FISCAL POLICY AND THE CURRENT ACCOUNT DYNAMICS IN SUB SAHARAN AFRICA

By

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ABSTRACT

The Current Account Balance (CAB) of Sub-Sahara African (SSA) countries is characterised by persistent deficits, averaging -7.3%, -3.4%, and -2.4% as a percentage of Gross Domestic Product in 1981, 1995 and 2009, respectively. While there is a growing body of empirical literature on the determinants (focusing specifically on Real Exchange Rate (RER), external debt, Terms of Trade (TOT), among others) of deficit in the CAB, little attention has been devoted to the role of fiscal policy (FP). This study, therefore, examined the effects of FP (measured by government expenditure) on the CAB in 34 SSA countries covering the period between 1985 and 2009.

A dynamic open-economy model, predicated on an inter-temporal framework that considered the CAB as national savings (borrowing) vis-á-vis the rest of the world and as the outcome of the inter-temporal choices of households, firms and governments, was estimated with data from World Development Indicators. The model combined the effects of FP and other determinants as control variables (RER, external debt and TOT) on dynamic adjustments of the CAB. The system Generalised Method of Moments estimation (GMM) technique that took cognizance of feedback mechanisms, retained valuable information and controlled for the joint endogeneity of FP and other determinants in the presence of country-specific effects was employed. A Panel Vector Autoregressive (PVAR) model was estimated to quantify the adjustment path of the CAB to FP shocks with reference to impulse response functions and variance decompositions. Diagnostic tests (Hansen, PVAR stability condition and residual normality tests) were carried out to ascertain the robustness of the parameter estimates.

Expansionary FP significantly led to a deterioration of the CAB, through its effects on aggregate income and imports. The coefficient of government expenditure was -0.2, indicative of an inverse change in the CAB of up to one-fifth of any change in government expenditure, while the coefficient of TOT (0.01) implied approximately one-hundredth of the effect of a change in TOT on the CAB. The coefficient of external debt showed that when it increased by 10.0%, the CAB improved by 0.2% and the same percentage depreciation in RER improved it by 25.0%. These coefficients were statistically significant at the 5% level. The dynamic response of the CAB to a generalised one standard deviation increase in government expenditure was a deterioration of 0.9% in the first year and the effect fell rapidly to 0.5% and 0.2% in the third and sixth years, respectively. This implied that the CAB did not fully recover to its initial value after the sixth year. In the same years (first, third and

sixth), variations in the CAB were largely explained by its own innovations, which were 82.2%, 78.1% and 73.7%, while FP accounted for 3.5%, 3.1% and 2.8% of its variations.

Government expenditure significantly influenced the behaviour of the current account balance in sub-Sahara African countries. Accordingly, fiscal policy is important in the restoration of equilibrium in the external sector. Therefore, the government should restrain rapid increases in its expenditure in order to check balance of payments deficits.

Keywords: Current account balance, Generalised method of moments, Panel vector autoregressive, Open-economy model

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DEDICATION

This doctoral thesis is dedicated to:

God for his overwhelming love and gift of life;

Jesus Christ, my benevolent, dear Advocate and Saviour; and

Holy Spirit, my Friend, Teacher and Guardian.

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Babatunde Israel Ekundayo

CERTIFICATION

We certify that this work was carried out by Babatunde Israel Ekundayo in the Department of Economics, Faculty of the Social Science, University of Ibadan, Ibadan.

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LIST OF ABBREVIATIONS

ADF:	Augmented Dickey Fuller
ADI:	Africa Development Indicators
AIC:	Akaike Information Criterion
AID:	Foreign Aid
AIDS:	Acquired Immunodeficiency Syndrome
AR:	Autoregressive
CAB:	Current Account Balance
DFE:	Dynamic Fixed Effect
ECM:	Error Correction Model
ED	External Debts
FE:	Fixed Effect
FEVDs:	Forecast Error Variance Decompositions
FGLS:	Feasible Generalised Least Squares
GDP:	Gross Domestic Output
GGDP:	Output Growth.
GLS-RE:	Generalised Least Square Random-Effects
GMM:	Generalised Method of Moments
GOV:	Government Expenditure
HIV:	Human Immunodeficiency Virus
HQC:	Hannan Quinn Criterion
ICA:	Inter-temporal Current Account
IMF:	International Monetary Fund
IRFs:	Impulse Response Functions
LR:	Likelihood Ratio
MG:	Mean Group
OLS:	Ordinary Least Square
OPN:	Trade Openness
PA:	Population-Average
PMG:	Pooled Mean-Group
PP:	Philips- Perron
PVAR:	Panel Vector Autoregressive
RER:	The Real Exchange Rate.

SAV:	Domestic Savings.
SIC:	Schwarz Information Criterion
SSA:	Sub-Saharan Africa
SVAR:	Structural Vector Autoregressive
TOT:	Terms of Trade
UNISDR:	The United Nations Office for Disaster Risk Reduction
VAR:	Vector Autoregressive
WDI:	World Development Indicators

CHAPTER ONE
INTRODUCTION

1.1: Statement of the Problem

As a result of incessant global current account imbalances in the recent decades, economists and policymakers have shown rapt interest in the issue of the current account balance. The behaviour of the current account balance reveals important information about the performance of an economy. Indeed, the evolution of the current account balance is perceived by policymakers as an important indicator of the state of the external position of a country. Thus, understanding the elements that influence the current account balance can have important policy implications. Especially in an open economy, factors that influence the current account balance are of considerable interest.

The importance of the position of the current account balance has triggered both theoretical and empirical studies on its behaviour and determinants. Various determinants of the current account balance have been considered in the literature. The relationships between the current account balance and real exchange rate (Stockman and Svensson, 1987), terms of trade (Obstfeld, 1982), global productivity shock (Glick and Rogoff, 1995), among many others, have been examined in both theoretical and empirical literatures. For instance, on terms of trade, the Harberger-Laursen-Metzler effect[1] predicted that any adverse shock to the terms of trade would worsen the current account balance. On the other hand, Obstfeld and Rogoff (1995), using a framework that considered the current account balance as the outcome of forward-looking, dynamic savings and investment decisions, argued that the impact of terms of trade on the current account balance depends on the duration of the shock. However, very little attention has been devoted to understanding the relationship that exists between the current account balance and fiscal policy, most especially in developing economies.

A striking feature of Sub-Saharan African (SSA) countries is bloating fiscal size, often referred to as fiscal dominance (Kusi, 1996; Chete, 2000; Tchokote, 2005). For instance, in SSA countries, the total government expenditure as a percentage of GDP for the years 2000, 2002, 2007, 2009, and 2010 were 25.99%, 25.34%, 26.49%, 29.95%, and 30.7%,

[1] See Harberger (1950) as well as Laursen and Metzler (1950) for more on the relationship between terms of trade and the current account balance.

respectively. Furthermore, development in the external sector profile of some SSA countries also reveals a periodic deficit in the current account. For instance, the current account balance as a percentage of GDP for the years 1981, 1995 and 2009 were -7.3%, -3.4%, and -2.42%, respectively. The data for individual countries were consistent with this broader pattern. Besides, Calderon *et al*., (2002) and Adedeji *et al.*, (2005) argued that developing countries were characterised by an incessant increase in external debt, dismal rates of growth, heavy dependence on foreign aid, inadequate private and public savings, huge exportation of primary products and large distortions in the economy, to mention but a few.

For these reasons, it is necessary to ask the following conceptual and policy questions: What determines the current account behaviour in SSA and are the determinants consistent with underlying economic fundamentals? What is the relationship between the current account balance and fiscal policy in SSA economies? Addressing these and related issues constitutes the primary fulcrum of this study.

1.2: Objectives of the Study

The broad objective of this study is to examine the determinants of the current account balance, with special focus on the effects of fiscal policy on the dynamics of the current account balance in SSA countries. The specific objectives are twofold. These are to:

(i) examine the determinants of the current account balance in SSA; and

(ii) examine the relationship between fiscal policy and the current account balance in SSA.

