterly output growth data over the time 1961-2004. His Autoregressive model was such that output growth was regressed on its lag, control variables and dummy variables. In this study, Grier (2007) used 34 regressors. Therefore, upon reviewing this work, concerns about model specification and loss in degree of freedom surfaces. However, a robustness check using CUSUM showed stability in estimated parameters. This allayed our concerns about this paper.

Also, in a somewhat different manner, Pepinsky (2007) tests a model where seasonally adjusted government fiscal balance is regressed on control variables and political dummies, using quarterly data for the period 1967- 1990. Suspecting heterokedasticity and non-stationarity, he estimates a GARCH model. However, reporting standard robust errors are alternatives to estimating GARCH models as these errors prove to be robust to misspecification and heteroskedasticity issues.

Using a different method from the conventional Univariate AR models, Erlandsson (2001) tests political cycles using the time varying regression technique. An advantage of this technique is

testing the stability of estimated coefficients. He employs annual real output and unemployment data in Sweden for the period 1958-1998. In the paper, this technique estimate models where real output and unemployment are regressed on two partisan dummies, expected inflation and real inflation, respectively using a nonlinear least square estimation. Despite the seemingly robustness of this work, no mention was made of stationarity of the variables and cyclically-adjusting the variables.

Another context in which univariate single equations are used is in cross-country studies. In this case, the single-equations are dynamic panel specifications where a macroeconomic variable is regressed on its lagged term(s), political indicator variables and in some cases, control variables. In addition, variables capturing common fixed-effects are included. In defending panel estimations, Chatfield (1996) as cited from Pepinsky (2007) notes that only in cases where available data can provide at least 100 uninterrupted observations can researchers be confident in such estimations. Also Alesina and Roubini (1992) notes that the advantage of a multi-country study is that, of course, one has many more degrees of freedom, including observations.

Alesina and Roubini (1992) run a dynamic panel OLS regression on a model with fixed effects and constant slopes to account for differences in long-term growth rates, unemployment, and inflation across 18 OECD countries in their panel study. They assume that the other parameters of the model are constant and equal across countries. However, Alesina and Roubini work is subject to potential bias because Brender and Drazen (2004) notes that using common fixed effects in an OLS regression with lagged dependent variables as found in Alesina and Roubini (1992), introduces a potential estimation bias. To deal with this potential bias, Brender and Drazen (2004) in their study on opportunistic cycle in a panel of developed and developing countries use a GMM estimator according to the Arellano-Bond procedure.

In the same vein, in their dynamic panel regression, Shi and Svensson (2006) use a more robust approach. For a large panel data set of 85 developed and developing countries, after taking note of the drawback of the OLS fixed effect estimator, use the GMM estimators to estimate a regression where government budget balance as a per cent of GDP is regressed on two lagged period of government budget balance, two control variables (log of GDP and GDP growth rates), a country dummy and an election indicator. For them, the GMM estimators are more robust since they control for unobserved country-specific effects as well as bias from lagged dependent variable (budget balance).they carry out a serial correlation and identification test. They test and confirm the presence of political budget cycles is prevalent in developing countries than developed countries.

However, Potfrake (2010) notes that GMM estimates are only appropriate for large samples. In their study of 21 OECD Countries, Potfrake (2010) developed a dynamic panel model where GDP growth is regressed on its lag term, political dummies, exogenous control variables, and fixed effects. They note the potential bias arising from using a fixed effect estimator in models with lagged dependent variables, but are constrained from using the GMM estimator based on the small sample size. Based on this observation, Potfrake (2010) applies Bruno's (2005a, 2005b) bias-corrected least squares dummy variable estimator for dynamic panel data models with small N. His diagnostic test on initial estimates add robustness to his work, as he tests for the existence of unrestricted serial correlation by applying the Wooldridge test, he also applies heteroskedastic and autocorrelation consistent (HAC) Newey-West type standard errors and variance-covariance estimates and finds estimates unaffected.

In a different manner from the use of conventional dynamic panel models, Wright (2011) in his study of political cycles in several non-democractic countries employs a dynamic panel Error correction model. He argues that this method is suited to allow for more general test of

the Long run and Short run impact of elections. In another framework Potrafke (2006) use a structural Seemingly unrelated regression (SURE) technique on state expenditure data in a panel of 16 states within Germany for the period 1974 to 2004. However, the performance of structural SURE estimation in T=31, worth questioning.

The studies reviewed above employ the univariate timeseries and panel frameworks, to test the existence of political cycles. However, few studies (such as Faust and Irons (1999), Berger and Woitek (1997)) employ a Multivariate Vector Autoregressive Models (VAR). Unlike the univariate analysis, this technique is based on the premise that in reality, there is causal feedback relationship among economic variables.

Also Univariate analysis differs from multivariate technique as it treats political variables as exogenous. However, Faust and Irons (1996) questions this assumption and canvasses about the endogeneity of political variables. Thus, to capture the endogeneity of political variables in relation to the economy, Faust and Irons (1996) tests evidence of political cycle by estimating an augmented VAR model with four economic variables and political dummies and then presenting corresponding impulse response function. Although Faust and Irons (1996) emphasise the endogeniety of political variables, according to Ito (1989) political variables (election dates) are necessarily endogenous only when election timing are flexible. Furthermore if Gujarati (2010) suggestion is anything to go by, then one finds that estimated VAR co-efficients are difficult to interpret, then, inference made by Faust and Irons using the VAR estimated co-efficient are inconclusive.

In the same vein, Berger and Woitek (1997) estimates an augmented 6 by 1 vector VAR model (net production, monetary aggregate, inflation rate, unemployment rate, Bundesbank discount rate and federal government deficit) and political dummies using monthly data for the period 1950-1989 in Germany. Unlike Faust and Irons (1996), Berger and Woitek (1997) estimate a

VAR model with trend, while using the VAR model without trends as a robustness check. Robustness checks are rare features in most of studies reviewed.

2.3.2 Theoretical Method

By using the theoretical method, it implies that political studies employed technique based on apriori economic theory. Presently, theoretical-based political business cycle works utilize a general equilibrium framework and are sparse.

An example is Milani (2007) who test various political business cycle theories adopting an optimizing New Keynesian model with a monetary and fiscal policy mix as the main setting the model using full-information Bayesian methods.

Another is Bloomberg and Hess (2000) who simulates and calibrates a standard real business cycle tax model by allowing for varying levels of government partisanship and competence using U.S post-war annual data.

2.4 Empirical Review of the Literature

Empirical inquiry into the phenomenon 'Political Business Cycle' started in the 1970s. It was needful to subject existing theoretical models to empirical testing, in a bid to confirm the validity of proposition of the existence of politically-induced fluctuations. Empirical work in this research area, started with Nordhaus (1975). Since then, the central question asked in empirical literature on political business cycle has been: Does a political cycle exist?

Other inquiries have focused on the size and magnitude of political cycle and on timing of elections. However, in line with the first objective of this work: to test for evidence of political cycle, this empirical review selectively focuses on literature addressing this question.

Nordhaus (1975) in his seminal work is the first to empirically test the existence of a political cycle. He tested his opportunistic model for 9 countries, using annual unemployment data for

the period 1947-1972 in these countries with a non-parametric binomial probability method. Specifically testing the hypothesis that during an electoral period, unemployment should rise in the first half and fall in the second half, he failed to find evidence for his model in 4 of the 9 countries, found evidence in 3 countries only, while evidence on the remaining 2 countries, remained inconclusive. This result suggests a bleak performance of his model to empirical testing.

In the same vein, McCallum (1978) and Paldam (1979) (as cited from Alesina and Roubini (1992)) test the opportunistic model in the United States and OECD countries, respectively and failed to find evidence of political cycle. Also, recent empirical evidences corroborate the poor performance of opportunistic cycles.

For instance, Alesina and Roubini (1992) were unable to find empirical evidence for the opportunistic model in 18 OECD countries using quarterly output and unemployment data and political data on election date, date of changes of government and political orientation of government over the period 1960-1987. One central question asked in the paper asked was if the movement in GNP growth and unemployment were affected by timing of election and of changes in government. Their result was such that of the 18 countries, only in two did they find evidence of increase in output and reduction in unemployment, in election years.

In an inconclusive result, Batool and Sieg (2009) test the opportunistic model in Pakistan using annual data on unemployment, inflation and Real GDP growth for the period 1973-2009. They estimate an ARIMAX model and find that unemployment and inflation support the Nordhaus opportunistic model, while they find no evidence of the opportunistic cycle in Real GDP growth. The study however, makes no mention of stationarity tests and de-trended series, which are essential in employing an ARIMA model and in business cycle analysis, respectively.

Till date, empirical findings on opportunistic cycles are perceived to have fared less than expected. Alesina and Roubini (1992) argue that there is relatively little evidence of a Nordhaus (1975) type opportunistic cycle on growth and unemployment because: First, a "rational" electorate imposes a limit on this behaviour; an excessive attempt to pursue opportunistic policies may be perceived as counterproductive by policymakers. Second, it may be quite difficult to create expansions precisely timed before elections.

Conversely, Tufte (1978) remains one of few studies that confirmed the validity of opportunistic cycles. He does for the United States. Also, Grier (2007) tests opportunistic model in the United States, over the period 1961-2004 using quarterly data on real GDP growth. The model estimates an autoregressive model with Real GDP and finds output growth is around 2 percentage points higher than it otherwise would be in the year and a half preceding the election, thereby confirming the existence of opportunistic cycles.

In another vein, Hibbs (1977) Partisan cycles have proved to have more empirical evidence than the opportunistic ones. Franzese (2002) as cited from Potfrake (2010) asserts that many existing empirical studies typically uncovered stronger evidence of Partisan than opportunistic cycles in real economic performance. Drazen (2000b) also confirms the existence of a clear partisan cycle in the United States and in other Countries.

For instance, unlike Nordhaus (1975)'s inconclusive result on opportunistic cycles, Hibbs (1977) in his study, found convincing evidence for the existence of partisan/ideological cycles. Specifically, Hibbs (1977) sought to test the hypothesis that shifts in political regime of government will be associated with gradual changes in economic variables. Using time series quarterly unemployment data for the United States and Great Britain over the period 1948:1 to 1972:4, and with a Box-Tiao (1975) Intervention analysis, he showed that fluctuations in unemployment data were significantly influenced by the ideology of political party. His results

show that under left wing government, unemployment reduced and inflationary trends gained momentum, than right wing governments.

In testing the Hibbs Partisan model, Erdlasson (2001) finds mixed support for partisan cycle. He employs a nonlinear least square method to estimate annual Real GDP and unemployment data for Sweden. While finding support for partisan effects in Real GDP, he was unable to show evidence in Unemployment data. However, not working with de-trended series raises concern about the validity of this result to the study of fluctuations.

Also, in their study on Germany, Berger and Woitek (1997) test empirical evidence of the Partisan theory using a Vector Autoregressive model (VAR) augmented with political dummies on monthly unemployment, net production, monetary aggregate, bundesbank discount rate and federal government deficit data. They find no support for partisan cycle in net production (output) and unemployment data. They, however find no support in inflation data after more variables were added to the estimated model. Their result is convincing as they use monthly data, more relevant to capturing fluctuations than lower frequency data.

Thus, from the review above, while some empirical findings support the opportunistic, some do not. Then, the empirical review of the pre-rational opportunistic and partisan models shows mixed evidence of the existence of political cycle. However, we explore next, the empirical performance of the rational opportunistic and partisan models.

Faal (2007) in his study on political budget cycles in New Guinea uses quarterly seasonally adjusted fiscal policies variables (government total revenue, total expenditure, recurrent expenditure, development expenditure, and net credit to the public sector) over the sample period 1988:1 -2004:4 to test the predictions of the Rogoff (1990) rational opportunistic model. His finding conform with the prediction of this model, such that there was clear pattern of pre-election manipulation of fiscal instruments by incumbent governments—mainly increased

development spending and overall primary expenditure-followed in most cases by a retrenchment in the post-election period, albeit the model was not confirmed for total revenue and recurrent expenditure.

Khemani (2000) studies the effect of state legislative election on policies of state government in 14 states of India, over the sample period 1960-1994, in order to confirm the existence of rational opportunistic cycle in fiscal policy variables and public service delivery. As peculiar to parliamentary elections, they deal with endogeniety problems first (Ito, 1989) and then estimate his dynamic panel model. His paper was unable to lend empirical support to the rational opportunistic model on tax, expenditure and budget deficit variables. However, he found support for public policy variables such as visible road construction. To Khemani, this pattern of findings is somewhat counter-intuitive because it does not support the idea of an opportunistic politicians spending to sway poor and uneducated voters. Based on this, he develops another framework since existing models of political budget cycles cannot lend credence to his finding.

Barberia and Avelino (2011) test the rational opportunistic model in 18 Latin American democracies over the period 1973-2008. They use a panel dynamic model where fiscal policy variables (Government spending, government revenue and budget balance all as per cent of GDP) are regressed on their lagged terms, control variables and electoral dummy. Their finding confirms the existence of political budget cycles. Albeit, they argue that existence of budget cycles in Latin American democracies depend on the definitions used for democracy and recent democracy and also on the rule used to code the election year.

In empirically testing the rational partisan theory, Alesina and Sachs (1986) estimate a system of equations using the least square technique and imposing a non-linear restriction (as in

theory) to provide evidence for the rational partisan model. They test data on GNP growth and money growth over the period 1948-1984 for the United States. Their findings confirmed the existence of rational partisan theory in monetary policy such that a left government is concerned with output while a right government is concerned with growth. However, in using the least square technique, stationarity tests which prevent spurious estimations were not mentioned. Furthermore, as necessary for short run analysis, they did not de-trend the series used. Still, Heckelman (2006) states that some of the evidence supporting the rational partisan model is due to Alesina himself, and that there are plenty of studies that do not generally support the model

In support of the Rational partisan model, Maloney et al (2002) develops and test a dynamic version of the rational partisan model on 20 OECD countries over the sample period 1960-1998. They estimate a reduced form equation where economic variables are regressed on lagged and lead terms of economic variables and then on political variables. Their findings are consistent with theoretical predictions that left wing incumbents are found to increase output, but the increased expectation of a left wing regime reduces it. They also test the effect of central bank independence and fixed exchange rate and find that central bank independence reduces the rational partisan cycle.

To confirm Heckelman (2006) assertion, Heckelman (2002) in a different vein tests a variable version of the rational partisan theory, that captures uncertainty over timing of elections; using quarterly data on output and unemployment in Canada, Germany and the United Kingdom. He tests models where de-trended real GDP is regressed on party popularity variable and party variable. The empirical results yielded are mixed. Specifically, the evidence is weak for Canada and the United Kingdom.

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Following empirical review of the political cycle theories: Pre-rational opportunistic and partisan models; rational opportunistic and partisan model, we find mixed results on the evidence of political business cycles.

In the next section we argue that the mixed results depend on the differences in the type of macroeconomic variable used and the type of country (developed or developing) used in existing empirical literature.

2.4.1 Macroeconomic Variables: Outcomes versus Policy Variables.

In answering the central question as initially posed: Does political cycle exist? A norm in existing literature is to test political cycles in macroeconomic variables, using real economic outcomes variables (such as Real Gross Domestic Product, Unemployment and Inflation) or macroeconomic policy variables (such as Government expenditure, Government revenue, Money supply, etc).

Initially, the proof of political business cycles was tested using macroeconomic outcome variables-Unemployment and/or real Gross Domestic Product data (Grier (2007); Hibbs (1977); Nordhaus (1975)). Brender and Drazen (2004) argue that given the lack of empirical evidence for political cycles in economic outcomes, a literature examining possible cycles in policy instruments developed.

Also, in view of the mixed evidence, Krause and Mendez (2004) notes that results of empirical tests change noticeably with the measure of economic activity that is chosen as the dependent variable. Krause and Mendez argue that studies that use GDP growth measures as dependent variables generally support partisan cycles theories but do not find evidence of opportunism... in contrast, studies that use inflation as the dependent variable tend to reject partisan cycles and favour claims of opportunistic behaviour.

Jula (2001) use annual unemployment data over the period 1990-2000, to test several hypotheses. Of importance, is his hypothesis capturing partisan political behaviour. He tests this hypothesis across counties in Romania using a static panel model where shares of votes received by parties depend on unemployment rate and an electoral dummy. Using the OLS method of estimation, his result is consistent with the pre-rational partisan model, such that left wing parties are relatively more concerned about unemployment rate and economic growth compared with the right wing ones.

Higashijima (2011) employs monthly Consumer Price Index (Inflation) data over the period 1995-2010, in Kyrgyzstan. He estimates a model where CPI is regressed on electoral dummies capturing all types of elections: Parliamentary, presidential and referendum across three political regimes and finds evidence for the existence of political cycles

Berlemann and Markwardt (2003) employ monthly inflation and unemployment data in a panel study of 17 countries to test both pre-rational and rational partisan theories. They use both descriptive statistics and a Pooled OLS dynamic panel estimation technique and find significant partisan differences in inflation rates under left-wing and rightwing but not for unemployment rates for pre-rational partisan model, while for the rational partisan model, they find significant temporary increases in the unemployment rate after unexpected elections of right-wing governments and temporarily decreasing unemployment rates after unexpected elections of left-wing ones. Thus, supporting pre-rational partisan model in inflation rates and not in unemployment data presents mixed evidence.

Erlandsson (2001) utilize real output and unemployment data for Sweden to validate the pre-rational partisan cycle. Using a time varying parameter regression, he finds empirical support for the partisan theory, such that, ceteris paribus, aggregate demand policy under left-wing

governments is relatively more expansionary than under right-wing governments, even if the expansionary policy sometimes leads to higher inflation.

Our empirical review negates the assertions that empirical support of political cycles in macroeconomic outcomes (output, unemployment and inflation) are hard come by, since the reviewed papers mainly support political cycles in these variables. Based on this, we reject the assertion of Drazen and Brender (2004).

Grier (1987) tests the support of opportunistic model on monetary policy variable in the United States. Specifically, the paper considers presidential influence on the Federal Reserve using data on money growth. He first tests an Autoregressive model of 9 lags, where quarterly money growth in the sample period 1961-1980, is regressed on 6 political dummies. He estimates another model where the sample period is extended to 1982 and three economic control variables added- lagged per cent GNP gap, lagged difference between full employment unemployment and actual unemployment; and lagged unemployment. In both models, he finds evidence of political monetary cycle.

Interestingly, in the second model augmented with GNP gap and unemployment data, he finds no evidence of cycle in unemployment data. This supports the view that despite the general rejection of (opportunistic) political business cycles in the US during the modern era... the accumulated evidence for opportunistic monetary cycles is quite strong (Heckelman and wood, 2005)

However, Heckelman and Wood (2005) tests seasonally adjusted quarterly broad money data to test the possibility of a historical political business cycle over the period 1879:1-1914:3 and 1914:4-1932:4, both corresponding to the era of the Independent Treasury and the introduction of the Federal Reserve Bank. They use an Autoregressive distributed lag models, Polynomial

distributed lag and develop reaction functions. In all, they failed to find evidence that monetary policy changed systematically over a four-year period timed around presidential elections, either under the Fed or the Independent Treasury.

On the fiscal policy variable side, Youssef (undated) use annual government expenditure, revenue and deficit data over the sample period 1987-2011 in Egypt to test evidence for opportunistic cycles. He employs an Autoregressive Distributed lag model and finds only revenue as being statistically significant and negatively affected in election years.

Akhmedov and Zhuravskaya (2003) examine de-trended monthly data on fiscal policies and economic growth variables over the period 1996-2003. They test opportunistic cycles in these variables for regional elections in Russia. Using a dynamic panel model, their findings give credence to cycles in fiscal policies but not in economic growth**.**

From this section, there is no support that the use of macroeconomic outcomes or policy variables explains the mixed results in empirical, and then we turn to find if division into developed and developing economies explain this assertion.

2.4.2 Developed and Developing economies

A second reason tested for mixed empirical finding in literature is that existence of political cycles can be country-dependent, especially along the division of either developed or developing-country studies.

Empirical testing of political cycles began with developed countries, especially the OECDs. Upon the weak evidence posed by the data of developed countries to political cycle theories, scholars began to shift focus to developing countries. At first one may have been apprehensive in applying existing theories to studies on developing countries, since they lack the institutional

settings on which existing theories are based (i.e; well developed democratic institutions). Yet, application of these theories to developing countries has proven to be more robust, when compared to studies on developed countries.

For instance, Brender and Drazen (2004) tests for the presence of political deficit cycle in a panel data study comprising 68 democratic countries. They separate these countries into new democracies and established democracies. By analogy new democracies comprise transition countries which are typically developing countries while established democracies are developed countries. Brender and Drazen test the hypothesis that political cycles are more prevalent in new democracies. Their results fail to reject the hypothesis. They find that political cycle exists in their test on the total sample. However, upon removing new democracies from the sample, the political deficit cycles fades.

This finding illustrates that political cycles are readily detected in developing countries than in industrialized countries. A reason for this as argued by Brender and Drazen (2004) is the high likelihood that politicians in new democracies manipulate fiscal instruments so as to increase their probability for re-election than those in developed economies.

In the same light, the study on Political budget cycle: Do they differ across Countries and why? by Shi and Svensson (2006) show evidence of a greater magnitude of political budget cycle in developing countries than in developed ones. Just like Brender and Drazen (2004), they argue that larger portion of politician's rent for remaining in office and of uninformed voters magnify the cycle in developing countries. Specifically, Shi and Svensson (2006) build and test a context-based moral hazard model of electoral competition on a panel data of 85 countries, over the period 1975-1995, to derive their findings.