1.3: Justification for the Research

The persistent current account imbalances in developing countries have excited considerable interest among researchers and policymakers, who desire to have a clearer understanding of the role of the current account balance in macroeconomic outcomes. For instance, Kusi (1995) investigated the effect of external shocks on the balance of payments in Southern Africa, where he observed that the external shock of the 1980s had limited effects on the growth and balance of payments of Southern African countries. In an attempt to understand the current account behaviour in Senegal, Kusi (1995) used a fiscal approach

to examine the impact of budget deficits on the current account deficit and found that the most effective way to adjust to external imbalance is through high growth and structural change supported by effective management of domestic absorption. In his study on the effect of budget deficits on the current account balance in Nigeria, Egwaikhide (1997) reported that it partly accounted for the current account imbalance. Tchokote (2005) studied the impact of the budget deficit on the current account balance in Cameroon and reported that there exist some degree of correlation between budget deficit and the current account deficit in Cameroon. Similarly, Nkuna and Kwalingana (2010) investigated the long-run and short-run determinants of the current account imbalances in Malawi based on saving-investment theory, there findings suggested that the government can directly control the behaviour of current account and, hence, improve the current account balance in the long run through policies that affect openness and external debt position. All these authors stressed the importance of government policies and intervention, in ensuring sustainable current account balance.

In spite of the relatively extensive body of empirical studies on the subject in SSA, there are only a few comprehensive cross-country studies that empirically analyse the effect of macroeconomic variables on the current account balance, and most especially, the effect of fiscal policy. This lack of cross-country empirical evidence is surprising given the fact that the position of the current account is typically used as one of the main leading indicators for future behaviour of an economy and is part of the everyday decision process of policy makers. In the context of the fragility of the macroeconomic sphere of SSA countries, vivid grasp of the factors that affect the current account balance, in terms of magnitude as well as the direction of the effect, will be important for policymaking in the region. On this ground, this study explores this relationship in the context of SSA.

In addition, an in-depth examination of the relationship between fiscal policy and the current account balance could be of help in SSA, since the economies are plagued with fiscal dominance. Proper understanding of the relationship between fiscal policy and the current account balance is important for policymakers because of the insight if offered into the possibility of correcting the imbalance in the current account balance through fiscal policy. Although a number of authors have examined this relationship in some countries,

specific investigations into the effects of government size on the current account balance in SSA are sketchy at best. This study examined the phenomenon, covering the period 1985 to 2009. In addition to this, the study examined the dynamic relationships that exist between the current account balance and its other determinants in SSA.

Most of the methodologies adopted to empirically validate the behaviour of the current account balance to its determinants, focus on static framework with little attention to the dynamic process that may be responsible for the behaviour of the current account balance. This study, thus adopted methodologies that are capable of estimating the dynamic behaviour of the current account balance, taking key cognisance of the factors that could matter in determining the current account balance in SSA. The methodology of rendition in this thesis embraced the development of an empirically testable model within an Inter-temporal Current Account (ICA) framework that was modified to capture the salient determinants of the current account balance in SSA. The study used techniques of Panel Vector Autoregressive (PVAR), anchored on the study of Sims (1980), to analyse the impact of the fiscal shock (as well as other determinants of the current account balance) on the current account balance behaviour in SSA, Generalized Method of Moment (GMM) by Arellano and Bond (1991)and Dynamic Fixed Effect (DFE) for the pooled analysis and the Pedroni panel cointegration test, as propounded by Pedroni (1999, 2004).The results from the analysis carried out in this thesis provide critical input into the formulation of a policy framework that could assist in reducing the current account deficits to sustainable levels as well as adjusting the fiscal policy such that both internal and external balance can be achieved.

Another key contribution of this study includes the breadth of its empirical investigation in SSA, as regards both country coverage and variety of empirical techniques employed. The sample included more than 70 per cent of the countries in SSA. Of interest, is that the results from the techniques employed complement and corroborate each other.

1.4: Scope of the Study

This study focuses on the dynamics of the current account balance in SSA countries with special reference to fiscal policy over the period spanning 1985 to 2009. Annual time series data are pooled for thirty-four (34) SSA economies. The countries are Benin, Botswana,

Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Congo Republic (Congo Rep.), Cote d'Ivoire, Ethiopia, Gabon, The Gambia, Ghana, Guinea-Bissau, Kenya, Lesotho, Madagascar, Malawi, Mali, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Seychelles, South Africa, Sudan, Swaziland, Tanzania, Togo, Uganda and Zambia. The choice of these countries is informed by several factors. Aside from the broad rationale for pooling data, which is to gain efficiency, the choice of countries is guided by the desire to limit attention to sub-Saharan African countries and also by the availability of reliable data on macroeconomic variables employed in the study. Furthermore, the aspiration to reflect country differences in the region in terms of macroeconomic performance, resource abundance and development, also influenced the choices. Finally, the consideration to represent countries from the four sub-regions in SSA; West Africa, East Africa, Central Africa, and Southern Africa, is accounted for.

1.5: Outline of the Thesis

The rest of the thesis is organised into five chapters. Chapter two follows this introduction. It presents profiles of fiscal policy and the current account balance of the sampled SSA countries. Chapter three presents the literature review where the theoretical and empirical literature on fiscal policy and the current account balance as well as its other determinants are examined. Also examined in chapter three are methodological issues. Chapter four contains the theoretical framework, description of the various methodologies employed, and the estimation procedure, while chapter five reports the model estimation, evaluation, and interpretation of results. Finally, Chapter six summarises the major findings and the lessons for policy and brings the thesis to a conclusion.

CHAPTER TWO

PROFILES OF FISCAL POLICY AND THE CURRENT ACCOUNT BALANCE IN THE SELECTED SUB-SAHARAN AFRICA (SSA) COUNTRIES

2.1: Introduction

Sub-Saharan Africa (SSA) is the term that describes a significant part of Africa, which lies south of the Sahara desert and is geographically demarcated by the southern edge of the Sahara desert (see: Appendix B1). SSA has 46 countries which are further divided into four sub-regions; namely, Central Africa, East Africa, Southern Africa and West Africa[2]. The SSA countries are also reclassified into four sub-groups, which are oil-exporting countries, middle-income countries, low-income excluding fragile countries and fragile countries[3].

The region remains the least developed and poorest in the world[4]. As pointed out by Oyejide and Wangwe (1999), the region is characterised by low growth and widespread poverty. Several studies of the region reveal that the case was not so in the early 1960s when Africa grew significantly more rapidly than Asia. The growth recorded during this period could be traced to the growth in the agricultural sector, which was and is the major employer of labour as well as the main foreign exchange earner in most of the SSA countries. There was a significant change in the trend when the focus was shifted from agriculture in some countries, especially, due to the discovery and exploration of natural resources. Furthermore, some countries experienced governance crisis as well as natural and civil unrests during this period. The lack of visionary and committed leadership that led to structural imbalance in the economy has also been identified as one of the causes of the plummeted growth witnessed during this era (See: Ogunleye, 2008).