In the context of Sub-Saharan Africa countries, Block (1999) using annual data for 44 SSA countries over the period 1980 to 1995 sought the presence of Rogoff (1990)'s rational opportunistic cycle on fiscal and monetary policy instruments. His results supports the presence of cycles in policy variables such as fiscal deficits, expenditures, government consumption, and net claims on government as shares of GDP, money growth, interest rates, inflation, seignorage, and nominal exchange rate changes. For him, Political business cycle may mean frequent reversals in fiscal and monetary policy reforms. Block's findings may be unsurprising since a portion of his study period (1989-1995) coincided with increased political transition in Africa.

Barberia and Avelino (2011) in their study on Latin America democracies in the period 1973 and 2008 also confirm the existence of political cycles. They focus on fiscal policy variables such as government total expenditure, total revenue, and budget deficits. They also find that the magnitude of political cycle depends not on the likelihood that politician will manipulate economic policies as Brender and Drazen (2004) but on democratic transitions.

Furthermore, several country-specific studies also give provide significant support to the existence of political cycles in developing countries.

Li (2011) in a study on China develops and tests a three-period model based on Persson and Tabellini (2000) which integrates China's institutional features. In this model, provincial leaders induce cycle because they desire to be promoted, after evaluation by a central government. In testing this model Li (2011) focuses on real capital formation growth rather than output growth, since real capital formation growth has been the driving force of China's output growth. Using provincial panel data in China over the period 1983 and 2007, Li finds that real capital formation growth is 7:3 percentage points higher in peak years than in the other

years. Li's result provides insight as to the strong magnitude of political cycle in a developing country.

Tarawalie et al (undated) test for opportunistic and partisan cycle using time series data on Ghana and Nigeria. Their results depict that Ghana experienced political cycles in macroeconomic outcomes (Real GDP growth), macroeconomic policy variables (fiscal deficit, government revenue, government expenditure and money supply) except inflation rates. On the other hand, political cycles were detected in all the variables listed for the Nigerian economy. For them, the existence of cycles in macroeconomic variables in the two economies under study portends implication for macroeconomic convergence, which is necessary for the formation of a monetary union in the West African Monetary Zone.

Another dimension to the political cycle literature is country-specific or cross-country studies on non-democratic regimes. Non-democratic regimes negate the democratic-institutional feature of political cycle theories. Yet these models are nonetheless applied to seeking the presence of politically induced cycles in authoritarian regimes. This is on the ground that dictators are liable to increase spending during elections so as to buy political support and show off political strength to opponents. This is unlike politicians in democratic regimes, who engage in economic policy manipulation so as to increase their re-election chances.

For instance (Wright (2011); Youssef (undated); Pepinsky (2007)) investigate political cycles in authoritarian regimes. All three studies provide strong facts for political cycles. While Wright (2011) examines support for spending cycle in a sample of electoral authoritarian regimes, Pepinsky (2007) focus on Malysian government expenditure data over the period 1967 to 1997. Pepinsky (2007) findings are expected in the light of Wright (2011) argument that 'evidence from single-country case studies suggests the presence of electoral budget cycles in dictatorships that have dominant parties and relatively routine multiparty elections'.

However, Youssef (undated) in his paper on non-democratic regime in Egypt decompose government into spending and revenue. Using annual for pre-revolution Egypt over the period 1987 to 2011, finds that government revenue rather than expenditure, exhibits opportunistic cycle. Youssef's finding provides cogent arguments for the need to study political cycles in composition of government budgets.

However studies on developed countries, as noted beforehand, provide weak proof for politically-induced cycles. Reasons for these outcomes may include: the presence of strong political institutions, which constrain the tendency of politicians to engage in self-interested political activities; macroeconomic stability as marked by the period of the Great Moderation in industrialized countries and a highly informed electorate.

For instance, a weak or no result of political cycle in developed countries is reflected in the works of Andrikopoulos et al (2004). In their study, these authors employed both opportunistic and partisan hypotheses in fiscal policy on European Union economies and found little or no evidence for these hypotheses. They interpret their finding as: politicians in EU economies have pursued stabilization policies rather than policies that creates business cycles.

Against the background that past studies had provided evidence for political cycle using German data, Berger and Woitek (1997) set out to affirm this empirical study. For them, such findings negate the sound fiscal economic policy and independent *Bundesbank,* which Germany was known for. Using monthly data and taking on another estimation technique, they test the Opportunistic and (Hibbs and Alesina) Partisan models, respectively, on net industrial output (NPI), unemployment (UE), consumer prices (CPI), Monetary aggregates (M1) and the *Bundesbank* discount rate (r) . They find no support for both theories, except a weak evidence of opportunistic cycle in Money aggregate (M1).

In a different fashion, Milani (2007) examines opportunistic and partisan cycles in an optimizing New Keynesian framework in the United States. Using quarterly data over the period 1966:1 to 2006:4, the model fail to provide evidence for partisan cycles in fiscal and monetary policy. It also rejected the opportunistic hypothesis in fiscal policy. However, it provides some, probably weak confirmation of opportunistic cycles in monetary policy. This confirmation is similar to Berger and Woitek (1997). Milani (2007) findings may be consistent with Tempelman (2007) as cited from Milani (2007) who argues that the positive evidence of political cycles in US monetary policy...may be due to their use of a long sample.

This assertion is corroborated by Maloney et al (2007). In their work, they develop and test a dynamic version of the Rational Partisan cycle model on monetary policy in 20 OECD countries for the period 1960-1998. Their results, different other studies on developed countries, rarely provide strong support for the rational partisan cycle.

Potrafke (2010) in his research paper 'Political cycles and economic performance in OECD countries: empirical evidence from 1951-2006' rejects proof for opportunistic and Partisan cycles in annual GDP growth. This finding is not surprising, since weak or no empirical support exist for macro outcomes in developed countries.

From this section, we find support that mixed empirical results in literature are to a large extent dependent on country-context.

Table 2.1: Summary on some empirical Political cycle studies

Study	Country	PBC theory tested	Technique used	Variable tested: Outcome versus policy variable	Findings

Nordhaus (1975)	9 developed countries	Opportunistic theory	Binomial Probability	Unemployment rate	Mixed
Hibbs (1977)	United States and United Kingdom	Partisan theory	Box-Tiao ARMA	Unemployment rate	Yes
Alesina and Roubini (1992)	18 OECD Countries	Opportunistic, Partisan and Rational Partisan	Dynamic, Pooled Panel model	GNP and unemployment rate	Opportunistic -(No) Partisan-(No) Rational Partisan- (Yes)
Batool and Sieg (2009)	Pakistan	Opportunistic and Rational Opportunistic	ARIMA	GDP, Inflation, unemployment And Fiscal deficit, government investment, M2 and govt budgetary borrowing	Empirical support for both opportunistic and rational opportunistic models
Study	Country	PBC theory tested	Technique used	Variable tested: Outcome versus policy variable	Findings

Grier (2007)	United States	Opportunistic	Autoregressive Distributed Lag (ARDL)	Real GDP growth	Political cycle exist
Erlandsson (2001)	Sweden	Partisan	Nonlinear Least quare	Real GDP and Unemployment	Mixed evidence, finds supports in Real GDP only
Berger and Woitek (1997)	Germany	Opportunistic, Partisan and Rational Partisan	VAR	GDP, Unemployment, Monetary aggregate, Discount rate and government deficit	No evidence in all three models
Faal (2007)	Papua New Guinea	Rational Opportunistic	ARDL	Fiscal policy variables	Mixed result: political cycle was detected in some fiscal variables only

Source: Author's compilation

2.4 Summary and Conclusion

To re-iterate, theoretical, methodological and empirical reviews of the political cycle literature was carried out in this Chapter.

In the theoretical review, five major theories of political theories were outlined and critiqued. From this, one notices that political cycle theories are premised on an electoral system. As a

result, political cycle theories which considers politically-induced fluctuations outside an electoral framework are non-existent

In the methodological review, it was discovered that both atheretical and theoretical methods were used. Studies using the atheoretical method explored several estimation techniques, however, the Autoregressive Distributed Lag models stands out, in some other cases, the Autoregressive Moving Average models were employed. In the theoretical method strand, the construction of Dynamic Stochastic General Equilibrium (DSGE) model was sparsely used.

The empirical review revealed mixed evidence of the existence of political cycles. We examined if the mixed empirical evidence was a result of the type of economic variable tested or was country-dependent. Specifically, we examined if empirical findings from political cycle papers that tested macroeconomic outcomes (output, unemployment and inflation) or macroeconomic policy variable (fiscal policy, monetary policy) were different. No trend as such was found. Further, it was checked if country-context explained the mixed evidence and then, one finds that more evidence exists for political cycle in developing countries that the developed ones.

Also, of the developing countries' studies, sparse empirical studies on PBCs in SSA, especially Nigeria existed. Thus, empirical works on PBC is virgin territory in Sub-Saharan Africa (SSA) and, specifically Nigeria. The articles on PBCs for SSA and Nigeria to my knowledge include:

a. Tarawalie et al (undated) Political Business Cycles and Macroeconomic Convergence in the WAMZ: The case of Ghana and Nigeria

b. Block, S.A (1999) 'Political Business Cycles, Democratization, and Economic Reform: The case of Africa'

The empirical review further reveals that existence of political cycles, timing of election are the main questions asked, but we find little question being asked by the nature of political cycle detected.

Therefore, from the theoretical, methodological and empirical reviews, we find the following gaps:

a. Theoretical review: Political cycle theories outside an electoral framework do not exist. This type of theory is premised on the notion that irrespective of the type of political regimes, as long as a political regime changes, the economy fluctuates. This study attempts to fill this gap.
b. Methodological review: There is sparse use of the theoretical DSGE models in the political cycle literature. However, this study employs the atheoretical method on grounds of simplicity and convenience. Between the Autoregressive distributed lag model and the Autoregressive Moving Average methods, this study opts for the ARMA models as it uses a Maximum Likelihood iterative procedure which are not subject to produce biased and inconsistent estimates as the OLS procedure will, under serially correlated error terms.
c. Empirical Literature: There is sparse literature on this research area in the SSA and in Nigeria. This study also addresses this gap. Further on, we extend the political cycle literature by considering the cyclical properties of political cycle. To achieve this, we apply a dynamic factor model to extract a political shock component. To the best of our knowledge and as confirmed by the methodological review, dynamic factor models have not been applied to political cycle literature, although they have applied to conventional business cycle analysis.

CHAPTER THREE

SOME STYLIZED FACTS

3.0 Political Regimes and Macroeconomic Fluctuations

3.1 Introduction

In this Chapter, some stylized facts on the correlation between politics and economic outcomes are deduced and used to explain the statistical political economy of Nigeria. In it, an overview of politics, economic performance and their interaction in Nigeria over the period 1960-2010 are highlighted. In this light, the chapter is divided into six sections. Section two present stylized facts about the interaction between politics and economics. Section three considers the empirical regularities pertaining to Nigeria's political system, in section four, a statistical overview of the Nigerian economy since 1960 is presented. In the fifth section, the political economy of nigeria is charcterised. Finally, a summary of stylized facts derived in the chapter, and conclusions are made in the sixth section.

First, What are stylized facts?

Stylized facts are empirical regularities showing preliminary statistical relationship among several relevant variables. In the case of this study, it is among the political and economic variables to be used in this study.

Its documentation has often been used to provide an empirical basis for the formulation of theoretical models of the business cycle and as a way to discriminate among alternative classes (Agenor et al, 1999). In line with this study, the stylized facts derived is used to characterise the political economy of Nigeria, then to select the most relevant political cycle theory and finally, serve as descriptive tools for interpreting political cycles in Nigeria.

3.2 Politics and Economic outcomes

That politics influences economic outcomes either in the positive or otherwise is obvious when one considers the interrelatedness and dynamic nature of economic, political and social forces within a society. For another reason, politics influence the nature of economic institutions in

any economy, as they define the rule of the game by specifying the limit of economic power and decision making (North, 1990)

For instance, the fact that political institutions affects economic outcomes is evident in the case of China and the United States of America. The existing political institution (communism) of pre-1949 China influenced central-planning oriented economic policies, just as the political institution of post-1978 China when more liberal Deng Xiaoping took over power reflects the more liberal economic policies obtainable in China. In a different manner, the democratic structure of the United States is correlated with the laissez-faire economic policies prevalent there.

Illustrating the assertion that politics inform the type of economic institution obtainable in a society, we use indices of economic freedom (proxy for economic outcome) and political freedom (proxy for political institutions) respectively.

Table 3.1: Free economies and their political systems

Countries	Index of Economic Freedom	Index of Political Freedom

Hong Kong	89.3	Partly Free
Singapore	88.0	Partly Free
Australia	82.6	Free
New Zealand	81.4	Free
Switzerland	81.0	Free
Canada	79.4	Free
Chile	79.0	Free
Mauritius	76.9	Free
United States	76.1	Free
Denmark	76.0	Free

Source: Heritage.org and Freedom House

Note: In the table, we first present the ten most free economies in the world as sourced from Index of Economic Freedom 2013. This index is published by Wall Street Journal and Heritage Foundation, Countries with higher index have freer economies. Then, we correlate the economic freedom with political freedom using the index of political freedom. The Index on political freedom which is sourced from Freedom House.

In the table, of the 10 most economically free countries according to the Index of economic freedom, 8 have free political systems, while the other 2 (Hong Kong and Singapore) have partly free political systems.

An implication of this finding is that although a perfect correlation between politics and economic outcome does not exist; yet, a correlation between politics and economic outcome is plausible. To confirm the validity of this finding, we compare the least economically free countries with their political systems and find that the political systems of the least economically free countries are not free.

Table 3.2: Least economic free countries with their political system

Countries	Index of Economic Freedom	Index on Political Freedom
Eritrea	36.5	Not free
Venezuela	36.1	Partly Free
Zimbabwe	28.6	Not free
Cuba	28.5	Not free
North Korea	1.5	Not free

Source: Heritage.org and Freedom House

Therefore, based on the preceding finds, it is concluded that there is a plausible positive correlation between politics and economic outcomes. This correlation is interpreted as a causal relation from politics to economic outcomes.

Stylized fact 1: There is a plausible positive correlation between politics and economic outcomes

In the next section, stylized fact one is examined in nigeria. However, before asserting that politics influences economic outcomes in Nigeria, for comprehensiveness, we explore separatetly the phenomenom ‘politics’ and ‘economic outcome’

3.3 Politics in Nigeria

3.3.1 Background: Some Historical Facts on Nigeria

The nation state ‘Nigeria’ was created in 1914. This was with the amalgamation by the British colonial rule, of North and South Protectorate. The British colonisation started with the annexation of Lagos as a crown colony in 1861; and the creation of a southern protectorate in 1900. Nigeria gained independence in 1960.

The name ‘Nigeria’ meaning Niger area was derived from the Niger River, which was suggested by Flora Shaw. With a population of 125 million (2001 estimate), Nigeria is the most populous Black Country in Africa and in the world. Its population makes up one-fifth of the African Continent. The country is bordered by Chad, Cameroon, Benin, Niger and the Atlantic Ocean. It has a total land mass of 923, 768 sq.km.

Nigeria is a pluralistic society, ethnically and religiously diverse. The country has over 250 tribes and languages, albeit the three main tribes are the Hausa/Fulanis (North), the Igbos (South-East) and the Yorubas (South-West). The three major tribes make up 70 per cent of the population. Also, the country is said to be evenly divided between Christians and Muslims. Her Official language is English.

Agriculture is the dominant economic activity in this country.

3.3.2 Political Outcomes in Nigeria

Drazen (2001) defines politics as the exercise of power and authority. By power, he means the ability of an individual (or group) to achieve outcomes that reflect his objectives. Authority is described as individuals or groups making decisions for others with their explicit or tacit permission. In Nigeria, this exercise of power and authority is handled by a head of government. For every head of government in power, a political regime is in place. Then, it suffices to say that politics as marked by the interaction of persons with power and authority, plays out in the form of political regime inherent in country per time. Consequently, political regimes define the politics of a society.

What then is a political regime? Fishman (1990) as cited by Ploberger (2012) defines it as the formal or informal organisations at the centre of political power determining who has access to political power.

We outline a selective political history of nigeria, with emphasis on the regimes which have been in place since Nigeria became an independent state in 1960. Metz (1991)[1] sums the political history of Nigeria as:

> "The Story of Nigeria during the postcolonial era has been one of a search for the constitutional and political arrangement that, while allowing for the self-expression of its socially and culturally diverse peoples, would not hinder the construction of a nation out of this mosaic. In this search, the country has experienced cycles of military and civilian rule, civil war, and peaceful reconstruction"

Upon independence from British colonial rule in 1960, Nigeria began her self-governance. The first post-colonial government was a civilian regime headed by Dr. Nnamdi Azikwe. The government was a coalition of two conservative parties of the National People Congress (NPC), skewed in the ideals of Northern Nigeria and the National Council of Nigeria and the Cameroons (NCNC) of South-East Nigeria. Opposing this coalition was the leftist Action Group of South-West Nigeria.

Metz (1991) notes this regime was fraught with political tension spurred along ethnic lines. For instance, the dominant Northern Nigeria (a result of holding majority seats in parliament) was believed to use to federal resources to favour the northern region

[1] Political history outlined are derived from Helen Chapin Metz, ed. *Nigeria: A Country Study*. Washington: GPO for the Library of Congress, 1991.

In short, the attendant political tension arising along ethnic divide led to political economy instability in this regime, such that the existence of the regime termed as the First Republic was short-lived by a Military Coup on January 15, 1966.

An outcome of this coup brought into power General Aguiyi Ironsi (whose regime lasted only six months). The use of soldiers in civil functions such as the control of civil unrest and the supervision of elections may have triggered the intervention of the military in the first coup. The coup carried out by young dissatisfied officers from the South-East was countered on July 25, 1966 with the murder of General Aguiyi Ironsi by Northern officers. A reason for the counter-coup may be seen on ethnic grounds. It is because Northern politicians seemed to mainly affected by the first coup conducted by the Igbo (South-East) officers. Furthermore, General Aguiyi Ironsi failed to prosecute the plotters of the coup and also placed Igbos in sensitive position in government.

Upon the success of the counter-coup, General Yakubu Gowon, a Northerner became Nigeria's second head of State in 1966. However, by virtue of the first coup and its counter-coup, a politico-ethnic tussle had risen between the government (Northern) and the Igbos. During his administration, Gowon dissolved regional governance, by operating a federal system through the creation of 12 states. By 1975, General Gowon's military regime was overthrown in a coup.

This coup brought General Murtala Muhammad into office as the third military head of state, in post-colonial Nigeria. His regime lasted only seven months as he was killed in an unsuccessful coup in February 1976. Indeed historians may tag this coup unsuccessful because the General Dimka and other officers from middle-belt Nigeria were its center; so as to re-instate their 'own' General Yakubu Gowon. Unfortunately, things turned in another direction, as General Olusegun Obasanjo the fourth military head of government. The Obasanjo regime

lasted from 1976 to 1979, when Nigeria transited to a civilian government headed by President Shehu Shagari.

Shagari's regime beginning on October 1, 1979 marked the Second Republic. Meltzer (1991) states a lack of co-operation between Shagari's government and the twelve states ruled by opposition parties was a reflection of this political tension. The inherent political instability, a fraudulent second-term elections, coupled with economic problems gave General Mohammed Buhari enough grounds to overthrow the Shagari's administration in 1983.

By 1983, when General Muhammad Buhari took over government as the fifth military head of state, one might have been optimistic that he took the reins of power so as to stabilise the political economy of the nation and then transit power to a civilian government. However, the government over time proved incapable of salvaging the economy and also, in cause of tackling the now widespread corruption and accompanying indiscipline

By 1985, General Ibrahim Babaginda took over government. He became the sixth head of State, Babaginda stepped-aside in 1993, handing authority to an interim head of government, Ernest Shonekan. However, within three months of Ernest Shonekan rule of the third republic, the defence minister, General Sani Abacha overthrew Shonekan's rule.

General Sani Abacha's became the seventh military head of state and by 1998, General Abdulsalaam Abubakar took over power after his death. Abubakar was instrumental to the third political transition to civilian rule by May 1999.

The fourth Republic in Nigeria, comprises the Obasanjo's civillian rule (1999-2007), the President Musa Yar'Adua (2007-2010). Yar'Adua regime came to an end upon his death and his deputy Goodluck Jonathan took the reins of power. Since 2010 till present, Goodluck Jonathan remains President.

Below, we provide a summary of the political history of Nigeria, with emphasis on the respective government regimes:

Table 3.3: Summary of political regimes in Nigeria.