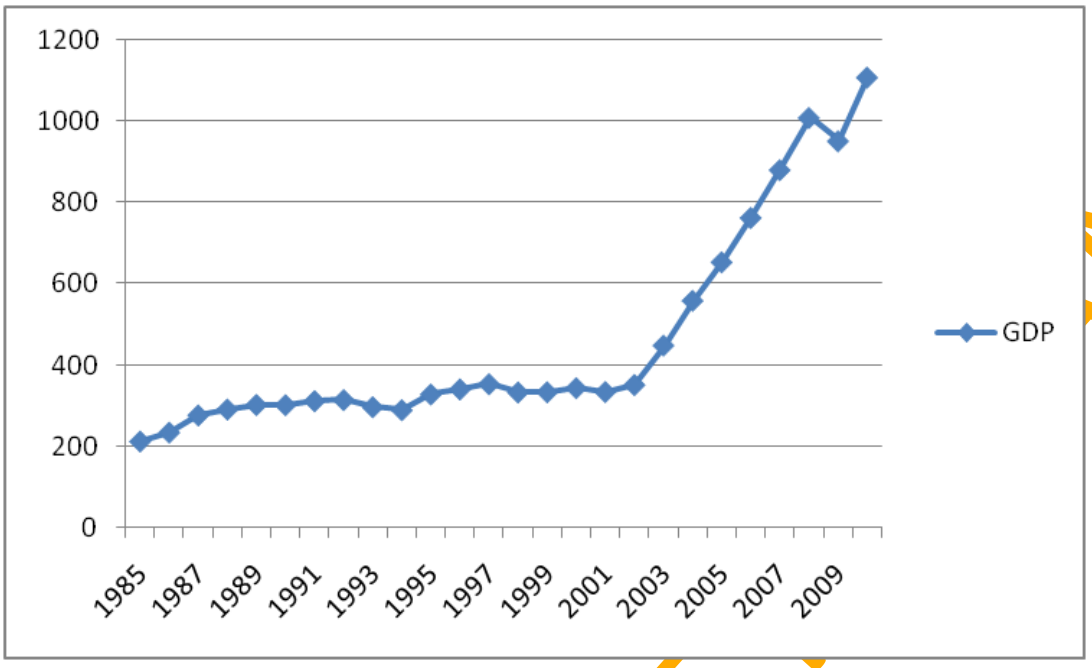
This chapter reviews the profiles of fiscal policy, the current account balance and the other determinants of the current account balance in the selected SSA countries. Broadly, the chapter is presented in two parts. The first part presents a general overview of fiscal policy and the current account balance in the SSA countries. The second part highlights the similarities and differences in the features of fiscal policy and current account behaviour in the sampled economies.

[2] See Appendix B2 for the full list of the countries that are under each of the sub-regional classification
[3] See Appendix B3 for the full list of the classification of SSA by IMF as regards the re-classification into the four groups.
[4] See Appendix B4: Regional share of World Real GDP, 1995-2009

2.2: The Macroeconomic Performances in sub-Saharan Africa Economies

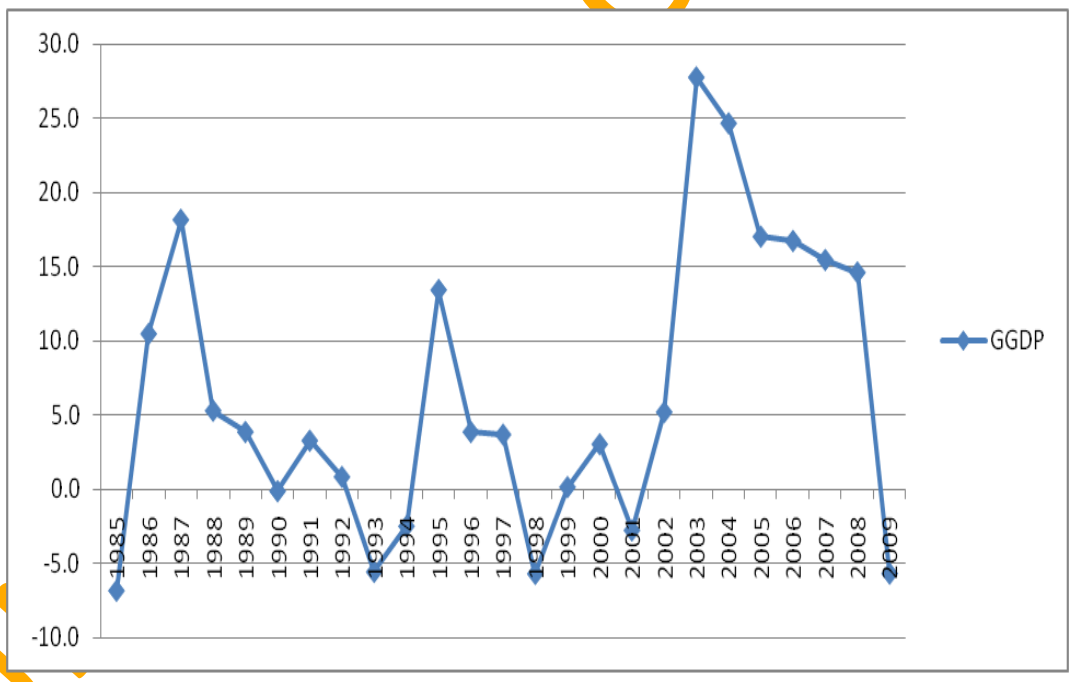
Economic performance in the SSA countries, measured in terms of nominal gross domestic product, has increased over the years, although in some years there were slumped in aggregate demand. The aggregate output in 1985 stood at US$211.1 billion and rose from US$301.3 billion in 1989 to US$313.3 billion in 1992 and thereafter fell to US$288.5 billion in 1994. There was significant improvement in aggregate demand in the region in 1997 when the nominal gross domestic product rose to US$353.4 billion. It was relatively stable from 1997 through 2002 ranging between US$353.4 and US$350.7 billion. It rose to US$448.03 billion in 2003, thereafter; rising to US$653.7 billion in 2005. Aggregate output increased to US$1009.8 billion in 2008, which was the highest during the period covered by this study (see: Figure 2.1).

The growth rate of the nominal output was volatile, ranging between -6.8% (1985) and 27.8% (2003). The growth rate of the output in SSA was negative in 1985 (-6.8%), 1990 (-0.1%), 1993 (-5.6%), 1994 (-2.5%), 1998 (-5.7%), 2001 (-2.8%) and in 2009 (-5.7%). It recorded positive growth in other years with 0.1% (1999) being the lowest positive growth rate observed and 27.8% (2008) the highest (see Figure 2.2).



Source: Drawn with data from WDI (2010)

Figure 2. 1: Gross Domest product (GDP) in SSA (US Billon $)



Source: Drawn with data from WDI (2010)

Figure 2. 2: Growth Rate of Gross Domestic Product (GGDP) in SSA

Table 2. 1: Real GDP Growth (Per cent)

	2004–08	2004	2005	2006	2007	2008	2009
Sub-Saharan Africa	6.4	7	6.2	6.4	7	5.6	2.7
Median	5	4.5	4.9	5.2	5.1	5.2	3.1
Excluding Nigeria and South Africa	7.2	7.1	7.1	7	8	6.8	3.5
Oil-importing countries	5.5	5.1	5.6	5.8	6	4.9	1.7
Excluding South Africa	6	5.7	6	6.1	6.3	5.9	4.2
CFA franc zone	4.6	7.3	4.7	2.7	3.9	4.5	1.8
WAEMU	3.7	2.9	4.7	3.3	3.2	4.4	2.9
CEMAC	5.6	11.8	4.7	2	4.7	4.7	0.5
EAC-5	6.7	6.2	7.2	7.3	7.2	5.7	5.1
ECOWAS	6.1	7.9	5.2	5.4	6	5.8	5.5
SADC	6.4	5.6	6.5	7.1	7.6	5.3	0.2
SACU	4.9	4.8	5	5.6	5.5	3.6	-1.6
COMESA (SSA members)	6.9	6.3	7	7.2	7.7	6.3	5.5
MDRI countries	6.7	6.1	6.9	6.6	6.5	7.2	5.1
Countries with conventional exchange rate pegs	4.6	7.2	4.5	2.9	4	4.3	1.7
Countries without conventional exchange rate pegs	6.9	7	6.6	7.1	7.7	6	2.9

Source: IMF World Economic and Financial Surveys, Regional Economic Outlook SSA (2013)

The 1980s, appeared not to be a very impressive decade in the region. There was a drastic drop in the nominal GDP in 1985, which was US$211.5 billion, the lowest of the 1980s. One of the major factors that was likely responsible for this slump was the governance crisis that disturbed most countries in the region during this period. This lack of visionary and committed leadership led to structural imbalance in the economies of SSA (Ogunleye, 2008). In most of the countries, policy reversals occurred because the economic policies implemented were not tailored to the needs of the various economies in the region. Thus, the need for a bailout necessitated the intervention of the World Bank/IMF-induced Structural Adjustment Programme (SAP).

Following the introduction of SAP in the early 1980s in some SSA economies, government size in the region rose from US$32.16 billion in 1985 to US$51.18 in 1989 and thereafter increased to US$56.83 billion in 1991, representing 17.7%, 17.1% and 18% of the Gross Domestic Product (GDP), respectively. There was a noticeable expansion in aggregate demand, led by growth in government expenditure. The expanded expenditure experienced in the region during this period could be adduced to the urgent need to finance post-war developments, particularly in some countries and the need to invest in social, physical and economic infrastructures.

In 1994, government expenditure of SSA countries was US$49.9 billion. However, it rose to US$55.5 billion in 1997, due to the need to stimulate aggregate demand, but later plunged to US$47.8 billion in 2001. Thereafter, the government expenditure surged in leaps and bounds. It rose from US$67.6 billion in 2003 to US$105.6 billion in 2006. Despite the financial crisis witnessed in 2008, the government expenditure in the region went up substantially. It had risen to US$124.65 billion in 2008. Furthermore, it was US$131.7 billion in 2009 and US$ 153 billion in 2010 representing 16.3% and 17% of the GDP, respectively.

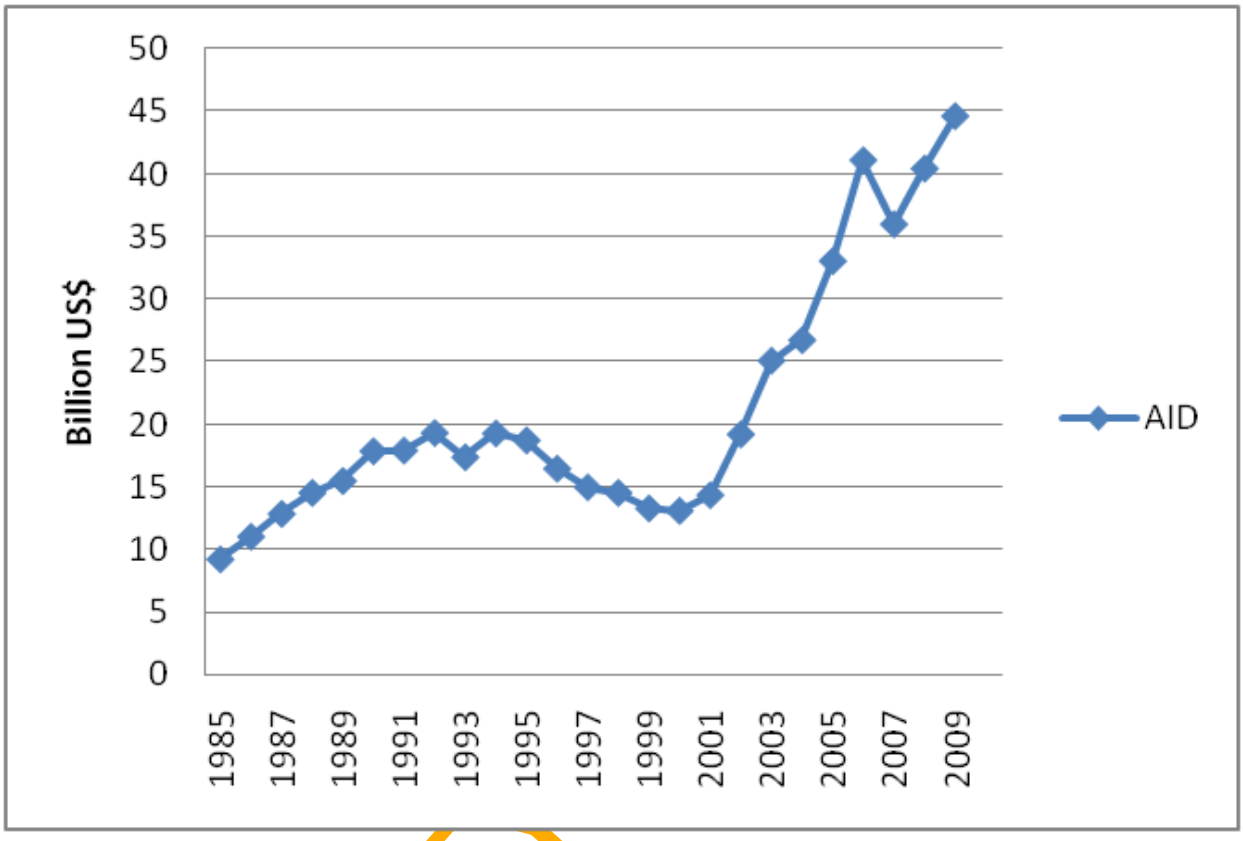
Table 2. 2: The Average Position of Output Growth in the Selected African Countries

Growth Rate of Gross Domestic Product	1985-89	1990-94	1995-99	2000-04	2005-09	1985-2009
West African Countries						
Benin	1.75	3.97	5.11	4.46	4.10	3.88
Burkina Faso	4.84	2.70	7.55	5.17	4.79	5.01
Cape Verde	4.94	3.87	6.58	4.10	8.09	5.52
Cote d'Ivore	2.30	-0.14	5.38	-0.98	1.95	1.70
Gambia, The	3.22	2.64	3.58	4.39	3.48	3.46
Ghana	5.16	4.13	4.40	4.60	6.37	4.93
Guinea-Bissau	3.39	3.52	0.44	0.27	3.17	2.16
Mali	16.33	17.93	23.70	28.75	27.97	22.50
Niger	4.40	0.03	3.73	2.82	4.24	3.04
Nigeria	5.72	3.63	2.50	6.19	6.21	4.85
Senegal	3.18	0.88	4.55	4.20	3.71	3.30
Togo	3.67	-1.01	6.25	1.77	2.63	2.66
Southern African Countries						
Botswana	11.94	4.54	7.15	6.14	1.90	6.33
Lesotho	2.81	5.03	3.15	3.50	3.87	3.67
Madagascar	2.36	0.01	3.23	2.63	3.68	2.38
Malawi	2.10	1.31	6.96	1.86	6.46	3.74
Mauritius	7.37	5.47	4.85	4.62	3.92	5.25
Mozambique	5.62	3.24	7.85	7.14	7.53	6.28
Namibia	2.29	4.63	3.64	5.19	3.72	3.89
South Africa	1.50	0.20	2.59	3.61	3.67	2.31
Swaziland	10.03	4.12	3.31	3.86	2.28	4.72
Zambia	2.05	-0.82	1.56	4.45	5.97	2.64
East African Countries						
Burundi	5.38	-0.11	-2.75	1.85	3.53	1.58
Ethiopia	2.50	0.65	4.68	5.46	10.74	4.81
Kenya	5.66	1.56	2.92	2.59	4.68	3.48
Rwanda	2.86	-11.48	15.65	7.44	7.86	4.47
Seychelles	6.39	4.46	5.27	-1.11	4.97	4.00
Sudan	4.39	2.84	5.98	5.77	7.72	5.34
Tanzania	5.40	1.80	4.31	7.05	6.87	5.04
Uganda	3.13	6.04	7.73	6.07	8.30	6.25
East African Countries						
Cameroon	0.61	-3.74	4.57	4.09	2.78	1.66
Central Africa Republic	1.25	-0.78	3.36	-0.92	2.72	1.13
Congo, Rep	-0.70	-0.10	1.76	4.06	5.08	2.02
Gabon	0.22	3.17	1.78	0.76	2.13	1.61

Source: Computed from WDI Database (2010)

Ogunleye (2008) observed that prior to the wake of the financial crisis, which rocked the world economy, there was a significant economic growth in SSA, basically facilitated by improvements in terms of trade, growth of exports, debt relief under different initiatives, and increased aid and private inflows. However, the global financial crisis of 2008 affected the overall performance of fiscal policies in sub-Sahara African (SSA) countries. The crisis weakened domestic economic growth via reductions in exports, remittances, tourism, and foreign direct investment. However, reduction in commodity prices and lower economic activity as a result of the global economic meltdown further reduced government revenue, while there was pressure to maintain, even increase spending, as need requires. Some are of the view that public finances could further come under severe strain because of the impact of the financial crunch on aid flows (IMF, 2011).