Tenure	Head of Government	Number of years in office	Regime type	Ethnic origin
Nov. 1960- Jan 1966	Nnamdi Azikwe	5	Democratic	South
Jan 1966- July 1966	Aguiyi Ironsi	0.5	Military	South
August 1966- July 1975	Yakubu Gowon	9	Military	North
July 1975- Feb 1976	Murtala Muhammad	1	Military	North
Feb 1976-Oct. 1979	Olusegun Obasanjo	3	Military	South
Octo 1979- Dec. 1983	Shehu Shagari	4	Democratic	North
Dec. 1983-August 1985	Buhari Muhammad	2	Military	North
Aug 1985- August 1993	Ibrahim Babangida	8	Military	North
Aug 1993- Nov. 1993	Ernest Shonekan	0.25	Democractic	South
Nov 1993-June 1998	Sani Abacha	5	Military	North
June 1998- May 1999	Abdulsalaam Abubakar	1	Military	North
May 1999- May 2007	Olusegun Obasanjo	8	Democratic	South
May 2007-May 2010	Musa Yar' Adua	3	Democratic	North
May 2010- present	Goodluck Jonathan	-	Democratic	South

Source: Author's compilation

3.3.3 Charactersing Nigeria's Political System

Stemming from the brief political history presented in the previous section, some features of Nigeria's political system (with emphasis on political regimes) over the sample period 1960-2010 are statistically characterised in this section. These features include:

a. Between 1960 to 2010, Nigeria has had 13 heads of governments. This implies that over a duration of 50 years, 13 persons have ruled Nigeria. (Refer to Table 3.3). Therefore, on average, political regimes have lasted for 3.85 years in Nigeria. On comparing with the United States, one finds that between 1961-2009, 9 presidents have ruled, and on average, a regime has lasted 5.33 years.

Table 3.4: Summary of political regimes in Nigeria, compared with US

Country	Number of leaders	Duration	Average years
Nigeria	13	50	3.85
United States	9	48	5.33

Source: Author's compilation

b. Of the 13 political regimes, there have been 5 democratic regimes and 8 military regimes. Of this, 5 democratic regimes have lasted on average for 4.25 years, while the 8 military regimes have lasted for 3.72 years

Table 3.5: Summary of political regimes by regime type

Regime type	Years ruled	Average years
Democratic	29.75	3.72
Military	21.25	4.25

Source: Author's compilation

c. By ethnic orientation, between the time frame 1960 to 2010, 5 heads of government from southern region have rule Nigeria while 8 heads of government have ruled from the north. While the Southern leaders ruled for 16.75 years , the northern ones have ruled 34.25 years

Table 3.6: Summary of political regimes by ethnic origin

Ethnic	Years ruled	Average years
North	34.25	4.28
South	16.57	3.35

Source: Author's compilation

Therefore, in this section, we derive the stylized fact that, there have been frequent changes in government in Nigeria.

Stylized fact 2: Since 1960, Nigeria has experienced frequent changes in government such that: (a.) On the average, each head of government has ruled for 3.85 years only, compared with 5.33 years in the United States (b.) On the average each military and civilian government have ruled for 3.72 and 4.25 years only, and (c.) On the average a south-led government has lasted 3.35 years compared with 4.28 years of rule of a North-led government.

An implication of stylized facts a-c is that every regime classification identified have lasted for a relatively short period in Nigeria (compared with an average of 5.33 years over similar range in the United States). This relatively short period of regime is interpreted as frequent changes in government. Because of these frequent changes, and the accompanying short regime duration, politicians are prone to rent-seeking activities. Furthermore, assuming every successive regime in the country, proposed new policy measures, these policies have on average 4 years to be implemented, before being abandoned.

Directly linked to the preceding section, another statistical fact about Nigeria's political system, is its weakness. This is illustrated by the World Governance Indicator, 1996-2011. Governance consists of the traditions and institutions by which authority in a country is exercised. This includes the process by which governments are selected, monitored and replaced; the capacity of the government to effectively formulate and implement sound policies; and the respect of citizens and the state for the institutions that govern economic and social interactions among

them (WGI, 2012). In these, governance in Nigeria performs poorly using some indicators as shown below in Table 3.7.

Table 3.7: Some Governance Indicators for Nigeria

Year	Voice/accountability	Political stability/Violence	Government Effectiveness	Regulatory quality	Rule of law	Control of corruption
1996	-1.67	-1.17	-0.98	-0.82	-1.26	-1.15

1998	-1.22	-0.70	-1.12	-0.93	-1.27	-1.07
2000	-0.59	-1.52	-0.96	-0.74	-1.11	-1.13
2002	-0.71	-1.69	-1.06	-1.23	-1.48	-1.33
2003	-0.64	-1.64	-0.96	-1.24	-1.52	-1.32
2004	-0.77	-1.72	-0.91	-1.32	-1.43	-1.31
2005	-0.83	-1.65	-0.88	-0.77	-1.36	-1.15
2006	-0.60	-1.99	-0.96	-0.89	-1.11	-1.06
2007	-0.75	-1.97	-1.03	-0.87	-1.10	-0.98
2008	-0.73	-1.81	-0.95	-0.78	-1.10	-0.81
2009	-0.86	-1.85	-1.22	-0.73	-1.20	-1.00
2010	-0.79	-2.08	-1.18	-0.72	-1.21	-1.00
2011	-0.76	-1.94	-1.12	-0.69	-1.25	-1.14
Avg	-0.84	-1.67	-1.03	-0.90	-1.26	-1.11

Source: Worldwide Governance Indictors (201)

Using the Key: -2.5 (weak governance) to +2.5 (strong governance), we find that the statistical rating of governance in Nigeria, using this index hovers only in the negative. This is an indication, that on average Nigeria has a weak governance, and by implication, political system.

Consequently, stylized fact 2 indicates that Nigeria has a weak political structure characterised by short durations and frequent changes in head of government.

3.4 An overview of Nigeria's economy (1960-2010)

In this section, we present a statistical review of Nigeria's economic performance since 1960, based on some macroeconomic variables such as Real Gross Domestic Product (RGDP), Government Expenditure (GE), Broad Money Ratio (MS) and External debt (ED), to represent

critical aspects: aggregate economic activity, fiscal policy, monetary policy and external debt policy of the Nigerian economy.

a. Aggregate economic activity:

Currently, statistical facts reveal that Nigeria is a lower middle income economy (World Bank, 2011). By statistical fact from IMF (2012), Its GDP (by PPP) in 2011 was $414.03 billion making it the largest economy in West Africa and the second largest economy in Africa. The IMF forecasts that by 2017, its GDP would have grown to become $676.254 billion. On GDP per capita basis, an average citizen earned $1,522.06 and it is projected to rise to $2,058.57 by 2017. Also, the Nigerian economy is characterised by a heavy reliance on crude oil (that contributes about 95 per cent of exports earnings and about 70 percent to government revenue), Adedipe (2004)

Since 1960, statistics show that aggregate economic activity has been on upward trend in the Nigerian economy. From a value of N2.4 billion in 1960, the economy grew to N4.22 billion in 1970, representing an average growth rate of 70 per cent. A surge in aggregate economic trend continued, such that by 2010, RGDP stood at about N 776.33 billion.

Table 3.8: Real GDP Statistics in Nigeria

Year	Value (N'billions)
1960	2.48
1970	4.22

1980	31.55
1990	267.55
2000	329.18
2010	776.33

Source: CBN Statistical Bulletin, 2011.

b. Fiscal Policy:

Government expenditure is total central government spending in a year. Statistical facts on fiscal policy as reflected in government spending shows that government expenditure in 1960 was a meagre N 0.163 billion, by 1970 government spending amounted to N0.99 billion, this increase continued such that by 1980 the amount of expenditure stood at N11.413 billion, in 1990, N66.58 billion. In 2000, government spending also rose to N1 trillion and by 2011, it stood at N4.2 trillion. This upward trend indicates on the whole, an increase in the government size

Table 3.9: Government Spending Statistics in Nigeria

Year	Value (N'billions)
1960	0.163
1970	0.99

1980	11.41
1990	66.58
2000	100
2010	420

Source: CBN Statistical Bulletin, 2011

c. Monetary Policy:

Unlike the upward trend in aggregate economy and government expenditure, the trend in Broad money ratio shows both significant increases and declines.

By 1970, Broad money (M2) as per cent of GDP increased from 11.98 per cent in 1960 to 14.95. This expansion continued to 1980. Between 1980 and 1990, broad money contracted by about 4.13 per cent, it dipped further by 0.59 per cent, between 1990 and 2000. By 2010, broad money ratio stood at 32.47 per cent, representing an increase of 13.3 per cent, over its year 2000 value of 19.17 per cent.

Table 3.10: Broad Money Supply in Nigeria

Year	Ratio
1960	11.98

1970	14.95
1980	23.89
1990	19.76
2000	19.17
2010	32.47

Source: CBN Statistical Bulletin, 2011.

d. External debt Position:

External debt measures Federal government foreign liability. A consistent increase in external debt figures were recorded from 1960 to 1970, from 1970 to 1980, 1980 to 1990, 1990 to 2000. This increase was cut off between 2000 and 2010.

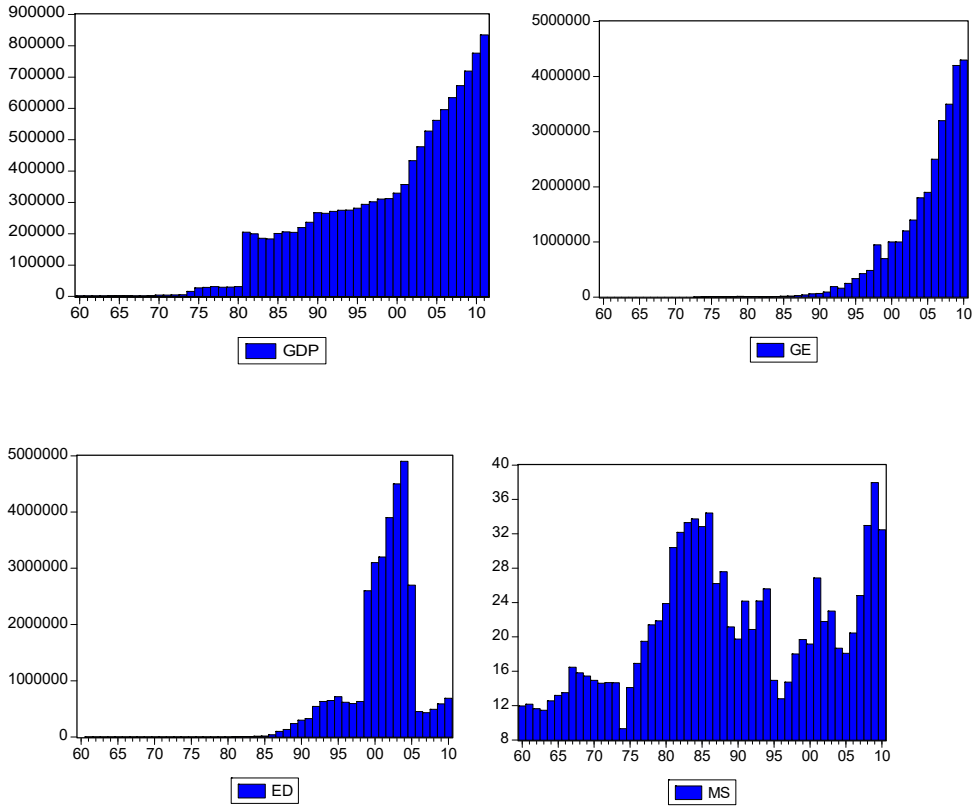
Table 3.11: External debt Statistics in Nigeria

Year	Value (N'Billions)
1960	.05
1970	0.18
1980	1.87
1990	298.61
2000	3,097.38
2010	689.85

Source: CBN Statistical Bulletin, 2011

Succinctly, the statistical trend in the four economic variables over the period 1960-2010 is shown in diagrams below:

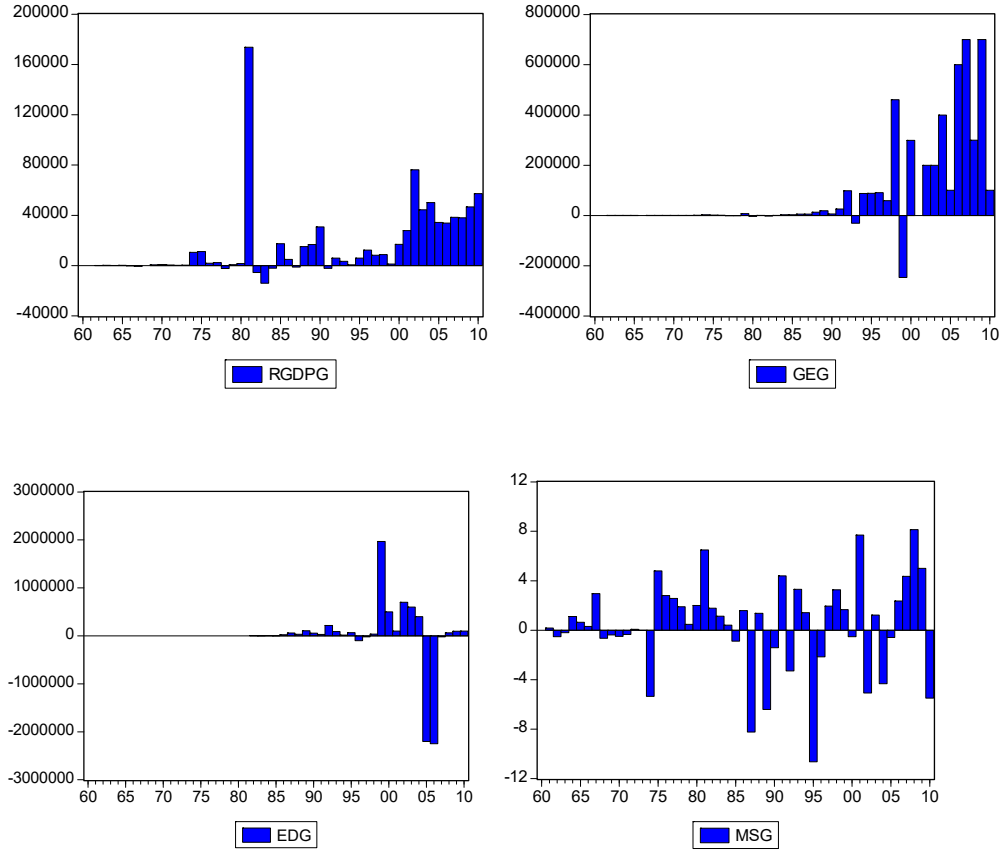
Figure 3.1: Trend in RGDP, GE, MS and ED in Nigeria



Source: CBN Statistical Bulletin, 2011

While an upward trend is recorded for the aggregate economy and total government expenditure figures, there are increases and declines recorded in external debt and money supply ratio statistics. Following this, we consider the growth rate patterns in each of these variables to examine the true picture of the economy.

Figure 3.2: Growth Patterns in RGDP, GE, MS and ED



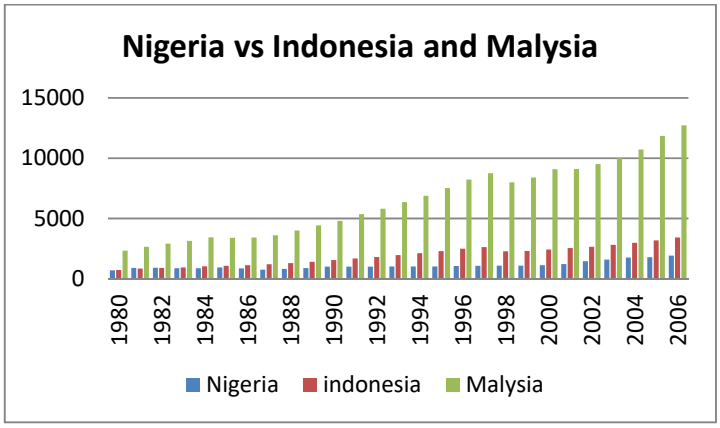
Source: CBN Statistical Bulletin, 2011

The growth patterns above are a preliminary evidence of possible instability in Nigeria's macro-aggregates. Therefore, an overview of the Nigerian economy over the period 1960-2010, using growth patterns in macro variables: RGDP, GE MS, and ED show an unstable trend, indicating likely unsatisfactory performance of the economy.

Comparing Nigeria's economy with other emerging economies confirms this unsatisfactory trend. By 1960, Nigeria was believed to be at par with Asian countries such as Indonesia, Malaysia and India (Sanusi, 2012). However, a look at the diagram below shows that since 1980, Malaysia economy as depicted by GDP per capita performs better than Nigeria. On other

hand, as at 1980, Indonesia was still at par with Nigeria, however since 1986, Indonesia is seen to continuously perform better than Nigeria (figures reported are from IMF (2012)

Figure 3.3: GDP per capita in Nigeria versus Indonesia and Malysia (1980-2006)



Source: IMF World Economic Outlook, 2012

Stylized fact 3: An overview of Nigeria's economy over the period 1960-2010, depicts an unsatisfactory performance.

So far, re-iterating the stylized facts shows that:

1. There is a plausible positive correlation between politics and economic outcomes
2. Nigeria political system is marred by frequent changes in government and a weak governance (political) institution.
3. An overview of Nigeria's economy over the period 1960-2010, depicts an unsatisfactory performance

Linking stylized facts 1 to 3 together shows that: if there is a positive correlation between politics and economics outcomes, such that politics induces economic outcomes, then the weak and frequently changing political institution of Nigeria is likely to explain the unsatisfactory economic performance recorded in the period 1960-2010.

This proposition is confirmed using the correlation analysis (cue taken from Verspagen, (2012)). If political factors induce macroeconomic outcomes, we expect to find a positive correlation between politics and economic outcomes in the correlation matrix.

Therefore a correlation analysis between politics and economic outcomes (RGDP, GE, MS and ED) is carried out. A political dummy called DUMP is constructed. It captures the various political regimes such that years in which a regime changes is denoted by 1 and elsewhere, 0.

Table 3.11: Correlation Matrix between political and economic variables (1960-2010)

	DUMP
DUMP	1.0000
RGDP	0.0797
GE	0.1223
MS	0.1391
ED	-0.0896

Source: Author's compilation

As expected, there was positive correlation between DUMP and RGDP, GE, MS except ED**.** The positive correlation is a preliminary proof of speculations that politics influences the outcomes of economic aggregates in Nigeria, such that the state of politics reflects in the state of the economy. However, this correlation is weak. We re-write stylized fact 1 as there is a positive correlation between politics and economic outcomes in Nigeria, such that a causal relation from politics to economic outcomes exists in Nigeria.

Stylized fact 4: There is a positive correlation between politics and economic outcomes in Nigeria, such that a causal relation from politics to economic outcomes exists in Nigeria.

3.5 Characterising the Political Economy of Nigeria

In the preceding section, preliminary evidence that politics determines economic outcomes in Nigeria was presented. In this stand-alone section, we compare how the relevant economic variables-RGDP, GE, MS and ED has fared across successive political regimes since 1960.

Table 3.13: Economic Performance across Political Regimes

Political Regimes	RGDP (Average)	GE (Average)	MS (Average)	ED (Average)
Nnamdi Azikwe/Ironsi	92.6	15.7	0.26	17.5
Yakubu Gowon	2680.8	844.3	0.07	27.2
Murtala/Obasanjo	2805.7	1805.2	2.51*	257.8
Shehu Shagari	38912.5*	-1260.2	2.86*	2241.6
Buhari Muhammad	7719	3148.1	-0.23	3361.5
Babangida/Shonekan	9224.6	18083.7	-1.08	76980.4*
Sani Abacha	7211.4	157359.4*	-1.23	-25.4
Olusegun Obasanjo2	35616.5*	194038.8*	0.30	-22694.4*
Musa Yar' Adua	45127.5*	450000*	3.00*	59595.8*
Total Average	**15476.9**	**85996.7**	**0.41**	**13796.9**

Source: Author's Compilation

From the table, the asterisk figures are economic outcome above the total average values for each of the economic variables. We considered the growth patterns in each of the variable above, across several political regimes.

With an average growth of N15476.9 million in the aggregate economy, only Shagari, Obasanjo civilian and Yar'Adua regimes were above the average. Of the three regimes, Statistics showed that the economy grew best under the Yar'Adua's regime. On the other hand, the economy grew least under Azikwe/Ironsi regimes.

3.6 Summary and Conclusion

The main findings from this chapter are the following stylized facts:

1. There is a plausible positive correlation between politics and economic outcomes
2. Nigeria political system is marred by frequent changes in government and a weak governance (political) institution.
3. An overview of Nigeria's economy over the period 1960-2010, depicts an unsatisfactory performance
4. There is a positive correlation between politics and economic outcomes in Nigeria, such that a causal relation from politics to economic outcomes exists in Nigeria.

Thus, the preliminary evidence favouring the assertion that politics influences economic outcomes is good ground on which to hypothesize that politically-induced economic fluctuations in Nigeria are plausible.

CHAPTER FOUR

THEORETICAL FRAMEWORK AND RESEARCH METHOD

4.1 Introduction

In this Chapter, the theoretical base of this study and the estimation strategy to address its primary objectives are outlined. In line, this Chapter has been divided into three sections. After the introductory part in section 4.1, section 4.2 discusses the theoretical framework used in this thesis. Existing Political business cycle theories are also outlined and the most relevant to Nigeria, chosen. Section 4.3 presents the relevant estimation strategy. This section comprises the model specification and univariate de-trending method of time series used. Then, applicable estimation techniques are stated. Two estimation techniques: Univariate and Multivariate will be used to find evidence for politically-induced fluctuations. Thereafter, the data sources and measurement is listed.

4.2 Theoretical Framework

In defining the theoretical base of this work, existing theories of political business cycle are first presented and then evaluated in the context of Nigeria. From the evaluation made, the most relevant theory is selected.