Over the years, the inflow of foreign aid into the region has been encouraging. It was US$9.2 billion in 1985. It rose through US$15.47 billion in 1989 to US$19.3 billion in 1992. Thereafter, foreign aid inflow reduced to US$17.36 billion in 1993. It further reduced in 2000 to US$13.09 billion, although between 1993 and 2000, it got to a peak of US$19.27 billion in 1994 but afterwards persistently declined until 2001 when it rose to US$14.34 billion. Subsequently, it grew until 2006 when it reached US$41.1billion. Although it dropped to US$35.96 billion in 2007, it was US$40.4 billion in 2008 and US$44.59 billion in 2009, representing 4% and 4.7% of GDP, indicating a further increase in foreign aid into SSA despite the global financial crisis that rocked the world economy (see Figure 2.3).



Source: Drawn with data from WDI (2010)

Figure 2. 3: Foreign aid in sub-Sahara African countries

Table 2. 3: Official Grants (Per cent of GDP)

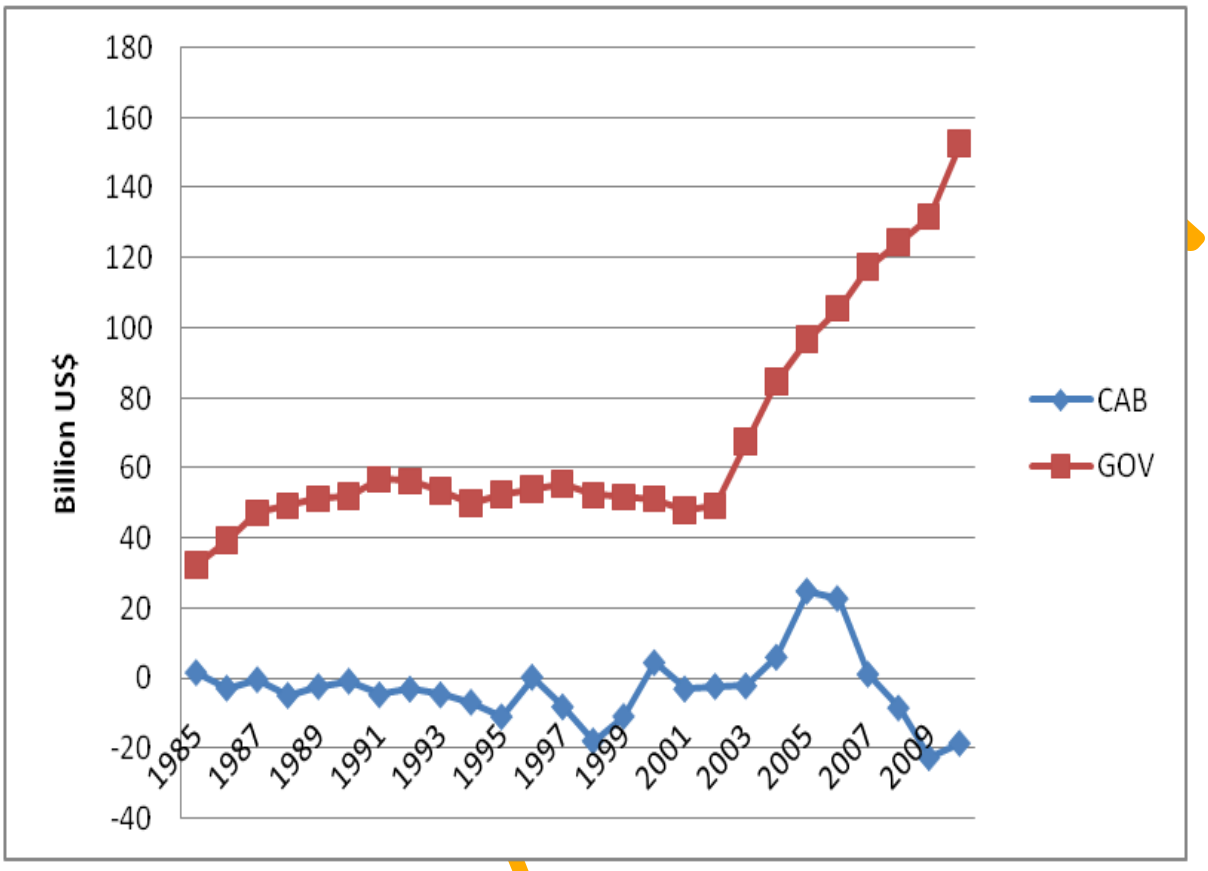
	2004–08	2004	2005	2006	2007	2008	2009
Sub-Saharan Africa	1	1	0.8	1.1	1.1	1.2	1.3
Median	2.5	3.2	2.1	2.5	2.4	2.2	2.6
Excluding Nigeria and South Africa	3	3.3	2.9	3.1	3	2.6	2.9
Oil-importing countries	1.3	1.3	1	1.3	1.5	1.5	1.6
Excluding South Africa	4	3.8	3.7	4.2	4.2	3.9	4.1
CFA franc zone	1.1	1	0.9	1	1.4	1.2	1.6
WAEMU	1.5	1.4	1.2	1.3	1.9	1.7	2.3
CEMAC	0.7	0.6	0.6	0.7	0.9	0.8	0.9
EAC-5	3.1	3.9	3.9	2.7	2.8	2.3	2.3
ECOWAS	1.2	1	0.8	1.4	1.3	1.4	1.6
SADC	0.6	0.5	0.3	0.6	0.7	0.7	0.8
SACU	-0.1	-0.1	-0.4	-0.1	0	-0.1	-0.2
COMESA (SSA members)	3.7	3.8	3.7	3.9	3.9	3.4	3.9
MDRI countries	3.8	3.9	3.8	3.9	4	3.5	3.8
Countries with conventional exchange rate pegs	2.3	2.3	2	2.3	2.6	2.3	2.9
Countries without conventional exchange rate pegs	0.7	0.7	0.5	0.8	0.8	0.9	0.9

Source: IMF World Economic and Financial Surveys, Regional Economic Outlook SSA (2013)

The negative effects of the credit crunch of 2008/9 were felt first in emerging and frontier markets, where financial sector linkages are better established, but later reached most countries in Africa. Specifically, the effect was more severe on South Africa given the fact that it has the most developed financial system in SSA. Other countries affected include Botswana, Cape Verde, Ghana, Kenya, Mauritius, Mozambique, Namibia, Nigeria, Seychelles, Tanzania, Uganda, and Zambia, given their well-functioning stock exchanges and few restrictions on capital repatriation.

The current account balance registered a substantial deficit in the region over the study period. It was US$1.53 billion in 1985; however, it recorded deficits in the subsequent years until 1996 when it was US$193.9 million. It remained in deficit again in 1998 (US$-18.03 billion) and other surplus was recorded in 2000 when the current account balance in the region amounted to US$ 4.37 billion, representing about 1.27% of the GDP. It was in deficit thereafter until 2004 when it turned surplus. The current account balance reached its peak in sub-Saharan Africa in 2005 when it amounted to US$24.81 billion, representing approximately 3.8% of the GDP. The current account balance fell to US$1.06 billion in 2007 and thereafter turned deficit in 2008, during the global financial crisis. It further went steeper to its lowest position in history in 2009, when it was US$-22.8 billion.

The episode of fiscal policy and the current account in SSA countries has been mixed over the period. The pictorial representation in Figure 2.5 showed that as government expenditure intensified in magnitude, especially during the 2000s, the current account balance tended towards the deficit.