Historically, the idea of political business cycles originated from the work of Kalecki (1943) in his paper 'Political Aspects of Full Employment.' In it, Kalecki (1943) speculated emergence of a business cycle because politicians were subject to conflicting pressures arising from (high-income) business class individuals who were adverse to full employment but favoured contracting economic policies and on the other hand, (low and middle-income) working class individuals who favoured expansionary economic measures

Also providing the philosophical base on which subsequent theoretical constructs were to stand was Downs (1957). In his work 'An Economic Theory of Democracy', Downs demonstrated

the Median Voter theorem that says in a two-party system, the policies of political parties tend to converge such that both parties follow the same policy when in office. A reason for this policy convergence outcome is that irrespective of the diverse ideological stance of the two rival parties, their underlying intention to win elections compels them to pursue the same policies.

Currently, Political business cycle theories although diverse, can be classified along two lines. The first being the Opportunistic-Partisan Strand and the other, based on the rationality or not of Voters. Classifying Political cycle models using these two frameworks result into four major types of models: Opportunistic model, Partisan model, Rational Opportunistic model and Rational Partisan model. In the next sub-section, these models are discussed.

4.2.1 Political Business Cycle Models

a. Opportunistic Political Cycle Model

This model stems mainly from the work of Nordhaus (1975) in his paper 'The Political Business Cycle'. The core idea of Nordhaus (1975) is that an office-motivated politician, in a bid to get re-elected, manipulates economic policies to woo voters. Therefore, prior to elections such a politician creates expansionary economic outcomes (which voters prefer) and in the period following elections, since he has won, implements contractionary economic policies.

Nordhaus presents an economy with only two agents: the politicians and individuals (voters). The macroeconomic structure is typified as having an exploitable Philips curve. A Philip curve demonstrates a trade-off between unemployment and inflation. Drazen[2] (undated) depicts this economy as

$$U_t - U_t^N = -(\pi_t - \pi_t^e) \quad (1)$$

[2] All Mathematical demonstrations derive from Drazen (2000b) and Drazen (Undated)

Where the difference between actual unemployment (U_t) and natural unemployment (U_t^N) equals the difference between actual and expected inflation

In this exploitable Philips curve economy, the aim of a Politician/Policymaker is to increase his likelihood of re-election. To achieve this aim, the politician possesses two policy options: either induce unemployment or induce inflation. Then, to maximize his re-election chances, a politician must be wary of voters' preferences. For example, Nordhaus (1975) characterise voters' preferences as:

> "*These individuals have the aggregate unemployment and inflation rates in their preference functions and that individuals prefer stable prices and low unemployment rates and are averse to high inflation and unemployment rates*"

Nordhaus (1975) also assumes that although individual voters are rational in their preferences, they are however, unlearned or ignorant about economic performance. Because of this ignorance, Voters cannot judge the competence of the politician on their own, but must fall back on comparing how well this politician has in the past satisfied their preference.

Thus, in making political decisions, voters retrospectively gauge the performance of incumbent politicians. Nordhaus (1975) also assumed that voters have decaying short memory such that voters only remember the most recent outcomes of the economy. Because of this, an opportunistic incumbent politician resorts to fine-tuning the economy just before election, so as to signal to his naive, short memory voters that he is competent in satisfying their preferences.

In the end, an opportunistic politician is successful at fooling voters with expansionary policies before elections (which is to reduce unemployment) and consequently, after elections, in a bid to combat resulting inflation, contracts the economy.

Finally, voters are assumed to form a backward looking expectation of government's policy so that they cannot predict it. The backward looking nature of voter's expectation is of the form:

$$\pi_t^e = \pi_{t-1} + \alpha(\pi_{t-1}^e - \pi_{t-1}) \quad (2)$$

Where ∝: speed with which expected inflation (π_t^e) adapts to past expected error. $0 < \alpha < 1$

Thus, under this framework, an economy cycles when in the next election period, the same trend of expansionary and contraction policy measures take place.

Notable criticisms of the Nordhaus (1975) model include: First, the assumption that government or incumbent politician controls monetary policy is regarded as inconsistent with reality. This is because in this model, politicians are proposed to use monetary policy to induce inflation or not. This idea negates the notion of an independent Central Bank. Second, arising from the advent of the rational hypothesis of the New Classical in the 1970s, voters are argued not to be backward looking, but forward looking individuals.

Applying the opportunistic political cycle model, especially to the case of developing countries raises the following issues:

i. Nordhaus (1975)'s economic structure is embedded in a fully-developed stylized democratic society. However, fully-developed democracies are most obtainable in industrialized societies. On the contrary, many developing countries either possess a nascent democracy or authoritarian regimes. Then, the question that arises is, how realistic this model is in the context of many developing countries with weak political structures?

To answer this, one discovers that on one hand, these models are somewhat realistic in developing countries since manipulative politicians as described in Nordhaus model exist in these countries. For example, (Block et al, (2003)) point that incumbents in SSA have access to large discretion in decision making. In a weak political institution as characterised by Acemoglu et al (2002), having a large discretion means that, politicians face no constraint (checks and balances) on their decision making power such that when they have vested self-interest, these incumbent politicians can afford to manipulate economic policies.

On the other hand, one is liable to argue that Politicians in developing countries (especially in authoritarian regimes) may not need to manipulate economic policies to be re-elected. This is in light of fact that politicians in these countries do not require electorates' votes to be elected, since they enforce themselves on the electorate. For instance, if Nigeria's incumbent politician and political party (in 2003 and 2007) were opportunistic in the sense of Nordhaus (1975), then rigging may not have occurred, as the incumbent will only resort to manipulate economic policies. In a country report on Nigeria, Polity IV (2010) notes that in the April 2003 presidential elections, Local and international observers, while unwilling to call the elections fraudulent, nevertheless, noted serious breaches of the electoral process; Also, Polity IV (2010) notes that elections were seriously marred by improprieties by the PDP-controlled government in the 2007 presidential elections.

b. **Partisan Political Cycle models**:

Coming from another perspective, Partisan models propose that ideologies are the driving impulse to politically-induced cycles. This model originated from the work of Douglas Hibbs (1977), as he sought to establish post-war patterns in macroeconomic policies and outcomes in

capitalist democracies such as the United States and Britain; and found that indeed: "government pursue macroeconomic policies broadly in accordance with the objective economic interests and subjective preferences of their class-defined core political constituencies."

According to this model, Politicians have two underlying leanings- left or right. Left wing politicians affiliate with low income workers and tend to pursue expansionary policy in order to reduce unemployment. On the other hand, right wing politicians associate with high income entrepreneurs who choose low inflation and high unemployment outcomes. In the end, politicians are assumed to induce macroeconomic fluctuates as power changes between a left and right politician.

More formally, Hibbs (1977) model presents politicians and voters in an expectation-augmented or exploitable Philip curve economy.

$$U_t - U_t^N = -(\pi_t - \pi_t^e) \quad (1)$$

Where voters judge economic performance of political parties based on the rate of unemployment and inflation in the form:

$$L^j(U_t, \pi_t) = \frac{(U_t - \breve{U}^j)^2}{2} + \theta^j \frac{(\pi_t - \tilde{\pi}^j)^2}{2} \quad (2)$$

Where $\tilde{\pi}^j$: Party j's target rate of inflation

$\breve{U}^j$: Party j's target unemployment rate

θ^j : The weight party j puts on deviation of actual inflation from target inflation relative to deviation of actual unemployment from target

The two parties, say a right-wing party R and a left-wing party L, are characterized by:

$\theta^L \leq \theta^R$; $\tilde{\pi}^L \geq \tilde{\pi}^R$; $\breve{U}^L \leq \breve{U}^R$

Furthermore, voters also form backward expectation of government intervention of the form

$$\pi_t^e = \pi_{t-1} + \alpha(\pi_{t-1}^e - \pi_{t-1}) \quad (3)$$

Where α: speed with which expected inflation (π_t^e) adapts to past expected error. $0 < \alpha < 1$

The above equations are worked out so that cycle occurs when the level of economic activity and inflation varies with the ideology of the incumbent.

In similitude with drawbacks in the Nordhaus (1975) Opportunistic model, the Partisan Model assumes that voters form adaptive expectation of economic performance. Also, government's management of monetary policy contradicts the idea of an independent Central Bank.

Furthermore, applying Hibbs (1977) partisan model to developing countries reveals that:

Politician's ideology division into left and right policy leanings largely suits well-developed democratic economies. Schuknecht (1996) as cited from Kaplan (2006) opines the difficulty with extending the right-left concept to developing countries because party distinctions do not always exhibit the standard right-left ideological differences frequently found in developed countries., in developing countries as Nigeria, the left-right political split is difficult to define. A reason is that rather than this left-right ideology divide, Nigeria's politics is deeply-entrenched in ethnic fragmentation. Collier (2008) supports this by stating that many developing countries, especially in Africa, are highly ethnically diverse and these sub-national identities trump the relatively recent introduction of national identities.

Rational-based Political business cycle models

The emergence of the New Classical Rational hypothesis in the 1970s made impracticable Nordhaus (1975) and Hibbs (1977) assumption of a backward looking voter with adaptive expectation. Rationality of voters and even politicians were invariably introduced into existing political cycle models. These rational-based models include: Rational Opportunistic model and Rational Partisan Model. They are explained in the next subsection

c. Rational Opportunistic Models

These models were pioneered by Rogoff and Sibert (1986); Rogoff (1990); Persson and Tabellini (1990). They are also termed '*political budget cycle.'* The rational opportunistic models maintain the central assumptions of the traditional opportunistic model. However, it differs based on the ground that individual voters form expectations in a forward looking manner.

In defending the Rational Opportunistic Model, Rogoff and Sibert (1986) asserts that while electoral cycles arise from manipulating economic policies (based on voter's naiveness) in the traditional strands, in the Rational Opportunistic models, electoral cycles arise from temporal information asymmetry.

The temporal information asymmetry is such that a forward looking voter relies on the competence of an incumbent, in making his voting decision. Competence, according to Rogoff and Sibert (1986), is reflected in the administrative ability of incumbent and in the success of policies to provide government services efficiently. Since competence is not a directly observable attribute, voters utilize the performance of the economy to measure the competence of an incumbent politician. For instance, when economic outcomes are positive, this signals to voters that the incumbent is competent.

To be re-elected, prior to election, the incumbent tries to signal competent in order to convince voters of better economic outcomes under him, than his opponent. Furthermore, the model assumes that competency is persistent with a lag.

For example, in order to indicate competency, incumbent politicians use fiscal policy to induce high economic activity before elections. One such way is to increase consumption spending on visible budgetary items such as increase in transfers and reduction of taxes amongst others over

investment spending just before election and thereafter return to normalcy (investment spending exceeding consumption) after election.

d. Rational Partisan Models

The Rational Partisan model is an extension to the traditional Partisan model. This model was proposed by Alesina (1987). In it, Alesina (1987) suggests that in addition to political ideological differences, uncertainty about election outcomes trigger economic fluctuations. In the same vein, Alesina and Sachs (1986) emphasize that 'only unexpected policy matter'. To them, uncertainty about election outcome means voters cannot predict the party (left wing or right wing) that will win the next election.

Since voters cannot predict the winner of an election, they form expectations of future policy based on the average of the expected policies of the two competing parties. However, if a left (right) wing party with expansionary (contractionary) monetary policy wins the election, since this is unexpected, there will be a fall (rise) in unemployment after the election.

Furthermore, the model opines that in the first part of a politician or party's tenure in office, each party (left or right) follow an expansionary or a contractionary policy respectively. But in second part of their tenures, both left and right wing policies soon converge. The re-election motive of both parties creates this policy convergence. By asserting that policy converges for the purpose of re-election, Alesina's Rational Partisan model is sometimes classified as being opportunistic-partisan in nature

Following the brief review of the Rational opportunistic and Partisan Models respectively, one central critique of the rational-based models come from Nordhaus (1989). Upon empirical testing of the concept, he finds no evidence of rational voters. He captions this as the 'honeymoon effect.' This refers to the idea newly elected politicians enjoy high popularity at

the beginning of their tenure, but over time, this high popularity dwindles because voters had unrealistic expectations of the politician.

e. Context-based models:

In practice, using a distinct PBC model to capture politically induced cycles may be inadequate. Therefore, features of both partisan and opportunistic PBC models can be combined for more valid and context-relevant theoretical constructs. Tiganas and Peptine (undated) refer to these as Context-dependent models. Tiganas and Peptine (undated) highlight the work of Frey and Schneider (1978) who present a mix of both partisan and opportunistic PBC models. According to them, Frey and Schneider (1978) argue that partisan incumbents can be opportunistic before elections depending on the popularity of such incumbent.

Yet another classification of context-based PBC models exists. These are ad hoc models developed to capture the peculiarity of the country under study. For example, Li (2011) developed a three-period PBC model capturing the institutional features of China, while Bloomberg and Hess (2000) introduce a political variable into a dynamic stochastic general equilibrium model and Maloney et al (2002) develop a dynamic version of the Rational Partisan model. These models, although replicable, are most often relevant in the context of work done only.

4.2.2 Applying Political business cycle theories in Nigeria's context

In the quote below, Drazen (2006) shows the appropriateness of existing Political business cycle (PBC) theories to cases of developing countries as Nigeria.

> "...the same political economy is relevant for developing and developed economies...The most important policy questions may be different, as may be the choice of models in terms of what issues, choice mechanisms, or constraints should be stressed.

> However, the general theoretical framework that is used to study issues in developed countries is relevant in developing countries as are the methodological approaches and the key building blocks of the analysis."

Therefore, irrespective of Nigeria's political institutional differences from those of developed countries, existing PBC theories are applicable to her. However, in applying the existing PBC theories, some of their assumptions have to be relaxed.

Of the five PBC theories listed above, this study finds Hibbs (1977) Partisan Model, most relevant to testing Political cycles in Nigeria, with an authoritarian-democratic framework.

The relevance of the Partisan Model in defining Nigeria's political economy is depicted below:

> "The political system in Nigeria is characterised by the concentration of power in the executive, and in particular the President and State governors. Other institutions of government, including the legislature, judiciary and civil service, have limited influence and capacity... In this context many policy decisions are taken personally by the President often in response to active lobbying from individuals and interest groups. This has resulted in a shifting and unpredictable policy environment that benefits certain interest groups, and can lead to vigorous change, but does not provide a coherent stable and predictable basis for investment and broad-based, private sector-led growth" (Utomi, Duncan and Williams, 2007).

From the quote above, one discovers that:

a. Policy Choices are largely influenced by personal ideologies of heads of government in Nigeria:

In countries with weak political institutions as Nigeria, where citizens are not actively engaged in the political process, and where elected officials are not responsive to the elements of governance (Natufe, 2006 paraphrased); and where checks and balances on government discretion are absent (Acemoglu et al, 2002), policy formulation is likely to be individualized, without recourse to formal institutions (such as citizen participation)

The facts that citizens' participation in political process is low and that, policy formulation is very likely to be individualized, is captured by the World Governance Indicator. This indicator rates six dimensions of governance: Voice and Accountability, Political Stability and Absence of Violence, Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption. In this context, we focus on Voice and Accountability that measures the extent to which citizens in a country participate in selecting their government, as well as freedom of expression, freedom of association, and free media (overall citizen participation); and on Control of corruption that shows the extent to which public power is exercised for private gain and 'capture' of the state by elites and private interests (how policy formulation are personalised for private gain).

The percentile ranks for the period 1996-2011 reveal that Nigeria ranks between 0 and 45 percentile for voice and accountability and between 0 and 35 percentile for Control of corruption, using a Percentile score that ranks worse governance lower and allots higher values to better governance. This confirms the exclusion of citizens in political decision making and also depicts that policy formulation and outcomes are captured by elites and private interests in Nigeria.

b. Interest groups especially ethnic-based ones, largely influence Policy choices in Nigeria:

In a multifaceted, ethnically-diverse society as Nigeria, political decision processes are ethnic-based struggles over redistribution of national resources. With over 250 ethnic groups and a post-colonial history of factional political conflict, the most intense ethnic divisions have historically revolved around the Hausa-Fulani, the Igbos, and the Yorubas. Moreover, the core division within the Nigerian polity over the past forty years pits the politically dominant Muslim states of the north against the economically advantaged "Christian" south (Polity IV, 2010). Inherent ethnic fragmentation has birthed political patronage in Nigeria. For instance, Utomi, Duncan and Williams (2007) opines that past leaders have used ethnicity as an easy tactic to mobilise support, and have then come under pressure to corner a share of national resources for their people (ethnic constituency). With deep-seated ethnic divisions, it becomes difficult for politicians and political parties to develop conventional left-right political ideologies.

Based on the discussions above, this study adapts Hibbs (1977) Partisan model, albeit relaxing the following assumptions:

1. Just as Hibbs (1977), this study assumes that political preferences of incumbent are the driving impulse of economic fluctuations. However,
2. In Hibbs (1977), politician's ideology derives from the policy preferences of politician's political parties. Instead, this study adapts this assumption to Nigeria by proposing that incumbent Politician's ideology derive from his personal preference.
3. While Hibbs (1977) classifies policy preferences of politicians along a left-right policy dimension. This study characterises the ideology of past heads of government by a. Ethnic background b. Political regime type c. Economic Policy thrust

4. While Hibbs (1977) assumes a well-developed democratic institution, we relax this assumption based on the fact that Nigeria has had a mix of authoritarian and nascent democratic regimes over time.
5. In applying the Hibbs (1977) partisan model, one must take note of rationality of voters in Nigeria. Taking a cue from the poor rating of Nigeria in the Voice and Accountability index of the World Governance Indicator, one may conclude that voters are excluded from selecting their government and in policy decision making process. Then, on average, voters can be inferred to be just as naive as voters in Hibbs (1977) partisan model.

4.3 Research Methods

4.3.1 Model Specification

In line with the first objective of this study, the existence of political cycles is tested using an atheoretical method. The atheoretical method specifies a model with little or no recourse to economic theory. Despite this, we find the theoretical framework (section 4.2.3) useful at defining the macroeconomic and political variables to be specified in the study's model.

In actual testing of politically-induced fluctuations, the empirical norm is to select relevant macroeconomic variables. The economic variables selected are used to represent the macro economy of Nigeria, and are classified as either policy variables or aggregate macroeconomic outcomes. Once selected, the presence of politically-induced cycles is then tested using the time series data of each variable. In this study, the variables: Real Gross Domestic Product (RGDP), Government Expenditure (GE), Broad Money Supply (MS) and External Debt (ED) are used. By employing these variables, the implication is that political cycles are tested in both macroeconomic outcomes (RGDP) and in macroeconomic policy variables (GE, MS and ED).

Then, the model specified takes the form where macroeconomic variables (RGDP, GE, MS and ED) is assumed to be a linear function of past lagged value of itself and intervention political dummies, respectively.

With both macroeconomic variables and political dummies, this study estimates a model in a Univariate ARMAX (p,q) form. The ARMAX framework is selected in this work, because of the intuition that as political regime changes, structural breaks are created in the economy. Then, the ARMAX model is liable to identify any structural changes in economic series data as a result of this political change, as it assumes that mean shifts in time series are generated by a noise model and exogenous variables. The ARMAX method used stems from Hibbs (1977). However, our model differs from Hibbs (1977) due to the number of economic series used. While Hibbs (1977) test political cycle in unemployment data, we test political cycles using RGDP, GE, MS and ED such that:

$$Y_t = \theta + \alpha_p Y_{t-p} + \sum_{t=1}^{4} \tau P_t + \beta_q \varepsilon_{t-q} \quad (4.1)$$

Where Y_t: $\begin{pmatrix} RGDP \\ GE \\ MS \\ ED \end{pmatrix}$

Y_{t-p}: lag order of Autoregressive terms

P_t: Exogenous Political Variables

ε_{t-q}: lag order of Moving Averages

θ: Constant term

α_p: Parameter of AR (p) process

β_q : Parameter of MA (q) process

τ: Parameters showing the effect of a shift in political variables on Y_t

Apriori expectation: τ should be statistically different from zero at 5 per cent

Other underlying assumptions of the model are: First, the 4 by 1 vector of Y_t are cyclical components and these dependent variables are weakly stationary. In ARMAX modelling, the stationary criteria must be met so that estimated parameters are stable and well-behaved.

In addition, the Exogenous Political variables P_t are assumed to be intervention variables that induce changes in the endogenous time series. Ideally, intervention variables are represented as dummies. In this study, P_t is a vector of 4 political dummies- DUMP, DUME, DUMR and DUMI. These variables (to be defined later) are used to characterise the various forms of political ideologies in Nigeria (as identified in the theoretical framework: ethnic, political regime type and economic policy thrust). This study opines that changes in these political dummies variables induce fluctuations in the dependent variable.

In testing the second objective of this thesis: characterise the business cycle properties of political cycles, we use a multivariate method called the dynamic factor model. This model is premised on the notion that the dependent variables (RGDP, GE, MS and ED) are jointly generated by an unobserved dynamic factor.

In the context of this work, we estimate a dynamic factor model where:

$$Y_{it=}\ \alpha\ (L)f_t\ +\ e_{it} \tag{4.2}$$

$$f_t\ =\ \beta\ (L)f_{t-1} +\ v_t \tag{4.3}$$

Where:

$Y_{it} = \ \ldots \ \ e_{it}$

$i = 1, \ldots, 4$ and $t = 1, \ldots, n$

Y_{it} : 4 by 1 vector of observable time series, comprising RGDP, GE, MS and ED

f_t : Unobserved dynamic factor, AVDUM

e_{it} *and* v_t: Stochastic error term

Equations (4.2) and (4.3) are assumed to be stationary processes and (e_{it} and $v_t$are assumed to be Gaussian).

Upon estimation of equations (4.2) and (4.3), a one-step-ahead forecast of f_t is estimated. These forecasts of f_t are the underlying political shocks, identified by AVDUM. AVDUM is a composite variable, comprising the average of the 4 dummies used in model (4.1).

4.3.2 Estimation Techniques

In estimating the models specified above, a series of procedures are used. In this section, procedures for estimating the univariate and multivariate models are respectively presented. However on the whole, the estimation strategy is: First, extract cyclical component of required macroeconomic variable; then, apply both the ARIMA and Dynamic Factor Models to estimate the model, afterwards, extract political shocks using the dynamic factor models and finally, characterise the business cycle properties of this political shocks. These are expounded below:

a) De-trending Method

There are four components in a time series: Trend, seasonal, cyclical and irregular. Then, it is worthwhile to extract cyclical components from each macroeconomic time series employed in this work, since the study is concerned with macroeconomic fluctuations. Formal statistical tools used in extracting cyclical components from a time series are called de-trending methods. These methods range from unit root first differencing of a series, to the Hodrick-Prescott, Baxter and King Filters, among others.

Of these methods, Hodrick-Prescott (1980) Filter is a Univariate technique applied to extract the cyclical components of RGDP, GE, MS and ED. This Filter is regarded as a most commonly used de-trending technique because of its simplicity. The Hodrick-Prescott filter estimates trend by smoothing – in effect, by taking a weighted moving average of the original series, where the moving average is symmetric and centred (French (2001). It is a high pass filter that eliminates low frequency variation in a series.

HP framework can be mathematically illustrated as assuming a time series $y_t = \tau_t + c_t$, that comprises a trend component (τ_t) and a cyclical one (C_t). The aim is to minimize equation (4.4) below with respect to the trend component (τ_t).

$$\min_{\tau} \left(\sum_{t=1}^{T} (y_t - \tau_t)^2 + \lambda \sum_{t=2}^{T-1} [(\tau_{t+1} - \tau_t) - (\tau_t - \tau_{t-1})]^2 \right). \quad (4.4)$$

Where C_t: $y_t - \tau_t$ is sum of squared deviation representing the deviation from trend and is the cyclical component

λ : penalizes fluctuation in second differences of the trend component

French (2001) notes that the HP filter is optimal for cases when is known to have an I(2) trend and Second, the H-P filter is optimal only if the cycle consists of white noise or if the identical dynamic mechanism propagates changes in the trend growth rate and in the innovations to the business cycle component. Despite these drawbacks, the advantage of the HP method is its simplicity, because it uses the same method to extract trend from a set of variables.

In applying the HP Filter in this work, each individual time series are logged and then HP-filtered. In the end, cyclical components of RGDP, GE, MS and ED are extracted.

b) **Univariate ARMAX Modelling**

In this stage, the extracted cyclical data of RGDP, GE, MS and ED are fitted to an Autoregressive Moving Average model with exogenous variables. The ARMAX (p, q) model is an extension of the Autoregressive Moving Average (ARMA) process with other time series as input variables. More succinctly, a variable Y_t follows an ARMAX process if it is generated by past lagged values of itself, input variables and stochastic error terms. The input variables can be numeric or categorical. If categorical, the ARMAX model can be termed an intervention model.

Following this, ARMA model with exogenous variables can be specified as:

$$Y_t = w_0\ (I_t) + \ N_t \qquad (4.5)$$

Where,

Y_t: Dependent variable

$f\ (I_t)$: Intervention component (Exogenous variable(s))

N_t: Noise component (ARMA structure)

w_0: Parameter of Intervention component

Note: Equation (4.5) is specified to illustrate the actual form of ARMAX (intervention models). Equation (4.1) derives from this framework.

The next task is to fit cyclically-derived macroeconomic data to equation (4.1) using the Box-Jenkins procedure. This procedure is an iterative one evolving in four stages: identification, estimation, diagnostic checking and forecasting. However, this study focuses only on the first three stages.

i. Identification:

Since ARMAX (p, q) are atheoretical models, then it behoves us to find the appropriate ARMA process by which our ARMAX (p, q) model were generated. At this stage, the appropriate values of p and q are determined using an autocorrelation and partial autocorrelation function. The autocorrelation function and partial autocorrelation function are plots of the autocorrelation and partial autocorrelation as a function of lags. The patterns of spikes or lags in these functions are understudied to arrive at the appropriate value for p and q. The table below gives a summary of patterns used in determining the order of ARMA (p,q) models.

Table 4.1: Patterns of ACF and PACF

Process	**ACF**	**PACF**
AR(1): $a_1 > 0$	Direct geometric decay: $\rho_s = a_1^s$	$\emptyset_{11} = \rho_1$; $\emptyset_{ss} = 0$ for $s \geq 2$
AR(1): $a_1 < 0$	Oscillatory decay: $\rho_s = a_1^s$	$\emptyset_{11} = \rho_1$; $\emptyset_{ss} = 0$ for $s \geq 2$
AR (p)	Decays toward zero. Coefficients may oscillate	Spikes through lag p. All $\emptyset_{ss} = 0$ for s > p
MA (1): $\beta > 0$	Positive spike at lag 1. $\rho_s = 0$ for $s \geq 2$	Oscillatory decay: $\emptyset_{11} > 0$
MA (1): $\beta < 0$	Negative spike at lag 1. . $\rho_s = 0$ for $s \geq 2$	Geometric decay: $\emptyset_{11} < 0$
ARMA (1,1) $a_1 > 0$	Geometric decay beginning after lag 1. Sign $\rho_1 = \text{sign}(a_1 + \beta)$	Oscillating decay after lag 1. $\emptyset_{11} = \rho_1$
ARMA (1,1) $a_1 < 0$	Oscillating decay beginning after lag 1. Sign $\rho_1 = \text{sign}(a_1 + \beta)$	Geometric decay beginning after lag 1. $\emptyset_{11} = \rho_1$ and sign $(\emptyset_{ss}) =$

		sign ($\emptyset_{11}$)
ARMA (p, q)	Decay (either direct or oscillatory) beginning after lag q	Decay (either direct or oscillatory) beginning after lag p

Source: Enders (2010)

Note: ACF: Autocorrelation Function PACF: Partial Autocorrelation Function

As a chip-in, underlying time series variables (RGDP, GE, MS and ED) should be tested for stationarity. This is based on the premise that time series are weakly stationary in an ARMA model because the distribution theory underlying the use of sample ACF and PACF as approximation to those of the true data-generating process assumes the time series is stationary, Enders (2010). When weakly stationary, variables are said to possess a constant mean, variance and covariance over time. This study employs the Augmented Dickey Fuller and Philip Perron Unit root tests in testing for stationarity in time series. Both methods test a null hypothesis that there is a unit root. While the ADF is parametric, the PP is non-parametric. Upon estimating, if the test-statistics of both methods are compared with the critical values at 1, 5 and 10 per cent respectively and is less, then we reject the null hypothesis and conclude that no unit root exists and vice-versa.

ii. Estimation:

Once the appropriate order of p and q has been determined, then the parameters of the newly determined ARMAX model are estimated using a Maximum Likelihood Estimator. The estimated parameters of the ARMAX (especially intervention) model are expected to be statistically different from zero. In the context of this work, the statistical significance of parameters of the political exogenous variables is of primary importance. If these variables are significant, then political cycles are detected.

iii. Diagnostic Checking:

In this stage, the likelihood that the estimated ARMAX model is a reasonable good fit to RGDP, GE, MS and ED data is tested. This stage requires that the residuals from the estimated models are white-noise. Upon evidence that the residuals are white-noise, the estimated model is judged adequate.

The criteria used to specify that residuals are white noise are that:

a. The autocorrelation and partial autocorrelation function of residuals is tested on ground that its lags are statistically equal to zero (i.e $\rho_s = 0$) and that its residuals are serially uncorrelated
b. The Portmanteau Q-test statistic produces a value where its p-value are statistically equal to zero (i.e: insignificant)

Nonetheless, it is not uncommon to discover several plausible models for a single time series. In this case, the best model within the 'class of good models' are selected with recourse to the Akaike Information criterion (AIC) and Bayesian Information Criterion (BIC). The most parsimonious model is one with the lowest value of AIC and BIC.

It is worth mentioning that an advantage of the ARIMA method is its simplicity, nevertheless, it is based on the assumption that no feedback or causal relationship exists among variables in an economic system. In reality, this does not hold, for in any economy, several variables are interdependent with feedback interaction among them. In order to model this assumption of an economy, we turn to a multivariate framework.

c) Dynamic Factor Models

In reality, economic variables are not just determined by past lags of themselves, but also by interaction with other variables and their past lags. To account for the dynamics amongst

several macroeconomic variables, Multivariate frameworks such as the Vector Autoregressive Model by Christopher Sims (1980) was proposed.

In the context of political cycle studies, numerous studies consider the existence of political cycles in a univariate system. This attempt is likely to underestimate the true magnitude of political cycle fluctuations. Therefore, multivariate analysis is essential to help capture simultaneously, political cycle fluctuations in several macroeconomic variables. An attempt to use a multivariate technique was by Faust and Irons (1999), who used a VAR technique. However, Gujarati (2010) opines that co-efficients in a VAR models are difficult to interpret.

This study proposes the use of dynamic factor models. Just as the VAR models, dynamic factor models are multivariate time series techniques. The model assumes that co-movement or variability in several macroeconomic series can be largely explained by unobservable or state factor(s).

More formally, the premise of a dynamic factor model is that a few latent dynamic factors, f_t drives the co-movement of a high dimensional vector of time-series variables,X_t, which is also affected by a vector of mean-zero idiosyncratic disturbances e_t (Stock and Watson, 2010). The dynamic factor model is presented as:

$$X_{it=}\ \alpha\ (L)f_t\ +\ e_{it} \tag{4.6}$$

$$f_t\ =\ \beta\ (L)f_{t-1} +\ v_t \tag{4.7}$$

Where:

$X_{it=}$ ... e_{it}

$i = 1, \dots, m$ and $t = 1, \dots, n$

X_{it} : N by 1 vector of observable time series, if there are N series

e_{it} : N by 1 vector of stochastic error terms

f_t : q by 1 vector of unobserved dynamic factors, if there are q dynamic factors

v_t: q by 1 vector of stochastic error terms

Equations (4.6) and (4.7) are assumed to be stationary processes and (e_{it} and $v_t$are assumed to be Gaussian).

To estimate equations (4.6) and (4.7), Stock and Watson (2010) proffer three methods:

a. The Gaussian Maximum Likelihood estimation and the Kalman Filter;
b. A non parametric estimation method using cross-sectional averaging; and
c. Using consistent non-parametric estimates of the factors to estimated parameters of the state-space model.

In this study, the Gaussian Maximum Likelihood (ML) and Kalman Filter method is preferred to estimate the dynamic factor model used. An advantage of this method is that it provides optimal estimate of factor and it produces consistent parameters, even in the face of irregular and missing data. However, the model is limited by a dimensionality problem; this is such that the ML and Kalman Filter accommodate small series only. This restricts the number of series that can be estimated. Furthermore, the dimensionality problem constrains one to estimate a model where the number of observable time series, X_t is strictly greater than that of the unobserved dynamic factors, f_t.

In direct comparism with the Univariate ARIMA model, the dynamic factor model as a multivariate method is expected to produce better fit in sample.

4.3.3 Data Source and Measurement

Once again, the atheoretical methods used in this study assumes that economic time series are a linear function of past lags of these series and of four intervention political dummies in the case of the univariate model. For the multivariate model, it is assumed that economic time series in a feedback system are a linear function of an unobserved factor. The unobserved factor is identified by a composite political dummy. We note that we were constrained to use a

composite dummy to deal with the dimensionality problem in the estimation of the dynamic factor model.

Furthermore, the variables used in this work are annual frequency, derived from Central Bank Statistical Bulletin, 2011. The variables are:

Table 4.2: Description of Data

Variable	Description	Measurement	Source
RGDP	Real Gross Domestic Product	N' Million	CBN Stat. Bulletin
GE	Total Government Expenditure	N' Million	CBN Stat. Bulletin
MS	Money Supply ratio (M_2/GDP)	Ratio	CBN Stat. Bulletin
ED	External Debt	N' Million	CBN Stat. Bulletin

The political dummies employed in this study, derive from the forms of political ideology identified in section 4.2.3 (theoretical framework), they are defined as:

$dump_t$: Political dummy defining period in which a head of government was in office

$dume_t$: Political regime dummy defining the ethnic origin of head of government

$dumr_t$: Political regime dummy defining if government was military or civilian

$dumi_t$: Political regime dummy defining the economic policy thrust of government

DUMP	Dump= 0: Years when heads of government did not change Dump= 1: Years when heads of government change
DUME	Dume= 0: Years when the head of government was a Northerner Dume= 1: Years when head of government was a Southerner
DUMR	Dumr= 0: Years when head of government was military

	Dumr= 1: Years when head of government was civilian
DUMI	Dumi= +1: Years when an expansionary government was in place Dumi= -1: Years when a contraction government was in place
AVDUM*	Composite dummy derived from average of the four dummies above. It is used in the multivariate analysis.

CHAPTER FIVE

ESTIMATION AND INTERPRETATION

5.1 Introduction

In line with the main objective of this study, empirical evidence of political cycles (i.e: evidence of political regimes as sources of business cycle fluctuation) in Nigeria, over the timeframe 1960-2010, is tested. Consequently, this chapter provides the requisite empirical proof of the existence of political cycles, thereafter; the second objective concerned with characterising the cyclical properties of political cycle is explored. To this end, this Chapter is divided into five sections. Asides section one, the estimation results of the Univariate ARIMA model are presented in section two. In section three, dynamic factor model findings are presented, while

in section four, the cyclical properties of the political cycle detected is shown and finally, in section five, summary of findings is given.

5.2 Presentation of Results

5.2.1 Univariate ARIMAX model: Existence of Political Cycles

The Univariate ARIMAX method provides a simple atheoretical framework through which political cycles can be detected. The technique is most suited to this study, since it assumes that mean shifts or structural changes in macroeconomic time series (RGDP, GE, MS and ED) are generated by a noise process and intervention political dummies. Therefore, equation (4.1) is estimated.

$$Y_t = \theta + \propto_p Y_{t-p} + \sum_{t=1}^{4} \tau P_t + \beta_q \varepsilon_{t-q} \quad (4.1)$$

Where Y_t: $\begin{pmatrix} RGDP \\ GE \\ MS \\ ED \end{pmatrix}$

Y_{t-p}: lag order of Autoregressive terms

P_t: Exogenous Political Variables

ε_{t-q}: lag order of Moving Averages

θ: Constant term

$\propto_p$: Parameter of AR (p) process

β_q : Parameter of MA (q) process

τ: Parameters showing the effect of a shift in political variables on Y_t

Apriori expectation: τ should be statistically different from zero at 5 per cent

Equation 4.1 can be re-written as:

$$RGDP_t = \theta + \propto_p RGDP_{t-p} + \sum_{t=1}^{4} \tau P_t + \beta_q \varepsilon_{t-q} \quad (5.1)$$

$$GE_t = \theta + \propto_p GE_{t-p} + \sum_{t=1}^{4} \tau P_t + \beta_q \varepsilon_{t-q} \quad (5.2)$$

$$MS_t = \theta + \propto_p MS_{t-p} + \sum_{t=1}^{4} \tau P_t + \beta_q \varepsilon_{t-q} \quad (5.3)$$

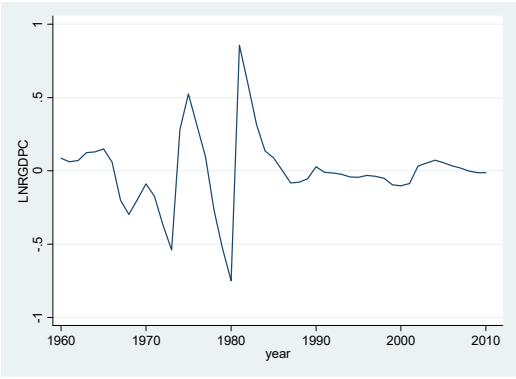
$$ED_t = \theta + \propto_p ED_{t-p} + \sum_{t=1}^{4} \tau P_t + \beta_q \varepsilon_{t-q} \quad (5.4)$$

As ARMAX (p,q) models, equations 5.1 -5.4 is solved using the Box-Jenkins Iterative Method.

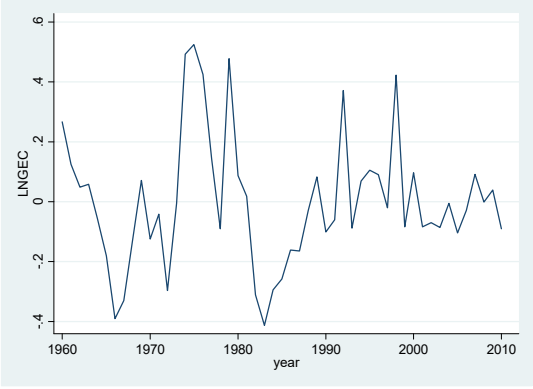
Following the Box-Jenkins procedure, we run time plot of each variables for the purpose of detecting (non) stationarity and outliers.

Figure 5.1: Time Series Plot

RGDP

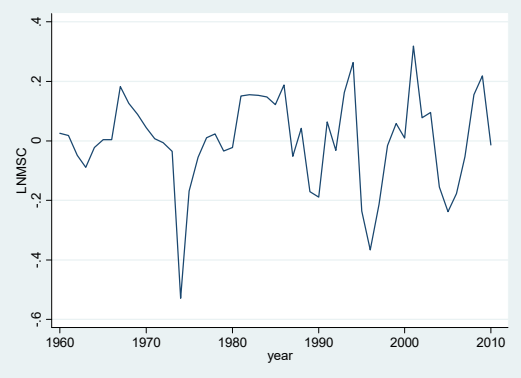


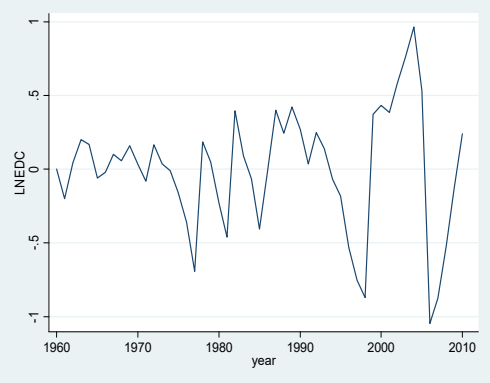
GE



MS

ED





However, judging by requirement that time series be weakly stationary so that estimates are stable and well-behaved, formal unit roots tests- Augmented Dickey Fuller and the Philip-Perron are used to test stationarity in our variables. The results confirm the visual inspection above. The unit root tests statistics are less than the critical values at 5 per cent. Therefore, we reject the null hypothesis of the existence of a unit root and conclude that the time series variables are stationary at levels (i.e: I(0))

Table 5.1: Result of Unit root tests

	Augmented Dickey Fuller		Philip-Perron	
Variable	Intercept only	Intercept+trend	Intercept only	Intercept+trend
RGDP	-5.339 (-2.933)	-5.282(-3.504)	-4.716 (-2.930)	-4.671 (-3.500)
GE	-3.305 (-2.933)	-3.283 (-3.504)*	-4.217 (-2.930)	-4.177 (-3.500)
MS	-4.311(-2.933)	-4.264 (-3.504)	-4.414 (-2.930)	-4.371 (-3.500)
ED	-4.536 (-2.933)	-4.487 (-3.504)	-3.986 (-2.930)	-3.947 (-3.500)

Source: Author's compilation

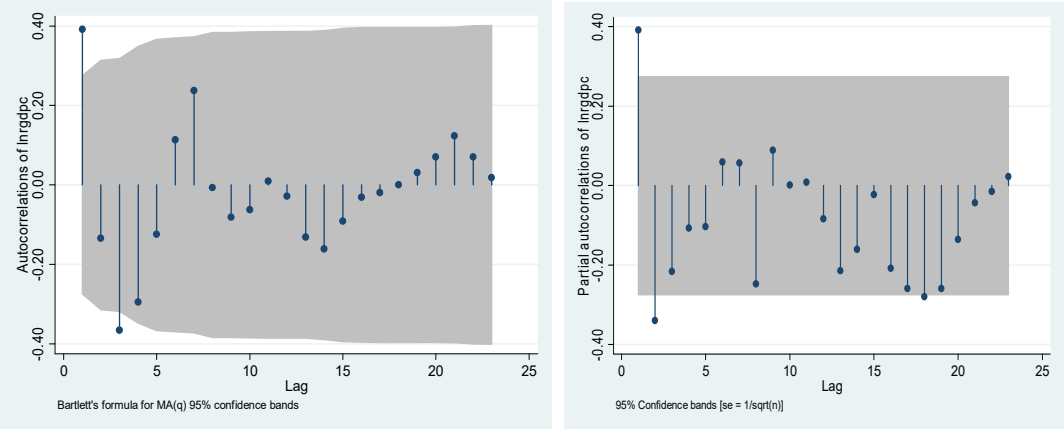
Note: Numbers in bracket () denote critical values at 5%

*- stationary at 10 per cent

Upon confirming that the variables RGDP, GE, MS and ED are stationary, the next step in fitting the 'best' ARMAX (p,q) model is using Autocorrelation functions and Partial Autocorrelation functions in identifying the order of the model to be used.