Source: Drawn with data from WDI (2010)

Figure 2. 4: The Average Position of the Current Account Balance in the Selected African Countries

Table 2. 4: The Average Position of the Current Account Balance in the Selected African Countries

Current Account Balance (% of GDP)	1985-89	1990-94	1995-99	2000-04	2005-09	1985-2009
West African Countries						
Benin	-3.46	-3.81	-5.90	-5.75	-6.88	-5.09
Burkina Faso	-1.01	-1.73		-10.13	-14.58	-6.45
Cape Verde	-1.17	-4.78	-9.79	-11.62	-10.95	-7.93
Cote d'Ivore	-6.77	-7.76	-2.07	1.50	2.30	-2.56
The Gambia	5.82	4.64	-6.59	-3.41	-4.28	0.22
Ghana	-1.89	-5.51	-6.40	-3.94	-8.54	-5.26
Guinea-Bissau	-37.70	-27.28	-10.89	-0.91	-4.14	-17.99
Mali	-12.40	-8.19	-9.31	-8.27	-7.92	-9.22
Niger	-8.49	-7.60	-6.97	-6.74	-9.52	-7.79
Nigeria	2.63	3.24	-1.89	9.47	19.09	6.51
Senegal	-8.93	-6.42	-4.81	-6.15	-10.70	-7.26
Togo	-4.77	-6.91	-8.90	-10.39	-7.74	-7.74
Southern African Countries						
Botswana	14.08	5.46	8.75	6.40	9.17	8.77
Lesotho	-0.41	10.00	-34.61	3.39	3.93	-3.54
Madagascar	-5.16	-8.15	-6.41	-7.16	-11.00	-6.92
Malawi	-6.60	-10.81	-6.31	-5.08		-7.43
Mauritius	-0.05	-2.88	-0.94	2.08	-7.50	-1.86
Mozambique	-13.62	-18.23	-14.31	-16.59	-11.23	-14.79
Namibia		2.73	2.95	4.33	6.09	4.01
South Africa	3.03	1.25	-1.29	-0.64	-5.40	-0.61
Swaziland	5.57	0.18	-2.65	1.71	-7.18	-0.47
Zambia	-12.52	-13.56	-11.54	-14.88	-3.20	-10.74
East African Countries						
Burundi	-4.50	-3.86	-2.20	-4.43	-12.16	-5.43
Ethiopia	-1.53	-0.25	-1.81	-2.88	-8.48	-2.99
Kenya	-4.31	-4.36	-15.22	-0.97	-3.93	-5.76
Rwanda	-4.56	-0.50	-2.20	-5.37	-4.85	-3.50
Seychelles	-11.75	0.19	-11.62	-11.21	-27.14	-12.30
Sudan	-0.66	-5.11	-6.48	-4.73	-8.07	-5.01
Tanzania	-7.29	-15.73	-7.76	-2.84	-9.74	-8.86
Uganda	-2.14	-4.88	-4.77	-3.63	-5.19	-4.12
East African Countries						
Cameroon	-4.88	-3.05	-2.85	-3.36	-1.49	-3.13
Central Africa Republic	-4.95	-4.01				-4.48
Congo, Rep	-14.67	-22.07	-16.80	9.47	-4.37	-10.15
Gabon	-14.05	1.53	6.21	12.62	22.88	2.59

Source: Computed from WDI Database (2010)

Table 2. 5: Current Account (Per cent of GDP)

	2004–08	2004	2005	2006	2007	2008	2009
Sub-Saharan Africa	0.6	-1.5	-0.3	3.9	1.2	-0.3	-3.1
Median	-5.9	-4.5	-5.8	-5.3	-5.9	-8.1	-7.3
Excluding Nigeria and South Africa	-0.9	-2.9	-1.2	1.5	0.5	-2.6	-6.8
Oil-importing countries	-5.1	-3	-4.1	-4.6	-5.9	-7.7	-5.3
Excluding South Africa	-4.9	-3.1	-4.8	-3.7	-4.7	-8.2	-6.5
CFA franc zone	-1.6	-4.8	-1.7	0.3	-1.3	-0.6	-4
WAEMU	-5.4	-4.5	-5.7	-4	-6.1	-6.9	-3.5
CEMAC	2.1	-5.1	2.5	4.5	3.3	5.2	-4.5
EAC-5	-4.4	-0.7	-2.9	-5	-5.5	-7.6	-7.7
ECOWAS	6.7	1.3	3.1	14.7	8.2	6.2	3.3
SADC	-2.5	-2.6	-2.1	-1.2	-2.4	-4.4	-6
SACU	-4.1	-2.4	-2.5	-3.8	-5.5	-6.2	-4
COMESA (SSA members)	-5.7	-3.1	-5.9	-5.4	-4.6	-9.3	-7.4
MDRI countries	-6.7	-5.2	-7.1	-5.6	-6.4	-9.2	-7.3
Countries with conventional exchange rate pegs	-1.1	-3.6	-1.3	1.1	-0.8	-0.7	-4.1
Countries without conventional exchange rate pegs	1	-1	0	4.5	1.6	0	-2.7

Source: IMF World Economic and Financial Surveys, Regional Economic Outlook SSA (2013)

Table 2. 6: The Average Position of Government Expenditure in the Selected African Countries

Government Expenditure (% of GDP)	1985-89	1990-94	1995-99	2000-04	2005-09	1985-2009
West African Countries						
Benin	-3.46	-3.81	-5.90	-5.75	-6.88	-5.09
Burkina Faso	-1.01	-1.73		-10.13	-14.58	-6.45
Cape Verde	-1.17	-4.78	-9.79	-11.62	-10.95	-7.93
Cote d'Ivore	-6.77	-7.76	-2.07	1.50	2.30	-2.56
The Gambia	5.82	4.64	-6.59	-3.41	-4.28	0.22
Ghana	-1.89	-5.51	-6.40	-3.94	-8.54	-5.26
Guinea-Bissau	-37.70	-27.28	-10.89	-0.91	-4.14	-17.99
Mali	-12.40	-8.19	-9.31	-8.27	-7.92	-9.22
Niger	-8.49	-7.60	-6.97	-6.74	-9.52	-7.79
Nigeria	2.63	3.24	-1.89	9.47	19.09	6.51
Senegal	-8.93	-6.42	-4.81	-6.15	-10.70	-7.26
Togo	-4.77	-6.91	-8.90	-10.39	-7.74	-7.74
Southern African Countries						
Botswana	24.08	26.20	27.14	21.89	21.02	24.07
Lesotho	27.16	30.72	36.50	37.74	41.71	34.77
Madagascar	8.93	7.96	7.86	8.49	10.57	8.76
Malawi	17.71	17.15	16.12	13.81	16.24	16.20
Mauritius	11.69	13.82	14.14	14.06	13.70	13.48
Mozambique	12.44	11.88	7.48	9.70	11.60	10.62
Namibia	29.84	31.88	30.12	22.08	20.86	26.96
South Africa	18.79	19.95	18.77	18.75	19.69	19.19
Swaziland	19.05	15.50	18.82	16.94	19.26	17.91
Zambia	19.94	19.48	15.98	12.79	10.42	15.72
East African Countries						
Burundi	9.65	15.75	18.22	21.07	27.63	17.21
Ethiopia	11.41	9.52	10.01	14.77	10.53	11.25
Kenya	18.16	16.15	15.51	16.82	17.14	16.76
Rwanda	12.58	12.44	10.49	13.50	16.41	13.08
Seychelles	34.50	29.01	28.92	25.06	16.49	26.80
Sudan	10.56	6.43	5.83	9.77	16.14	9.75
Tanzania		18.57	11.05	13.79	18.83	15.56
Uganda	9.31	9.78	12.39	15.30	12.85	11.93
Central African Countries						
Cameroon	10.80	12.12	9.10	10.01	9.60	10.39
Central Africa Republic	15.87	16.12	11.76	12.06	7.64	12.69
Congo, Rep	20.50	18.68	17.54	15.27	13.65	17.13
Gabon	20.94	14.09	12.21	10.27	9.11	13.32

Source: Computed from WDI Database (2010)

Table 2. 7: Government Expenditure (Per cent of GDP)

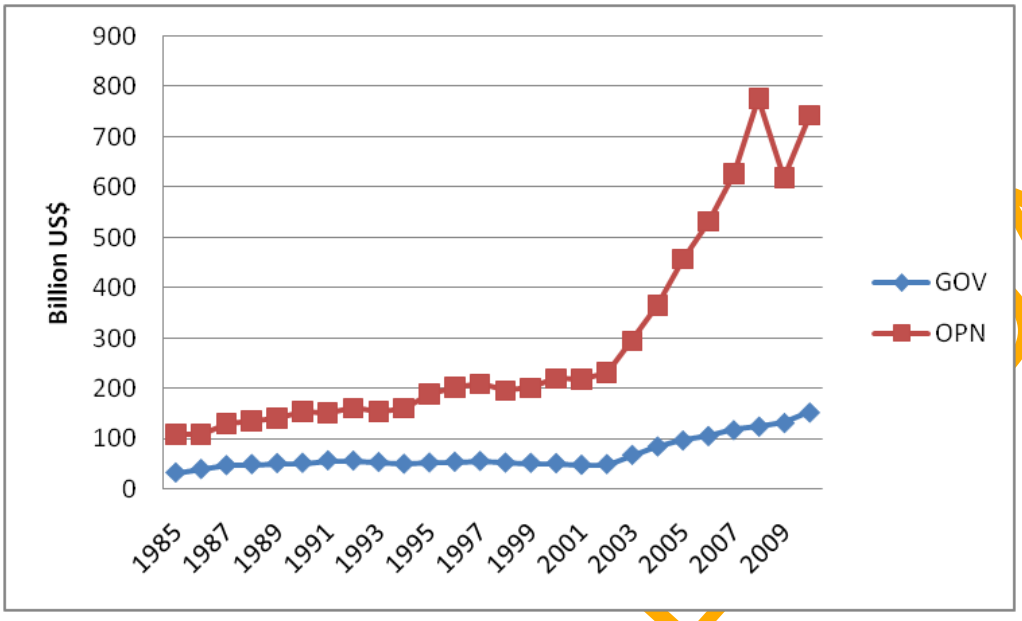
	2004–08	2004	2005	2006	2007	2008	2009
Sub-Saharan Africa	26.4	25.5	24.9	25.7	26.8	28.9	29.6
Median	23.6	22.8	23.2	23.3	23.8	24.7	26.1
Excluding Nigeria and South Africa	25.7	23.9	23.9	25	26.1	29.5	28.5
Oil-importing countries	26	25.3	25.4	26	26.2	27.1	28.9
Excluding South Africa	23.8	23.7	23.7	23.6	23.8	24.3	25.2
CFA franc zone	21	20.2	19.7	21.1	22.1	21.7	25.8
WAEMU	22.3	21.3	21.6	22.7	23.6	22.2	23.9
CEMAC	19.6	18.9	17.7	19.7	20.6	21.2	27.8
EAC-5	23.2	21.6	22.9	23	23.9	24.7	25.5
ECOWAS	23.8	24.6	22.4	23	24.4	24.7	25.8
SADC	29.2	27.1	27.3	28.5	29.4	34	33.5
SACU	28.4	27.1	27.2	28.1	28.6	30.8	33.6
COMESA (SSA members)	23.8	24.3	24.7	23.4	23.3	23.4	23.2
MDRI countries	22.1	21.4	21.5	22.2	22.7	22.6	22.9
Countries with conventional exchange rate pegs	22.5	22.1	21.5	22.5	23.3	22.9	27.1
Countries without conventional exchange rate pegs	27.2	26.3	25.7	26.5	27.6	30.3	30.3

Source: IMF World Economic and Financial Surveys, Regional Economic Outlook SSA (2013)

Trade openness[5] and the history of government size in SSA economies are depicted in Figure 2.6. A closer observation of Figure2.6 revealed that there was a relationship between the history of trade openness and government expenditure in the SSA. The co-movement was particularly striking over the period under consideration. Trade openness and government expenditure moved in the same direction in terms of magnitude and trend from 1985 till 1993 when the government expenditure rose slightly above trade openness, the pattern was also observed during 1997 till 1999 and later in 2007, 2008 and 2009. Trade openness, however surpassed government expenditure between 2004 and 2006 (see Figure 2.5).

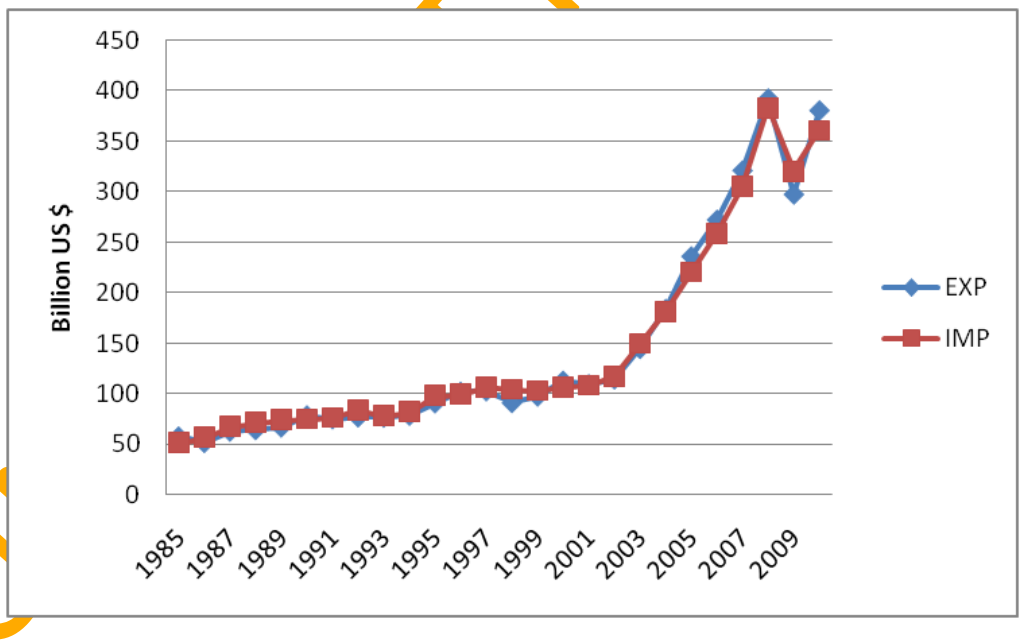
A decomposition of the trade openness in the region suggested that cumulatively both the import and export volumes were relatively the same over the years considered in this study. This is illustrated in Figure 2.6.

[5] Trade openness is measured as the sum of exports and imports of goods and services from World Development Indicators.



Source: Drawn with data from WDI (2010)

Figure 2. 5: Government Expenditure and Trade Openness in SSA



Source: Drawn with data from WDI (2010)

Figure 2. 6: Government Expenditure and Trade Openness in SSA

Table 2. 8: Exports of Goods and Services (Per cent of GDP)

	2004–08	2004	2005	2006	2007	2008	2009
Sub-Saharan Africa	37.4	33.6	36.2	37.5	38.6	41.2	32.7
Median	30.6	28.9	30	31.9	30.7	31.7	27.5
Excluding Nigeria and South Africa	41.1	36.5	40.3	42.2	42.8	43.7	35.4
Oil-importing countries	30.2	27.8	28.5	30.4	31.4	32.8	27.5
Excluding South Africa	30.3	29.5	29.9	30.9	31.3	30.1	27.8
CFA franc zone	44	39.9	43.6	45.9	44.5	45.9	39.1
WAEMU	31.4	31.3	31.5	32.5	30.7	31.1	31
CEMAC	56.3	49.6	56	59	57.7	59.3	47.9
EAC-5	21.8	19.9	21.5	22	22.4	23.2	22.4
ECOWAS	37.9	37.7	39.4	37.5	36.7	38.2	33.2
SADC	37.5	31.5	34.2	37.4	40	44.2	33.4
SACU	31.7	28.2	29.1	31.5	32.9	36.7	28.4
COMESA (SSA members)	29.4	29.1	28.6	28.8	31.3	29.3	25.1
MDRI countries	26.7	24.2	25	27.6	28.7	27.9	25.1
Countries with conventional exchange rate pegs	43.8	40.3	43.2	45.6	44.4	45.6	39.3
Countries without conventional exchange rate pegs	36.1	32.2	34.8	36	37.4	40.3	31.4

Source: IMF World Economic and Financial Surveys, Regional Economic Outlook SSA (2013)

Table 2. 9: Imports of Goods and Services (Per cent of GDP)