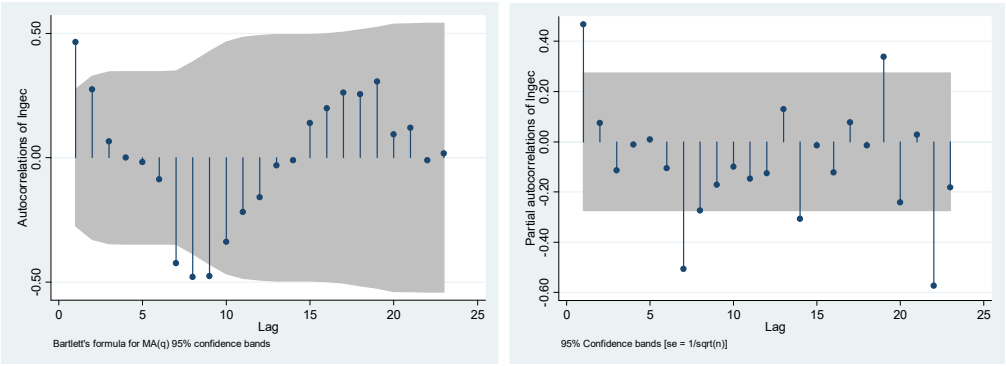
Figure 5.2: Autocorrelation and Partial Autocorrelation Functions of variables used

RGDP



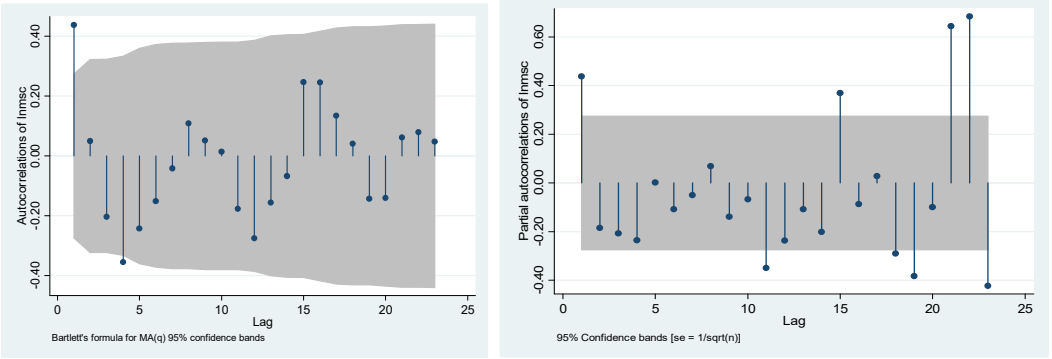
The autocorrelation function plot of RGDP with a 95 per cent confidence band shows significant spikes at lag one and three only. The spikes are decaying in an oscillatory manner, suggesting an AR(1) process. On the other hand, the PACF shows significant spikes at lags one and three with an oscillatory-like pattern among the spikes.

GE



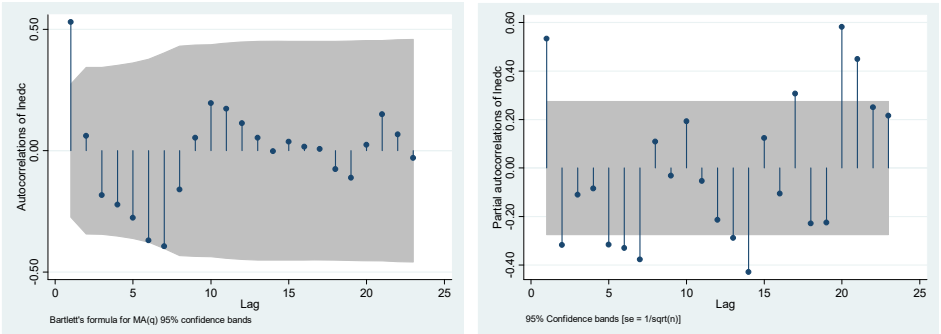
The autocorrelation function plot of GE with a 95 per cent confidence band reflects a clear wave-like decay among the lags. There are significant spikes at lags one, six, seven and eight. Furthermore, the PACF reveals irregular patterns among the spikes; this may suggest an ARMA process.

MS



The autocorrelation function plot of MS with a 95 per cent confidence band shows only a significant spike at lag one and insignificant spikes under subsequent lags. Furthermore, there is a swing-like pattern among the spikes. With a positive spike at lag one, an MA (1) process is probable. The Partial Autocorrelation function with a 95 per cent confidence band, a positive and negative significant spikes are seen, such patterns suggests an ARMA process.

ED



The autocorrelation function plot of ED with a 95 per cent confidence band shows only a significant spike at lag one and insignificant spikes under subsequent lags. Furthermore, there seems to be an oscillatory pattern among the spikes. With a positive spike at lag one, an MA(1) process may be suggested. Surveying the Partial Autocorrelation function with a 95 per cent confidence band, a positive significant spike is also seen in lag one, however, the spike seems to be patterned in an irregular pattern; this may suggest an ARMA process.

However, to know the true ARMAX order, equations (5.1), (5.2), (5.3) and (5.4), were fitted using several specifications. Upon identification, the plausible ARMAX (p,q) orders for each of the relevant time series were:

Macro variables	ARMA orders				
RGDP	104	201	205	303	305
GE	102	400	500	502	600
MS	201	202	102	301	302
ED	100	101	107	204	304

Source: Author's compilation

The respective orders were selected using statistical significance of political variables in the model; the Akaike Information Criterion and Bayesian Information Criterion; and white noise specification in the residuals of the ARMAX models.

Finally, the orders ARMAX (104, 502, 202 and 101) were selected as best fit for RGDP, GE, MS and ED respectively.

5.2.1.1 RGDP: The existence of political cycles in aggregate economic activity

Our 'best' ARMAX (1, 0, 4) model was fitted to RGDP data for Nigeria over the time period 1960-2010. Therefore equation (5.1) is explicitly re-written as:

$$RGDP_t = \propto_0 + \propto_1 RGDP_{t-1} + \beta_1 dump_t + \beta_2 dumi_t + \beta_3 dumr_t + \beta_4 dume_t + \gamma_j \varepsilon_{t-j} + \varepsilon_t$$

(5.5)

Where:

$RGDP_t$: Real Gross Domestic Product

$RGDP_{t-1}$: Real Gross Domestic Product at first lag

$dump_t$: Political regime dummy defining period in which a head of government was in office

$dume_t$: Political regime dummy defining the ethnic origin of head of government

$dumr_t$: Political regime defining dummy if government was military or civilian

$dumi_t$: Political regime dummy defining economic policy thrust of government

$\gamma_j \varepsilon_{t-j}$: MA (q) where q=1,...,4

ε_t: Stochastic error term, where $\varepsilon_t \cong N(0, \sigma^2)$

Equation (5.5) was estimated using Stata Version 11. Stata Version 11 estimates ARMAX (p,q) models by an iterative Maximum Likelihood approach using the Kalman Filter Procedure. Further, Robust Standard errors were reported. These variant of error prove to be robust to misspecification issues and other violations of conventional OLS regressions such as heteroskedasticity. In line with the objective of this study, the primary concern with the ARMAX estimation is with the value of coefficients and statistical significance of the political dummies used. The results show:

Table 5.2: ML estimation of Political Cycle in RGDP

Political dummies	Value of Co-efficient	% Impact	$P > \|Z\|$ Value

Dump	0.104	10.96	0.056**
Dume	-0.168	15.46	0.019*
Dumr	0.178	19.48	0.019*
Dumi	0.010	1	0.663

Source: Author's compilation

Note: co-efficient interpreted using 100*(exp (co-efficient)-1)

*statistically different from zero at 5 per cent
** Statistically different from zero at 10 per cent

Since RGDP is in logarithm, the actual impact of estimated co-efficient of political dummies on RGDP is derived by the formula:

$$100 \times (e^{co-efficient} - 1)$$

Using this formula, it follows that a unit increase in political dummies, DUMP, DUME, DUMR and DUMI led to a 10.96 per cent increase, 15.46 per cent decrease, 19.48 per cent increase and 1 per cent increase in the fluctuations in RGDP.

Furthermore, the P-value shows that all political dummies except DUMI are statistically significant at 5 per cent and at 10 per cent (in the case of DUMP). Consequently, based on the statistical significance of the co-efficient of these political dummies, one can then reject the null hypothesis of the thesis and conclude there is evidence of political cycle in Nigeria.

Albeit, these political cycles are driven by: (a) Changes in political regimes as power fluctuate from one head of government to the other (b) Changes in the ethnic background of successive governments and (c) Changes in the regime type of successive governments. On the other hand, the changes in the economic policy thrust of government did not induce economic fluctuation over the period 1960-2010.

The statistical implication of the results is that:

a. As power changed overtime, from a head of government to another, a 10.96 per cent increase in aggregate economic fluctuations is recorded.
b. As political power switched from a southern head of government to a Northern one, this reduced economic fluctuations by 15.46 per cent
c. As political power changed from military to civilian government, this exacerbated economic fluctuations by the highest magnitude of 19.48 per cent.

5.2.1.2 GE: The existence of political cycles in fiscal variable

An ARMAX (5, 0, 2) model was found to be most suited to Government expenditure (GE) data for Nigeria over the time period 1960-2010. Therefore, equation (5.2) is explicitly re-written as:

$$GE_t = \propto_0 + \propto_P \ GE_{t-P} + \ \beta_1 \, dump_t + \ \beta_2 dumi_t + \beta_3 dumr_t + \ \beta_4 dume_t + \gamma_j \varepsilon_{t-j} + \varepsilon_t \quad (5.6)$$

Parameters remain as defined beforehand. Except that p= 1,...,5 and j= 1, 2. The result of the Maximum Likelihood estimation of equation (5.6) is shown below.

Table 5.3: ML estimation of Political Cycle in Government Expenditure

Political dummies	Value of Co-efficient	% Impact	$P > \|Z\|$ Value
Dump	0.062	6.39	0.353
Dume	0.094	9.86	0.299
Dumr	0.040	4.08	0.580
Dumi	0.222	24.86	0.022*

Source: Author's compilation

Note: co-efficient interpreted using 100*(exp (co-efficient)-1)

*statistically different from zero at 5 per cent

Results from the table above indicates that a unit change in DUMP, DUME, DUMR and DUMI led to a 6.39 per cent, 9.86 per cent, 4.08 per cent and 24.86 per cent increase in fluctuations in central government's total spending.

Specifically, only government's economic policy thrust (DUMI) is seen to induce fluctuations in government expenditure. The implication is that as government's economic policy switched from contractionary to expansionary; on average 24.86 per cent swings in fiscal policy are induced.

5.2.1.3. MS: The existence of political cycles in monetary variable

To capture political cycle fluctuations in monetary policy in Nigeria, an ARMAX (2,0,2) model is fitted such that:

$$MS_t = \propto_0 + \propto_P MS_{t-P} + \beta_1 dump_t + \beta_2 dumi_t + \beta_3 dumr_t + \beta_4 dume_t + \gamma_j \varepsilon_{t-j} + \varepsilon_t \quad (5.7)$$

Parameters remain as defined beforehand. Except that p= 1, 2 and j= 1, 2. The result of the Maximum Likelihood estimation of equation (5.7) is shown below.

Table 5.4: ML estimation of Political Cycle in Money Supply

Political dummies	Value of Co-efficient	% Impact	$P > \|Z\|$ Value
Dump	-0.012	1.21	0.788
Dume	-0.120	12.75	0.073**
Dumr	0.114	12.08	0.104
Dumi	0.015	1.51	0.186

Source: Author's compilation

Note: co-efficient interpreted using 100*(exp (co-efficient)-1)
*statistically different from zero at 5 per cent
** Statistically different from zero at 10 per cent

The estimation reveals that a change in DUMP, DUME, DUMR, DUMI led to a 1.21 per cent reduction; 12.75 per cent reduction, 12.08 per cent increase and 1.51 per cent increase in money supply fluctuations, over the sample period 1960-2010.

Specifically, as a result of the statistical significance of DUME, one can imply that as regimes switched from a south-led government to a north-led one, this reduced Money supply fluctuations.

5.2.1.4. ED: The existence of political cycles in external debt policy variable

We fit ARMAX (1, 0, 7) to time series data on external debt, so as to account for proof of political cycle fluctuations in external debt policy in Nigeria. The equation below is estimated.

$$ED_t = \propto_0 + \propto_1 ED_{t-1} + \beta_1 dump_t + \beta_2 dumi_t + \beta_3 dumr_t + \beta_4 dume_t + \gamma_j \varepsilon_{t-j} + \varepsilon_t \text{ --(5.8)}$$

Parameters remain as defined beforehand. Except j= 1,...,7 The result of the Maximum Likelihood estimation of equation (5.8) is shown below.

Table 5.5: ML estimation of Political Cycle in External debt

Political dummies	Value of Co-efficient	% Impact	$P > \|Z\|$ Value
Dump	0.163	17.7	0.029*
Dume	0.210	23.37	0.315
Dumr	0.072	7.47	0.737
Dumi	0.051	5.23	0.230

Source: Author's compilation

Note: co-efficient interpreted using 100*(exp (co-efficient)-1)

*statistically different from zero at 5 per cent
** Statistically different from zero at 10 per cent

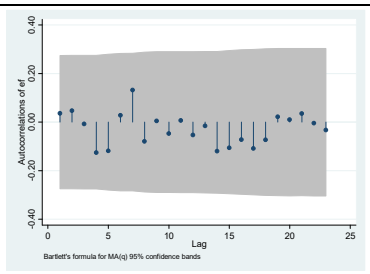
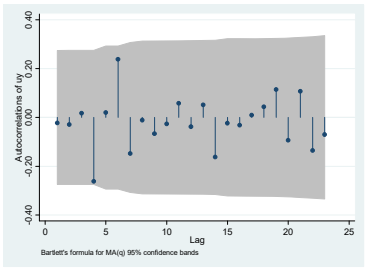
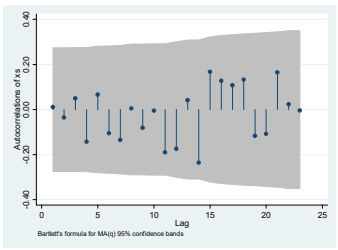
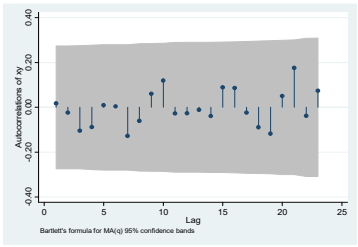
The results above shows that a unit change to in DUMP, DUME, DUMR and DUMI leads to a 17.7 per cent, 23.37 per cent, 7.47 per cent and 5.23 per cent increase in external debt policy.

Specifically, only political regimes as defined by change in head of government (DUMP) accounts for significant fluctuations in external debt policy. More succinctly, as the heads of government changed, cyclical swings in external debt grew larger.

5.2.2 Diagnostic Check on Residuals of ARMAX Models

Table 5.6: Residual testing of ARMAX model

Variable	AIC	BIC	ACF Residual	Q-test

RGDP	-2.592	14.794		0.999
GE	-22.657	2.451		0.810
MS	-51.719	-34.332		0.460
ED	36.040	57.290		0.9882

Source: Author's compilation

Note: AIC: Akaike Information Criterion; BIC: Bayesian Information Criterion; Q-test: Portmanteau Q-test

Judging from the autocorrelation function plot of residuals and the associated Portmanteau Q-statistics, each ARMAX models fit the data well. The various spikes at different lags under the ACF residual plot are seen to fall within the shaded region. This implies that all the lags are not statistically significant. Furthermore, the Q-statistics show insignificant values. An indication of the insignificance of both tests is that the residuals of the various ARMAX models fitted are white noise. Consequently, the models are 'best' in their own right.

5.3 Dynamic Factor Models

In this section, a dynamic factor model is estimated to test the second objective of this work: characterising the business cycle properties of the political cycles detected in the preceding section.

In the context of this work, the dynamic factor system models several endogenous variables (RGDP, GE, MS and ED) as linear functions of an unobserved factor (political dummy). The dynamic factor model used in this study, answers the question:

> '*Can an unobserved factor (in this case political dummy) explain the co-movement or fluctuations in the relevant macroeconomic series data used for Nigeria over the period 1960-2010?*'

In the context of this work, we estimate a dynamic factor model where:

$$Y_{it} = \alpha\,(L) f_t + e_{it} \quad (4.2)$$

$$f_t = \beta\,(L) f_{t-1} + v_t \quad (4.3)$$

Where:

$Y_{it} = \ldots \; e_{it}$

$i = 1, \ldots, 4$ and $t = 1, \ldots, n$

Y_{it} : 4 by 1 vector of observable time series, comprising RGDP, GE, MS and ED

f_t : Unobserved dynamic factor, AVDUM

e_{it} *and* v_t: Stochastic error term

Equations (4.2) and (4.3) are assumed to be stationary processes and (e_{it} and $v_t$are assumed to be Gaussian).

Equation 4.2 and 4.3 are estimated using the Stata Version 11. Stata Version 11 estimates dynamic factors model by a Maximum Likelihhod procedure using the Kalman Filter.

According to Stata User Guide Manual 12, the Maximum Likelihood (ML) estimator is implemented by writing the equation in state-space form and then the Kalman Filter is used to derive and implement the log likelihood. However, a limitation of the use of the Kalman Filter is that of dimensionality of the observable variables and the unobserved factors. In this light, limited number of parameters was only allowed to be estimated in such a way that only observable time series variables strictly greater than unobserved factor: $X_t > f_t$ was allowed. This constrained the author to finding the average of the four political dummies used earlier. The averaged political dummy is called AVDUM

Upon estimation of our dynamic factor model, the result shows that the unobserved factor AVDUM is a significant predictor of the co-movements or fluctuations in MS, ED and GE, but not in RGDP.

Table 5.7: ML Estimation of Dynamic Factor Model

Unobserved Factor: AVDUM, Wald test=88.20 (P-Value=0.0000)

Variable	Co-efficient	P-Value
RGDP	-0.002	0.968
GE	-0.133	0.005*
MS	0.066	0.000*
ED	0.099	0.021*

Source: Author's compilation

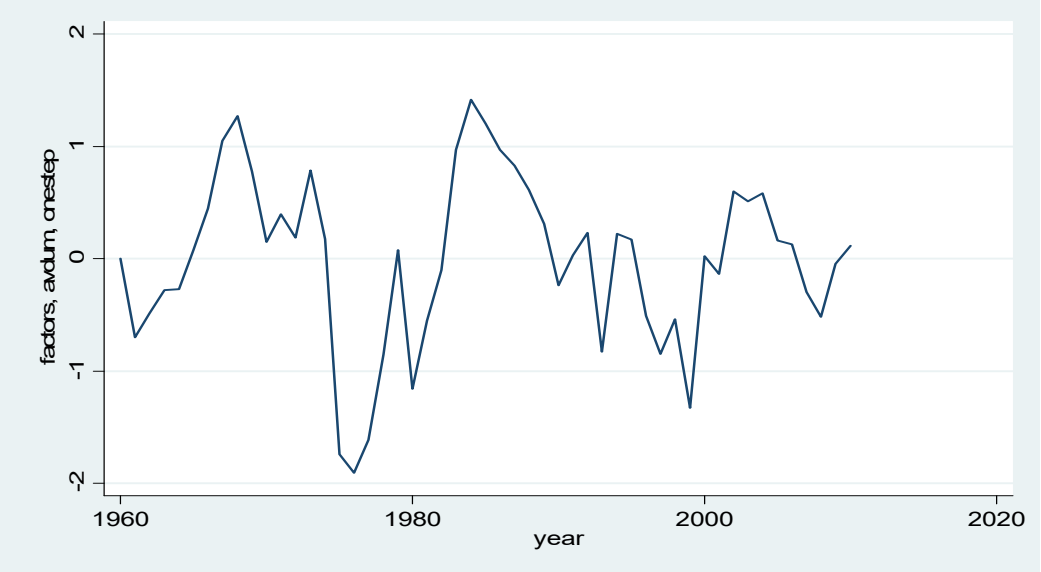
Note: co-efficient interpreted using 100*(exp (co-efficient)-1) since dummies are used.

*statistically different from zero at 5 per cent

** Statistically different from zero at 10 per cent

Upon estimation of equations (4.2) and (4.3), we derive a one-step-ahead forecast of f_t. This forecast of f_t is the underlying political shocks, identified by AVDUM. We extract the political shock component.

Figure 5.3 : Political Shock Component



Source: Author's compilation

5.3.1 Diagnostic Checking

The Portmanteau Q-test on residuals is used to diagnose the fitness of the estimated model. At 1 per cent and 5 per cent, respectively, the estimated model can be said to have white noise residuals, since the P-value of the Q-statistic is 0.063.

5.4 The Cyclical Properties of the Political Cycle

In this section, the cyclical characteristics of the estimated political shock is explained.to the best of the author's knowledge, this becomes one of the first attempt to characterise political cycle properties. Among the benefits of characterising the political cycles include: analysing political dynamics to measure its impact and magnitude on aggregate economic fluctuation in Nigeria; then, understanding the volatility, persistence and co-movement of political fluctuation to propose appropriate stabilisation and smoothing measures. Finally,

characterising the cyclical properties of politically-induced fluctuation is essential to generate some stylized facts about the political economy of Nigeria.

One finds that the sources and nature of economic fluctuations or shocks are a central concern in business cycle analysis. However, a challenge in political cycles studies is attempting to quantify 'political shocks', so as to gauge its underlying properties and its magnitude. To address this challenge, the dynamic factor model is used to extract this 'political shock' component.

Upon extracting the political shocks, the political cycles detected in the previous section is characterised. In explaining the cyclical properties of the political fluctuations, we focus on the following business cycle statistical moments.

Table 5.8: Business Cycle Moments of Political shocks

Statistical Moment	Measure
Standard deviation	Volatility
Mean	Volatility and magnitude of cycle
Serial Correlation	Persistence
Correlation	Co-movement (Procyclicity or not)

The business cycle characterization procedure to be used stems from Alege (2008) who characterised business cycle fluctuations in Nigeria. In examining the statistical feature of any cyclical component, it is necessary to establish the stationarity of the component. To this, the Dickey Fuller and Philip Perron Test are used. The extracted political cycle component is called FACT

Table 5.9: Unit root test on Political Shock 'FACT'

	Augmented Dickey Fuller		Philip Perron	
	Intercept only	Intercept+ Trend	Intercept only	Intercept+ Trend
FACT	-3.237 (-2.936)	-3.210 (-3.185)	-3.192 (-2.930)	-3.161 (-3.500)

The unit root test rejected the null hypothesis at intercept only but failed to reject at intercept and trend. So as to address this contrast, the Dickey Fuller GLS was used which confirmed FACT to be I(1). Therefore FACT was differenced by order 1.

Once differenced, the following business cycle properties were found:

a. Volatility:

From Alege (2004), volatility is a measure of the amplitude of fluctuations. In this study, volatility is measured by percent standard deviation.

```
Mean estimation                     Number of obs    =        50
```

	Mean	Std. Err.	[95% Conf.	Interval]
factd	.0023248	.0872122	-.1729346	.1775842

From above, volatility of the political dynamics is 8.7 %. Unfortunately, it may be difficult to ascertain the truth weight of this figure. However, one can rely on the value of the mean. The mean with a value of 0.2 per cent shows that the political shocks in Nigeria are not volatile. This is because Alege (2008) opines that the mean value of a variable expressed in percentage can also be used as a measure of fluctuations. If not greater than 1, it implies the variable is not subject to very high fluctuations. Furthermore, this study interprets that the value of mean has implication for the magnitude or contribution of political shocks to aggregate economic fluctuations. On average, political shocks is seen to statistically contribute only 0.2 per cent to aggregate economic fluctuations in Nigeria.

b. Persistence:

This is measured by the autocorrelation of an economic time series. It is expected the first four autocorrelations be strongly positive. Upon examining the autocorrelation of political shock 'FACT' one finds that the first four lags are negative and insignificant. Using Agenor et al (1999), it is concluded that political shocks cannot be characterised as business cycles.

c. Co-movement:

The co-movement or correlation of political shocks with the variables used in this study- RGDP, GE, MS and ED are measured by the correlation co-efficient γ such that if $\gamma > 0$, a variable is procyclical with political shock, if $\gamma < 0$, a variable is countercyclical with political shock and if $\gamma = 0$, a variable is acyclical with political shock. The result shown below

Table 5.10: Correlation matrix

	FACT
FACT	1.0000
RGDP	-0.0124
GE	-0.2365
MS	0.3641
ED	0.1225

Source: Author's compilation

From the results above, political shocks produces countercyclical movements in RGDP and GE but produces procyclical movement in MS and ED.

5.5 Summary of findings:

1. The existence of Political Cycles

Table 5.11: Univariate ARIMAX Models

Economic Variable	Political Cycle detected	
RGDP	DUMP, DUME, DUMR	Yes
GE	DUMI	Yes
MS	DUME	Yes
ED	DUMP	Yes

In the Univariate Context, there is evidence of political cycle fluctuations in both aggregate macroeconomic outcome, as proxied by Real Gross Domestic Product (RGDP) and policy variables as reflected in Government expenditure, Money Supply ratio and External debt.

Therefore testing the null hypothesis that political regimes have not induced economic fluctuations in Nigeria, over the period 1960-2010, the univariate analysis rejects this null hypothesis for both macroeconomic outcomes and policy variables.

As to the evidence of the existence of political cycles, the sources of these shocks vary and include:

a. RGDP: In the aggregate economy, over the sample period 1960-2010, political cycles were induced by:
    1. Change in head of government from one political regime to another, exacerbated aggregate economic fluctuations. This is not surprising in a weak political system with poor checks and balances as illustrated by the World Governance Indicator (2012) -refer to stylized facts.
    2. Change in head of government from a south leader to a north leader stabilized aggregate economic fluctuation. This confirms the speculation that political

ideology as shaped by a government ethnic origin can induce or stabilize fluctuations.

3. Alternation of political regimes from military to civilian government exacerbated economic fluctuations in Nigeria. thus, political ideology as shaped by the regime type of government are relevant for determining politically-induced fluctuations

b. Government Expenditure: In fiscal policy, over the sample period 1960-2010, political cycle was induced by the type of economic policy leaning- contraction or expansionary taken by government. However, governments that were inclined to austere policies exacerbated fluctuations in this policy variable, than the expansionary-inclined ones.
c. Money Supply: In monetary policy, a change in government from South to North stabilized fluctuations. The existence of political cycle in this variable, indicates the non-independence of the central bank of Nigeria from political motives
d. External debt: In Nigeria's external debt position, change in government from one political regime to another, on average, exacerbated fluctuations.

2. Business cycle properties of political shocks

Table 5.12: Dynamic Factor Model

Statistical Moment	Measure	Value (%)
Standard deviation	Volatility	8.7
Mean	Magnitude of cycle	0.2
Serial Correlation	Persistence	First 4 lags are negative and insignificant
Correlation	Co-movement	RGDP: -0.0124 GE: -0.2365 MS: 0.3641 ED: 0.1225

From the table, we find that political cycles are not volatile, such as they are not subject to high fluctuations. We also find that the weak persistence of the cycle makes it difficult to be characterized as a business cycle. Furthermore, it is surprising to find a negligible magnitude of political shocks. It implies that other sources of shocks are likely to induce economic fluctuations in the aggregate economy than pure government effect. This finding indirectly conforms to Alege (2004) who considers productivity, exports and money shocks as sources of economic fluctuations in Nigeria.

CHAPTER SIX

SUMMARY AND CONCLUSION

6.1 Summary

Following the fact that economic fluctuations are more pronounced in developing countries (such as Nigeria), than developed countries and that, this has led policymakers/politicians to propose mitigating measures. Furthermore, due to the speculation that by outright policy mistakes and/or vested self-interest, policymakers/politicians can be a source of economic fluctuations in Nigeria, coupled with low constraints on the decision making power of politicians in government; this study argued that politically-induced fluctuations were highly probable in Nigeria.

Following this background, the study sought to examine the relationship between political regimes and economic fluctuations in Nigeria. Its specific objectives were to test for the existence of political cycles and to characterize the nature of the political cycles detected in the case of Nigeria. To this end, the study tested the null hypothesis that politically-induced fluctuations did not exist over the study period 1960 to 2010, in Nigeria.

The study stood on existing political business cycle theories, particularly the Hibbs (1977)'s Partisan variant. However, in adapting the theory to Nigeria, some of its assumptions were relaxed. Major changes was to assume that rather than the conventional left-right wing, the ideological divide stems from ethnic background, political regime type and economic policy thrust. Furthermore, the assumption that Nigeria had a stylized, well-developed democratic institution was relaxed for the fact that Nigeria had a mix of both authoritarian and democratic rules.

To achieve the two specific objectives of the study, two atheoretical estimation techniques were used: The Univariate ARIMA, Box-Jenkin Method and the Dynamic Factor model method. These two methods were used to test annual empirical data on Nigeria from 1960-2010, using macroeconomic policy variables such as Government Expenditure (GE); Money Supply (MS)

and External Debt (ED) that capture fiscal, monetary and external debt policy, respectively. Also, Real Gross Domestic Product (RGDP) was used as proxy for the aggregate economy.

The Univariate ARIMA model was used to examine the existence of the political cycles. It modelled each macroeconomic variable-RGDP, GE, MS and ED- as a linear function of an ARMA process and four exogenous intervention variables. The exogenous intervention variables used were political dummies: DUMP, DUME, DUMR and DUMI. Once the political dummies were statistically significant, the null hypothesis was rejected and the existence of political cycles was confirmed.

On the other hand, the Multivariate Dynamic Factor Model was used to address the second objective of this thesis. From the technique, an unobserved factor was estimated and its one-step ahead forecast obtained, this captured the political shock component. Unlike the ARIMA model, it had a more realistic assumption of feedback among macro variables in an economic system. However, this technique was ridden with dimensionality issue, which was bypassed by using a composite Political dummy AVDUM.

Using both the ARIMA and Dynamic Factor techniques, the estimation strategy of the study proceeded from extracting cyclical component of the economic variables-RGDP, GE, MS and ED- using the Hodrick-Prescott Filter. Thereafter, stationarity tests using Augmented Dickey Fuller and Philip Perron method was carried out on the cyclical component of the variables. Then the variables were estimated, hypothesis tested and diagnostic test carried out. It is worthy of note that in using the dynamic factor model, after the aforementioned procedures, a 'political cycle' data was extracted, and its business cycle properties tested.

Answers found using the estimation techniques and strategies above established the significance of the study. Therefore, the study had implication for validating the existence or not of political cycles. Secondly, it was useful for assessing the magnitude of political shocks

and thereby, its relevance among other sources of shocks. Thereafter, it helped to evaluate the policymaking environment in Nigeria and finally, some political economy stylized facts for Nigeria were derived.

Consequently, this study was novel in testing the existence of political business cycle outside a democratic or electoral framework. This is unlike existing studies that confine themselves to studying political cycles within an electoral system. Secondly, the study was novel in using for the first time, a dynamic factor model in estimating and extracting political shocks. On a third note, this study was also novel in characterising the business cycle properties of political shocks and then quantifying its magnitude among other sources of potential shocks to the Nigerian economy.

6.2 Major Findings

Chapters 3 and 4 are the primary source of findings in this study. The stylized facts taking on the requisite descriptive analysis, established among other facts, that politics indeed was a determinant of economic outcome.

On the other hand, the study present two sets of estimation results for the Univariate ARIMA and Multivariate Dynamic Factor Models, respectively. In answering the first research question 'Do political cycles exist in the Nigerian economy? The ARIMA model was used to test for this phenomenon in four separate macroeconomic variables- RGDP, GE, MS and ED. An implication of using these four variables, is that political cycles were tested in, policy variable- GE, MS and ED; and aggregate economic performance- RGDP. Estimated results revealed tha political cycles existed in all the variables. This finding conformed with Tarawalie et al (undated), who used Univariate ARIMA model to test for conventional political cycles on democratic Nigeria (1999-2007).

In another manner, the Multivariate dynamic factor technique was used to answer the second question posed by this thesis: 'What are the business cycle statistical properties of the political cycles?' business cycle moments such as mean, standard deviation (measure of volatility), autocorrelation (measure of persistence) and correlation (measure of co-movements) were examined using the political shocks extracted from the dynamic factor model. The results showed that political shock was not subject to high fluctuation; by measure of persistence, they were not strong enough to qualify as cycles. By means of co-movement, it was seen that political shocks produced a countercyclical movement in RGDP and GE; and a procyclical impact on MS and ED. The mean value further established the non-volatility of the political shocks but gave a bewildering statistical fact that political shocks only contributed 0.2 per cent to economic fluctuations in Nigeria.

The implication of this finding is that although political cycle exists, they are not a major source of shocks to Nigeria's economy. This means that sources of shocks different from political regimes are the plausible major contributors to economic fluctuations in Nigeria.

6.3 Political Economy Implication of Findings and Recommendation

To re-iterate the main findings: Political cycle exists in both policy variables and the aggregate macro economy. Also, political shocks have contributed a statistical 0.2 per cent on average over the period 1960-2010 to aggregate economic fluctuations.

First, a political economic implication of the study of political shocks is considering if changes in successive government or political regimes impact on the economy in the short run. Our results show that indeed changes in successive governments in Nigeria since 1960-2010 has impacted on both macroeconomic policy variables and aggregate economy in the short run. This is not surprising as these policy variables GE, MS and ED are policy instruments under the direct influence of government

A related implication of evidence of political cycles in Nigeria, to the above, is confirming the existence of a weak political structure in Nigeria, with poor checks and balances that make governments with varying personally-defined ideologies (that are shaped by regime type, ethnic origin and current economic situations) prone to self-seeking activities.

Also, in line with Faal (2007), A broader implication of our findings points to the potential incompatibility between the pressures motivating political business cycles and ongoing efforts on economic and political reform, including long term economic targets.

Furthermore, the small magnitude of political shocks deduced from the business cycle properties of the political cycle, implies that other source of shocks other than political shocks are relevant in explaining short run outcomes (fluctuations) in Nigeria.

In another dimension, the insignificance of political shocks means that the aggregate economic performance of Nigeria over the study period was largely unaffected by changes in government activities in the short run, such that political instability and policy reversals has had no impact on the economy. However, this study argues that, it is more likely that an insignificant political shock is a pointer to the ineffectiveness of past government economic policies and plans.

Since the 1960s, successive governments in Nigeria embarked on specific policies ranging from the Import Substitution Strategy, the Indigenization Decree, Economic Stabilization Act

and the Structural Adjustment Programs, among others. The small magnitude of political shocks depicts that these policies have had only minimal real effects on the economy.

Based on the implications of the major findings of this study, it is necessary that political economic scholars and the government consider the following:

a. There is need for a critical, empirically-based review of the effect of past government specific-measures on the economy
b. The strength of the discretionary policy environment in which past policies were implemented, must be assessed and possible options of putting in place policy rules that guide implementation and assessment of policies be considered. this is for the purpose of strengthening the current policy making and implementation structures in Nigeria
c. Since politics are deduced to be negligible sources of shocks in this study, there is need to determine the major sources of shocks to the Nigerian economy, and thereby propose measure to mitigate short run fluctuations in Nigeria, for the purpose of enhancing macroeconomic stability.

6.4 Contribution to Knowledge

First of all, it is worthy of note that this study contributed to knowledge, by filling the following research gaps: First the study tested the existence of political business cycle outside a democratic or electoral framework. This is unlike existing studies that confine themselves to studying political cycles with an electoral system. Secondly, the study used for the first time a dynamic factor model in estimating and extracting political shocks. On a third note, this study was genuine in being the first to best of author's knowledge in characterising the business cycle properties of political shocks and then quantifying its magnitude among other sources of potential shocks to the Nigerian economy.

In another dimension, the study contributed to knowledge by adding to the sparse literature on political business cycle in Sub Saharan Africa and particularly, in Nigeria. Furthermore, some stylized facts on political economy in Nigeria were established.

6.5 Conclusion and Future Line of Research

In a political environment typified by weak political institutions; discretionary policymaking with no constraints on politicians; poor accountability, transparency and corruption; policy reversal, mistakes and abandonment, political cycles are expected to exist and its magnitude great. Therefore, this thesis finds that politically-induced fluctuation exist in both policy variables and the aggregate economy. Surprisingly, the study finds that politically induced cycles are only a small proportion of aggregate economic fluctuations in Nigeria. Then, it becomes interesting to investigate the magnitude of other potential source of shocks vis-a-vis political fluctuations.

From another angle, since the results in this study are statistically derived, as they are based on atheoretical estimation, it will be interesting to build theoretical models such as Dynamic Stochastic General equilibrium models where politics can be factored, in examining the existence of political cycles in Nigeria.

Furthermore, high frequency data prove to be more revealing in business cycle analysis than low frequency data, this study proposes that future research undertake the study of political cycles using high frequency data such as quarterly series.

In another light, it proves informative to ascertain the real weight of the political shock obtained from the dynamic factor model, by conducting comparative country-specific studies to ascertain its relative magnitude.

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Appendix One

DESCRIPTION OF VARIABLES

Real Gross Domestic Product (RGDP):

This is the value of total goods and services produced in the Nigerian economy in a given year and adjusted for price changes. It is measured in N' Million and captures aggregate economic activity in Nigeria

Government Expenditure (GE):

This is total federal spending of the Nigerian government in a given year. It comprises federal government recurrent (consumption) and capital (investment) expenditure. It is measured in N' Million and used to capture fiscal policy, in this study

Money Supply Ratio (MS):

This is broad money supply (M2) as per cent of GDP in a given year. It is measured in ratio and represents the monetary policy in this study

External Debt (ED):

This is Nigeria's external debt outstanding. It comprises debt owed multilateral agencies, Paris Club, London Club, Promissory notes and others. It capture federal policy or position on external debt

DUMP:

This is a dummy used to denote political regime change. In years when there was a change in government, dummy variable is denoted as 1 and years when there was no change in government, dummy variable is denoted 0. This is used to capture differing personal ideology.

DUME:

This is an ethnic-origin dummy. It defines the existence of differences in ideology between a Northern and Southern head of government. In years when a Southern head of government is in power, dummy takes a value of 1 and for Northern, dummy takes a value of 0

DUMR:

It is a political regime type dummy. It captures the existence of differences in ideologies between a military and civilian government. In years when a civilian is in power is dummy takes a value of 1 and for military rule, dummy takes a value of 0

DUMI:

This dummy captures the economic policy leaning of government, as either austere or expansionary. This dummy is derived using a modified misery index. In this case, inflation growth rate and fiscal balance growth rate are added, and their average found across political regimes. In order to capture each political regime appropriately, both variables in annual form, were converted to quarterly data, using the quadratic-match interpolation technique. Upon addition of quarterly growth of inflation rates and fiscal balance rate, regimes whose average values were negative (positive) were termed contraction (expansionary) government. The dummy is denoted as contraction (-1) and expansionary (+1)

Appendix Two

DATA USED FOR ANALYSIS

Year	RGDP	GE	MS	ED	DUMP	DUME	DUMR	DUMI	AVDUM
1960	2489	163.898	11.9839		1	1	1	1	1
1961	2501.2	167.482	12.1718	49.766	0	1	1	1	0.75
1962	2597.6	183.514	11.6547	71.582	0	1	1	1	0.75
1963	2825.6	220.338	11.4577	93.89	0	1	1	1	0.75
1964	2947.6	236.42	12.5651	101.894	0	1	1	1	0.75
1965	3146.8	255.144	13.2047	90.366	0	1	1	1	0.75

1966	3044.8	258.014	13.5166	104.718	1	0	0	-1	0
1967	2527.3	349.892	16.4759	131.994	0	0	0	1	0.25
1968	2543.8	556.194	15.8299	141.228	0	0	0	1	0.25
1969	3225.5	903.9	15.4512	175.8	0	0	0	1	0.25
1970	4219	997.2	14.9506	175	0	0	0	1	0.25
1971	4715.5	1463.6	14.6134	178.5	0	0	0	1	0.25
1972	4892.8	1529.2	14.6896	265.6	0	0	0	1	0.25
1973	5310	2740.6	14.6688	276.9	0	0	0	1	0.25
1974	15919.7	5942.6	9.31683	322.4	0	0	0	1	0.25
1975	27172	7856.7	14.1155	349.9	1	0	0	1	0.5
1976	29146.5	8823.8	16.9215	374.6	1	1	0	-1	0.25
1977	31520.3	8000	19.5017	365.1	0	1	0	-1	0
1978	29212.3	7406.7	21.4034	1252.1	0	1	0	-1	0
1979	29948	14968.5	21.8841	1611.5	1	0	1	1	0.75
1980	31546.8	11413.7	23.8889	1866.8	0	0	1	1	0.5
1981	205222	11923.2	30.3891	2331.2	0	0	1	1	0.5
1982	199685	9636.5	32.1724	8819.4	0	0	1	1	0.5
1983	185598	9927.6	33.306	10577.7	0	0	1	1	0.5
1984	183563	13041.1	33.722	14808.7	1	0	0	-1	0
1985	201036	16223.7	32.8372	17300.6	1	0	0	-1	0
1986	205971	22018.7	34.4287	41452.4	0	0	0	1	0.25
1987	204807	27749.5	26.2049	100789	0	0	0	1	0.25
1988	219876	41028.3	27.5779	133956	0	0	0	1	0.25
1989	236730	60268.2	21.1732	240394	0	0	0	1	0.25
1990	267550	66584.4	19.7559	298614	0	0	0	1	0.25
1991	265379	92797.4	24.1562	328454	0	0	0	1	0.25
1992	271366	191229	20.8617	544264	0	0	0	1	0.25

1993	274833	160893	24.1769	633144	1	0	0	1	0.5
1994	275451	248768	25.592	648813	0	0	0	-1	-0.25
1995	281407	337218	14.9539	716866	0	0	0	-1	-0.25
1996	293745	428215	12.7965	617320	0	0	0	-1	-0.25
1997	302023	487113	14.7496	595932	0	0	0	-1	-0.25
1998	310890	947690	18.0232	633017	1	0	0	-1	0
1999	312184	701059	19.69	2,577,374.40	1	1	1	-1	0.5
2000	329179	701,059.40	19.17	3,097,383.90	0	1	1	-1	0.25
2001	356994	1,018,025.60	26.86	3,176,291.00	0	1	1	-1	0.25
2002	433204	1,018,155.80	21.79	3,932,884.80	0	1	1	-1	0.25
2003	477533	1,225,965.90	23.01	4,478,329.30	0	1	1	-1	0.25
2004	527576	1,426,200.00	18.68	4,890,269.60	0	1	1	-1	0.25
2005	561931	1,822,100.00	18.1	2,695,072.20	0	1	1	-1	0.25
2006	595822	1,938,002.50	20.46	451462	0	1	1	-1	0.25
2007	634251	2,450,896.70	24.82	431080	1	0	1	-1	0.25
2008	672203	3,240,820.00	32.96	493180	0	0	1	1	0.5
2009	718977	3,452,990.80	37.96	590441	0	0	1	1	0.5
2010	776332	4,194,217.88	32.47	689845	1	1	1	1	1

Appendix Three

HODRICK-PRESCOTT DE-TRENDING

YEAR	LNRGDPC	LNGEC	LNMSC	LNEDC
1960	0.086212	0.267135	0.02494	0
1961	0.062473	0.124354	0.017653	-0.19999
1962	0.070798	0.048685	-0.04885	0.045224
1963	0.123091	0.057887	-0.08967	0.200205
1964	0.128977	-0.05633	-0.02179	0.169263
1965	0.150017	-0.18073	0.003827	-0.06046
1966	0.060029	-0.39056	0.00466	-0.02177

1967	-0.2022	-0.32996	0.182794	0.100408
1968	-0.29734	-0.13218	0.126702	0.056798
1969	-0.19208	0.070611	0.08941	0.16029
1970	-0.08807	-0.12516	0.044423	0.033103
1971	-0.17354	-0.04144	0.007674	-0.08137
1972	-0.36461	-0.29709	-0.00628	0.165289
1973	-0.5393	-0.00579	-0.0355	0.03571
1974	0.279984	0.493258	-0.52919	-0.00956
1975	0.525511	0.524669	-0.16852	-0.15731
1976	0.305101	0.425033	-0.05469	-0.35681
1977	0.095081	0.143114	0.011024	-0.6927
1978	-0.26639	-0.09056	0.023668	0.186231
1979	-0.52436	0.47772	-0.03431	0.047968
1980	-0.75024	0.087587	-0.02246	-0.22844
1981	0.85705	0.018719	0.15132	-0.45881
1982	0.592034	-0.31099	0.155112	0.39624
1983	0.315412	-0.41315	0.153398	0.090197
1984	0.135742	-0.2952	0.148037	-0.06679
1985	0.090318	-0.25823	0.122385	-0.40452
1986	0.006606	-0.16146	0.188035	-0.01732
1987	-0.08343	-0.16417	-0.05176	0.401746
1988	-0.07807	-0.02902	0.042834	0.244666
1989	-0.05515	0.082888	-0.17145	0.422403
1990	0.027761	-0.10137	-0.18862	0.271022
1991	-0.01111	-0.06006	0.06406	0.036763
1992	-0.01373	0.371298	-0.03224	0.248359
1993	-0.02305	-0.088	0.162919	0.139151

1994	-0.04263	0.068864	0.263751	-0.06945
1995	-0.04534	0.105174	-0.23602	-0.1823
1996	-0.03092	0.089909	-0.36603	-0.53018
1997	-0.0376	-0.02002	-0.21292	-0.75404
1998	-0.05043	0.422833	-0.01544	-0.87164
1999	-0.09626	-0.08422	0.058906	0.373473
2000	-0.10188	0.09697	0.009701	0.434516
2001	-0.08751	-0.08342	0.318756	0.386481
2002	0.032686	-0.07026	0.077405	0.585561
2003	0.052696	-0.08621	0.095718	0.764647
2004	0.072914	-0.00498	-0.15519	0.964961
2005	0.056107	-0.1046	-0.23802	0.536241
2006	0.035194	-0.0296	-0.17687	-1.04653
2007	0.018899	0.091583	-0.05329	-0.87534
2008	-0.00116	-0.00124	0.155066	-0.52276
2009	-0.01168	0.038426	0.219037	-0.12827
2010	-0.01261	-0.09076	-0.01412	0.239434

Appendix Four

RESULT OF UNIT ROOT TESTS AT LEVELS

1. RGDP

Augmented Dickey Fuller Test

```
. dfuller lnrgdpc, lag(1)

Augmented Dickey-Fuller test for unit root         Number of obs   =        49

                                 ------------ Interpolated Dickey-Fuller ------------
                 Test         1% Critical       5% Critical      10% Critical
               Statistic           Value             Value            Value
------------------------------------------------------------------------------
 Z(t)            -5.339            -3.587            -2.933           -2.601
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.0000
```

```
. dfuller lnrgdpc, lag(1) trend

Augmented Dickey-Fuller test for unit root         Number of obs   =        49

                                 ------------ Interpolated Dickey-Fuller ------------
                 Test         1% Critical       5% Critical      10% Critical
               Statistic           Value             Value            Value
------------------------------------------------------------------------------
 Z(t)            -5.282            -4.159            -3.504           -3.182
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.0001
```

Philip Perron Test

```
. pperron lnrgdpc, lag(1)

Phillips-Perron test for unit root                 Number of obs   =        50
                                                   Newey-West lags =         1

                                 ------------ Interpolated Dickey-Fuller ------------
                 Test         1% Critical       5% Critical      10% Critical
               Statistic           Value             Value            Value
------------------------------------------------------------------------------
 Z(rho)         -33.231           -18.900           -13.300          -10.700
 Z(t)            -4.716            -3.580            -2.930           -2.600
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.0001
```

```
. pperron lnrgdpc, lag(1) trend

Phillips-Perron test for unit root                 Number of obs   =        50
                                                   Newey-West lags =         1

                                 ------------ Interpolated Dickey-Fuller ------------
                 Test         1% Critical       5% Critical      10% Critical
               Statistic           Value             Value            Value
------------------------------------------------------------------------------
 Z(rho)         -33.227           -25.700           -19.800          -16.800
 Z(t)            -4.671            -4.150            -3.500           -3.180
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.0008
```

2. Government Expenditure

Augmented Dickey Fuller Test Results

```
. dfuller lngec, lag(1)

Augmented Dickey-Fuller test for unit root         Number of obs   =        49

                                 ------------ Interpolated Dickey-Fuller ------------
                 Test         1% Critical       5% Critical      10% Critical
               Statistic           Value             Value            Value
------------------------------------------------------------------------------
 Z(t)            -3.305            -3.587            -2.933           -2.601
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.0146
```

Philip Perron Test Results

```
. pperron lngec, lag(1)

Phillips-Perron test for unit root                Number of obs   =        50
                                                  Newey-West lags =         1

                                 ---------- Interpolated Dickey-Fuller ----------
                 Test            1% Critical       5% Critical      10% Critical
               Statistic             Value             Value            Value
------------------------------------------------------------------------------
 Z(rho)         -25.977            -18.900           -13.300          -10.700
 Z(t)            -4.217             -3.580            -2.930           -2.600
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.0006


. pperron lngec, lag(1) trend

Phillips-Perron test for unit root                Number of obs   =        50
                                                  Newey-West lags =         1

                                 ---------- Interpolated Dickey-Fuller ----------
                 Test            1% Critical       5% Critical      10% Critical
               Statistic             Value             Value            Value
------------------------------------------------------------------------------
 Z(rho)         -25.964            -25.700           -19.800          -16.800
 Z(t)            -4.177             -4.150            -3.500           -3.180
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.0048
```

3. Broad Money Supply Ratio

Augmented Dickey Fuller Tests

```
. dfuller lnmsc, lag(1)

Augmented Dickey-Fuller test for unit root        Number of obs   =        49

                                 ---------- Interpolated Dickey-Fuller ----------
                 Test            1% Critical       5% Critical      10% Critical
               Statistic             Value             Value            Value
------------------------------------------------------------------------------
 Z(t)           -4.311             -3.587            -2.933           -2.601
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.0004
```

```
. dfuller lnmsc, lag(1) trend

Augmented Dickey-Fuller test for unit root         Number of obs   =        49

                                 ------------ Interpolated Dickey-Fuller ------------
                 Test            1% Critical       5% Critical      10% Critical
               Statistic            Value             Value            Value
------------------------------------------------------------------------------
 Z(t)            -4.264             -4.159            -3.504           -3.182
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.0036
```

Philip Perron Test Results

```
. pperron lnmsc, lag(1)

Phillips-Perron test for unit root                 Number of obs   =        50
                                                   Newey-West lags =         1

                                 ------------ Interpolated Dickey-Fuller ------------
                 Test            1% Critical       5% Critical      10% Critical
               Statistic            Value             Value            Value
------------------------------------------------------------------------------
 Z(rho)         -29.697            -18.900           -13.300          -10.700
 Z(t)            -4.414             -3.580            -2.930           -2.600
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.0003
```

```
. pperron lnmsc, lag(1) trend

Phillips-Perron test for unit root                 Number of obs   =        50
                                                   Newey-West lags =         1

                                 ------------ Interpolated Dickey-Fuller ------------
                 Test            1% Critical       5% Critical      10% Critical
               Statistic            Value             Value            Value
------------------------------------------------------------------------------
 Z(rho)         -29.695            -25.700           -19.800          -16.800
 Z(t)            -4.371             -4.150            -3.500           -3.180
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.0024
```

4. External Debt

Augmented Dickey Fuller Tests

```
. dfuller lnedc, lag(1)

Augmented Dickey-Fuller test for unit root         Number of obs   =        49

                                 ------------ Interpolated Dickey-Fuller ------------
                 Test            1% Critical       5% Critical      10% Critical
               Statistic            Value             Value            Value
------------------------------------------------------------------------------
 Z(t)            -4.536             -3.587            -2.933           -2.601
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.0002
```

```
. dfuller lnedc, lag(1) trend

Augmented Dickey-Fuller test for unit root         Number of obs   =        49

                                 ------------ Interpolated Dickey-Fuller ------------
                 Test            1% Critical       5% Critical      10% Critical
               Statistic           Value             Value            Value
------------------------------------------------------------------------------
 Z(t)            -4.487            -4.159            -3.504           -3.182
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.0016
```

Philip Perron Tests

```
. pperron lnedc, lag(1)

Phillips-Perron test for unit root                 Number of obs   =        50
                                                   Newey-West lags =         1

                                 ------------ Interpolated Dickey-Fuller ------------
                 Test            1% Critical       5% Critical      10% Critical
               Statistic           Value             Value            Value
------------------------------------------------------------------------------
 Z(rho)          -26.344           -18.900           -13.300          -10.700
 Z(t)             -3.986            -3.580            -2.930           -2.600
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.0015
```

```
. pperron lnedc, lag(1) trend

Phillips-Perron test for unit root                 Number of obs   =        50
                                                   Newey-West lags =         1

                                 ------------ Interpolated Dickey-Fuller ------------
                 Test            1% Critical       5% Critical      10% Critical
               Statistic           Value             Value            Value
------------------------------------------------------------------------------
 Z(rho)          -26.340           -25.700           -19.800          -16.800
 Z(t)             -3.947            -4.150            -3.500           -3.180
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.0104
```

Appendix Five

RESULT OF ARIMA REGRESSION

1. RGDP

```
ARIMA regression

Sample:  1960 - 2010                            Number of obs      =        51
                                                 Wald chi2(7)       =    204.73
Log pseudolikelihood =  10.29609                 Prob > chi2        =    0.0000
```

lnrgdpc	Coef.	Semirobust Std. Err.	z	P>|z|	[95% Conf.	Interval]
lnrgdpc						
dump	.1038856	.0544706	1.91	0.056	-.0028749	.2106461
dume	-.1683594	.0718703	-2.34	0.019	-.3092226	-.0274962
dumr	.17804	.0757678	2.35	0.019	.0295378	.3265422
dumi	.0099159	.0227571	0.44	0.663	-.0346871	.0545189
_cons	-.0435606	.0212233	-2.05	0.040	-.0851574	-.0019637
ARMA						
ar						
L1.	-.639664	.2970888	-2.15	0.031	-1.221947	-.0573806
ma						
L1.	1.002458	.2247297	4.46	0.000	.5619957	1.44292
L2.	-.4025712	.1500743	-2.68	0.007	-.6967115	-.108431
L3.	-1.002459	.2247308	-4.46	0.000	-1.442923	-.5619947
L4.	-.5974309	.1500746	-3.98	0.000	-.8915718	-.30329
/sigma	.1871318	.0265644	7.04	0.000	.1350666	.239197

2. Government Expenditure

```
ARIMA regression

Sample:  1960 - 2010                            Number of obs      =        51
                                                 Wald chi2(11)      =  5.21e+11
Log pseudolikelihood =  24.32874                 Prob > chi2        =    0.0000
```

lngec	Coef.	Semirobust Std. Err.	z	P>|z|	[95% Conf.	Interval]
lngec						
dump	.0617181	.0664534	0.93	0.353	-.0685282	.1919644
dume	.0939361	.0905296	1.04	0.299	-.0834987	.2713709
dumr	.0397053	.0717797	0.55	0.580	-.1009803	.1803908
dumi	.0222405	.0097322	2.29	0.022	.0031658	.0413152
_cons	-.0509928	.0234879	-2.17	0.030	-.0970283	-.0049573
ARMA						
ar						
L1.	1.739283	.22078	7.88	0.000	1.306562	2.172004
L2.	-.8893972	.3049383	-2.92	0.004	-1.487065	-.2917292
L3.	-.1407018	.2251245	-0.62	0.532	-.5819378	.3005342
L4.	.4381726	.2529245	1.73	0.083	-.0575503	.9338955
L5.	-.3148601	.1865228	-1.69	0.091	-.680438	.0507178
ma						
L1.	-1.992835	.003265	-610.37	0.000	-1.999234	-1.986436
L2.	1.000005	3.40e-06	2.9e+05	0.000	.9999981	1.000011
/sigma	.1342861	.0129741	10.35	0.000	.1088574	.1597148

.

3. Money Supply

ARIMA regression

Sample: 1960 - 2010 — Number of obs = 51
Wald chi2(7) = 532.98
Log pseudolikelihood = 34.85943 — Prob > chi2 = 0.0000

lnmsc	Coef.	Semirobust Std. Err.	z	P>|z|	[95% Conf.	Interval]
lnmsc						
dump	-.0123912	.0454455	-0.27	0.785	-.1014627	.0766803
dume	-.1196216	.0666692	-1.79	0.073	-.2502909	.0110476
dumr	.1137695	.0698788	1.63	0.104	-.0231905	.2507294
dumi	.0150371	.011375	1.32	0.186	-.0072575	.0373316
_cons	-.0081837	.0192479	-0.43	0.671	-.0459089	.0295414
ARMA						
ar						
L1.	1.274294	.2102512	6.06	0.000	.8622096	1.686379
L2.	-.6297946	.2232369	-2.82	0.005	-1.067331	-.1922583
ma						
L1.	-1.136427	.3722779	-3.05	0.002	-1.866078	-.4067757
L2.	.1364274	.3722825	0.37	0.714	-.5932328	.8660877
/sigma	.1176942	.0161812	7.27	0.000	.0859796	.1494088

4. External Debt

ARIMA regression

Sample: 1960 - 2010 — Number of obs = 51
Wald chi2(10) = 5.49e+08
Log pseudolikelihood = -7.020137 — Prob > chi2 = 0.0000

lnedc	Coef.	Semirobust Std. Err.	z	P>|z|	[95% Conf.	Interval]
lnedc						
dump	.1626149	.0746354	2.18	0.029	.0163322	.3088977
dume	.2103041	.2093187	1.00	0.315	-.199953	.6205612
dumr	.0715057	.2132869	0.34	0.737	-.3465288	.4895403
dumi	.0508202	.0429109	1.18	0.236	-.0332837	.1349241
_cons	-.1290465	.0694178	-1.86	0.063	-.2651029	.0070099
ARMA						
ar						
L1.	.0768595	.2582523	0.30	0.766	-.4293056	.5830247
ma						
L1.	.422603	.173215	2.44	0.015	.0831079	.7620982
L2.	.1216539	.0883494	1.38	0.169	-.0515078	.2948157
L3.	-.1056575	.0732472	-1.44	0.149	-.2492194	.0379045
L4.	.0812937	.0739515	1.10	0.272	-.0636486	.226236
L5.	-.0508028	.0866597	-0.59	0.558	-.2206527	.1190471
L6.	-.6849707	.0944168	-7.25	0.000	-.8700242	-.4999171
L7.	-.7841184	.1060134	-7.40	0.000	-.9919008	-.576336
/sigma	.2482255	.026854	9.24	0.000	.1955926	.3008584

Appendix Six

RESULT OF DYNAMIC FACTOR MODEL

Dynamic-factor model

Sample: 1960 - 2010 — Number of obs = 51
Wald chi2(5) = 128.72
Log likelihood = 13.035468 — Prob > chi2 = 0.0000

	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
AVDUM						
AVDUM L1.	.6532151	.1128032	5.79	0.000	.4321249	.8743052
lnrgdpc						
AVDUM	-.0016813	.041946	-0.04	0.968	-.0838939	.0805313
_cons	.0000383	.0363856	0.00	0.999	-.0712761	.0713527
lngec						
AVDUM	-.1329819	.0372713	-3.57	0.000	-.2060322	-.0599315
_cons	.0030305	.0538773	0.06	0.955	-.102567	.108628
lnmsc						
AVDUM	.0656446	.0231282	2.84	0.005	.020314	.1109751
_cons	-.0014959	.0319981	-0.05	0.963	-.0642111	.0612192
lnedc						
AVDUM	.0995619	.043284	2.30	0.021	.0147268	.1843969
_cons	-.0022689	.0634679	-0.04	0.971	-.1266636	.1221258
var(e.lnrg~c)	.0656165	.0203884	3.22	0.001	.025656	.1055771
var(e.lngec)	.0157381	.0104597	1.50	0.132	-.0047626	.0362388
var(e.lnmsc)	.0167687	.0047138	3.56	0.000	.0075298	.0260077
var(e.lnedc)	.149015	.0319476	4.66	0.000	.086399	.2116311

Appendix Seven

EXTRACTED POLITICAL SHOCK COMPONENT

YEAR	FACT
1960	0
1961	-0.69849
1962	-0.48662
1963	-0.28076
1964	-0.26988
1965	0.077764
1966	0.445721
1967	1.04862
1968	1.271856
1969	0.778813
1970	0.149053
1971	0.393923
1972	0.188875
1973	0.788221
1974	0.174579
1975	-1.74134
1976	-1.90473
1977	-1.61326
1978	-0.85314
1979	0.076884
1980	-1.15765
1981	-0.55255
1982	-0.10263

1983	0.968996
1984	1.414541
1985	1.202937
1986	0.970273
1987	0.829014
1988	0.614192
1989	0.312678
1990	-0.2351
1991	0.028382
1992	0.230162
1993	-0.82763
1994	0.221671
1995	0.169178
1996	-0.51079
1997	-0.84923
1998	-0.53739
1999	-1.33085
2000	0.020551
2001	-0.13422
2002	0.599129
2003	0.511203
2004	0.582939
2005	0.162234
2006	0.12688
2007	-0.29559
2008	-0.51826
2009	-0.04805

2010 0.11624

Appendix Eight

BUSINESS CYCLE MOMENTS OF POLITICAL SHOCK COMPONENT

Volatility

Mean estimation Number of obs = 50

	Mean	Std. Err.	[95% Conf.	Interval]
factd	.0023248	.0872122	-.1729346	.1775842

Persistence

```
. corrgram factd
```

LAG	AC	PAC	Q	Prob>Q	[Autocorrelation]	[Partial Autocor]
1	-0.0597	-0.0596	.18899	0.6638		
2	-0.0439	-0.0478	.29319	0.8636		
3	-0.1545	-0.1627	1.6135	0.6563		
4	-0.1210	-0.1514	2.4417	0.6551		
5	0.0952	0.0660	2.9656	0.7053		
6	0.1583	0.1469	4.4462	0.6165		
7	-0.3018	-0.3404	9.9535	0.1912		
8	-0.1106	-0.1747	10.71	0.2187		
9	-0.1531	-0.1553	12.196	0.2025		
10	0.0203	-0.1029	12.223	0.2704		
11	0.0812	-0.1849	12.662	0.3160		
12	-0.0789	-0.2594	13.089	0.3626		
13	-0.0067	-0.0308	13.092	0.4408		
14	-0.0718	-0.2897	13.464	0.4904		
15	0.0967	-0.0480	14.159	0.5135		
16	0.0870	-0.2257	14.738	0.5439		
17	0.0542	-0.1538	14.969	0.5977		
18	0.0664	-0.1003	15.328	0.6394		
19	0.1189	0.2526	16.514	0.6228		
20	-0.1646	-0.4401	18.861	0.5309		
21	0.1758	0.3859	21.632	0.4210		
22	-0.0850	-0.6102	22.302	0.4420		
23	-0.0046	0.2487	22.305	0.5019		

Co-movement

```
. correlate factd lnrgdpc lngec lnmsc lnedc
(obs=50)
```

	factd	lnrgdpc	lngec	lnmsc	lnedc
factd	1.0000				
lnrgdpc	-0.0124	1.0000			
lngec	-0.2365	0.0192	1.0000		
lnmsc	0.3641	-0.0261	-0.4454	1.0000	
lnedc	0.1225	-0.0813	-0.2596	0.1204	1.0000

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