	2004–08	2004	2005	2006	2007	2008	2009
Sub-Saharan Africa	35.2	32.5	33.2	34.2	36.4	39.8	36
Median	39.4	37.5	37.6	39.8	40.5	41.4	41.5
Excluding Nigeria and South Africa	41	38.9	40.3	39.9	41.7	44.2	43.5
Oil-importing countries	35.9	31.4	33	35.9	37.8	41.6	34.7
Excluding South Africa	40.5	37.2	39.4	40.1	41.8	43.9	40.7
CFA franc zone	37.8	36.2	36.6	38.4	39.1	38.8	39.5
WAEMU	38.2	35.7	37.7	37.4	39.1	40.8	36.8
CEMAC	37.5	36.8	35.5	39.4	39	36.9	42.3
EAC-5	32.5	26.9	30.6	33.4	34.5	37.2	36.1
ECOWAS	32.8	33.1	32.3	30.4	32.9	35.4	33.4
SADC	36.8	32	33.4	35.7	38.7	44.1	37.3
SACU	33.4	28.6	29.4	33.5	35.4	40	30.5
COMESA (SSA members)	41.2	38	40.4	40.1	42.4	44.9	40.1
MDRI countries	37	32.9	35.2	36.7	39.3	41.1	37.5
Countries with conventional exchange rate pegs	40.5	39.6	39.5	40.8	41.4	41.2	42.2
Countries without conventional exchange rate pegs	34	30.9	31.8	32.8	35.4	39.4	34.6

Source: IMF World Economic and Financial Surveys, Regional Economic Outlook SSA (2013)

However, further inquiry into the components of each part revealed that a larger proportion of the export volume was from exportation of raw materials in terms of crude oil and unprocessed cash crops, among others.

The collective analysis of the behaviour of fiscal policy (represented here by government expenditure) and the current account balance in SSA concealed some striking features exhibited by individual countries in the region. In what follows, an attempt is made to highlight some of these features in terms of their similarities as well as differences in some selected countries out of the sample.

2.3: Stylised Facts on Similarities and Differences Exhibited by Fiscal Policy and the Current Account Balance in the SSA Countries

2.3.1: Patterns of Fiscal Policy

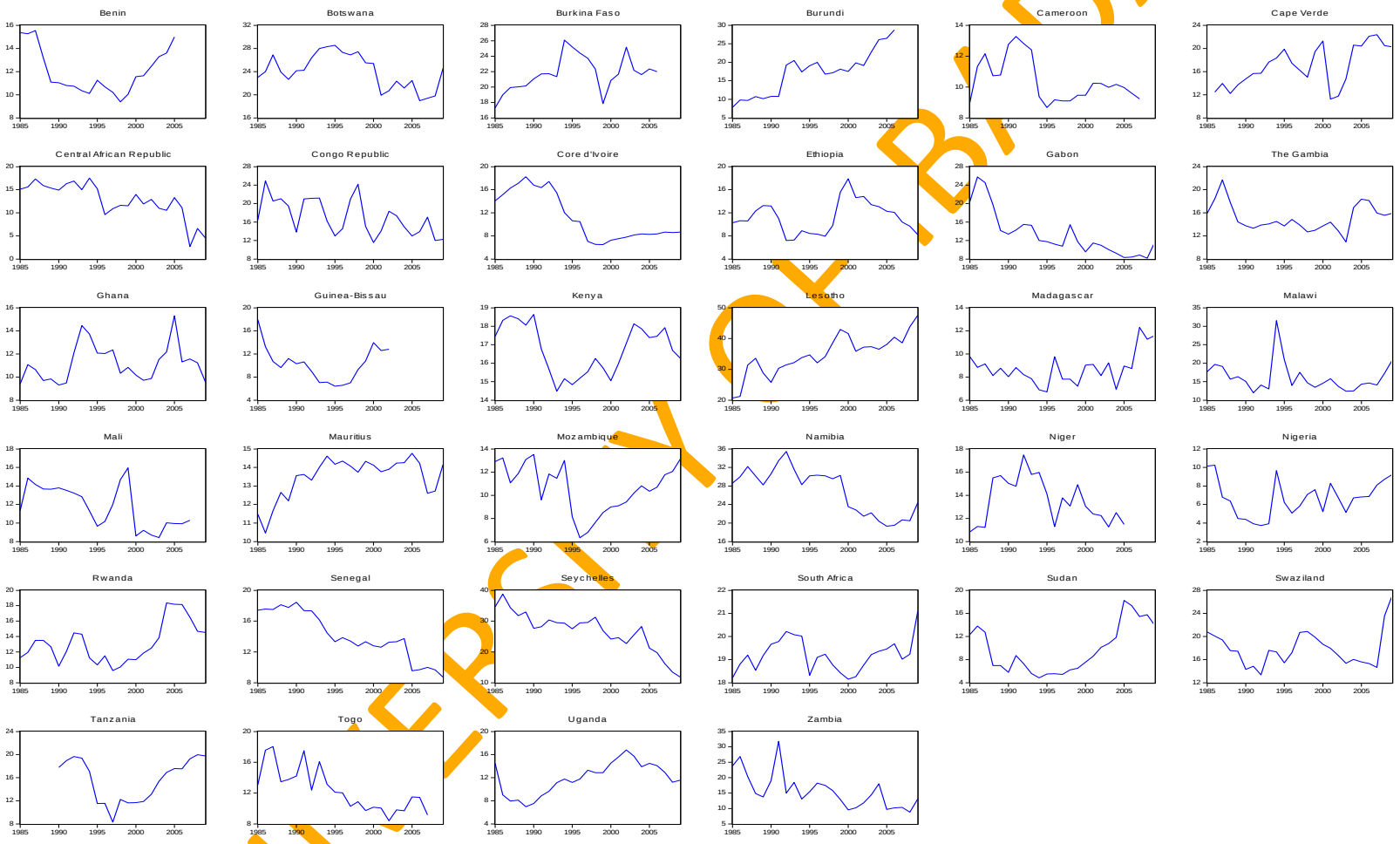
The patterns of government expenditure as a percentage of GDP in SSA countries are not homogeneous, although, some countries exhibited some similarities in their patterns. The evolution of government expenditure as percentage of GDP in SSA is depicted in Figure 2.7. The government expenditure as percentage of GDP in some countries was stable. This implies that, as government expenditure increased, output also increased, such that the rates of increase in both were roughly the same. Countries that experienced this kind of pattern include Mauritius, South Africa, Kenya, Madagascar, Cameroon and Senegal. Although there were some mild divergences in the rate of increase in output and government expenditure, the trend was approximately stable in some countries like Benin, Mozambique and The Gambia, among others. On the other end of the spectrum are those countries that experienced unsteady pattern in the ratio of government expenditure to GDP. Examples of such countries include Cape Verde, Congo Republic and Malawi.

The extent of increase in the size of government expenditure in some SSA countries outpaced that of GDP. Good examples of such countries are Burundi and Lesotho. The plausible explanation for this experience in Burundi includes the need for reconciliation, rehabilitation and reconstruction of the nation as a result of the aftermath of civil unrest. Furthermore, natural disasters experienced in the period also explained the development in Burundi. According to the statistics from The United Nations Office for Disaster Risk Reduction (UNISDR) in 2013, between 1980 and 2010, Burundi witnessed forty two (42)

natural disasters that resulted in no less than 908 deaths. About 4,568,742 people were affected by the disasters, which amount to average of 147,379 per year.

The case of Lesotho can be explained by the persistent natural disasters that the nation is prone to, which necessitate rehabilitation, development of infrastructure and disaster relief for flood victims. For instance, between 1980 and 2010, not less than fifteen natural disasters were witnessed resulting in the death of about ninety seven, but not less than 2 million people were affected by the disasters. Specifically, on average, about 64,418 people were affected by natural disasters on a yearly basis between 1980 and 2010 (UNISDR, 2013) in Lesotho. According to World Bank (2012), Lesotho is prone to natural disasters such as rockslides and flooding because of rugged mountain terrain, steep slopes abundance of water and high elevation. In addition to this, there is pressure on the government to focus on issues of income equality, Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome (HIV/AIDS), water resource management, transportation, and education.

The reverse was the case in some countries where the rate of increase in GDP outpaced that of government expenditure over the years, implying a downward trend in the curve of the government expenditure as percentage of GDP. Examples of such countries include Seychelles and Togo.



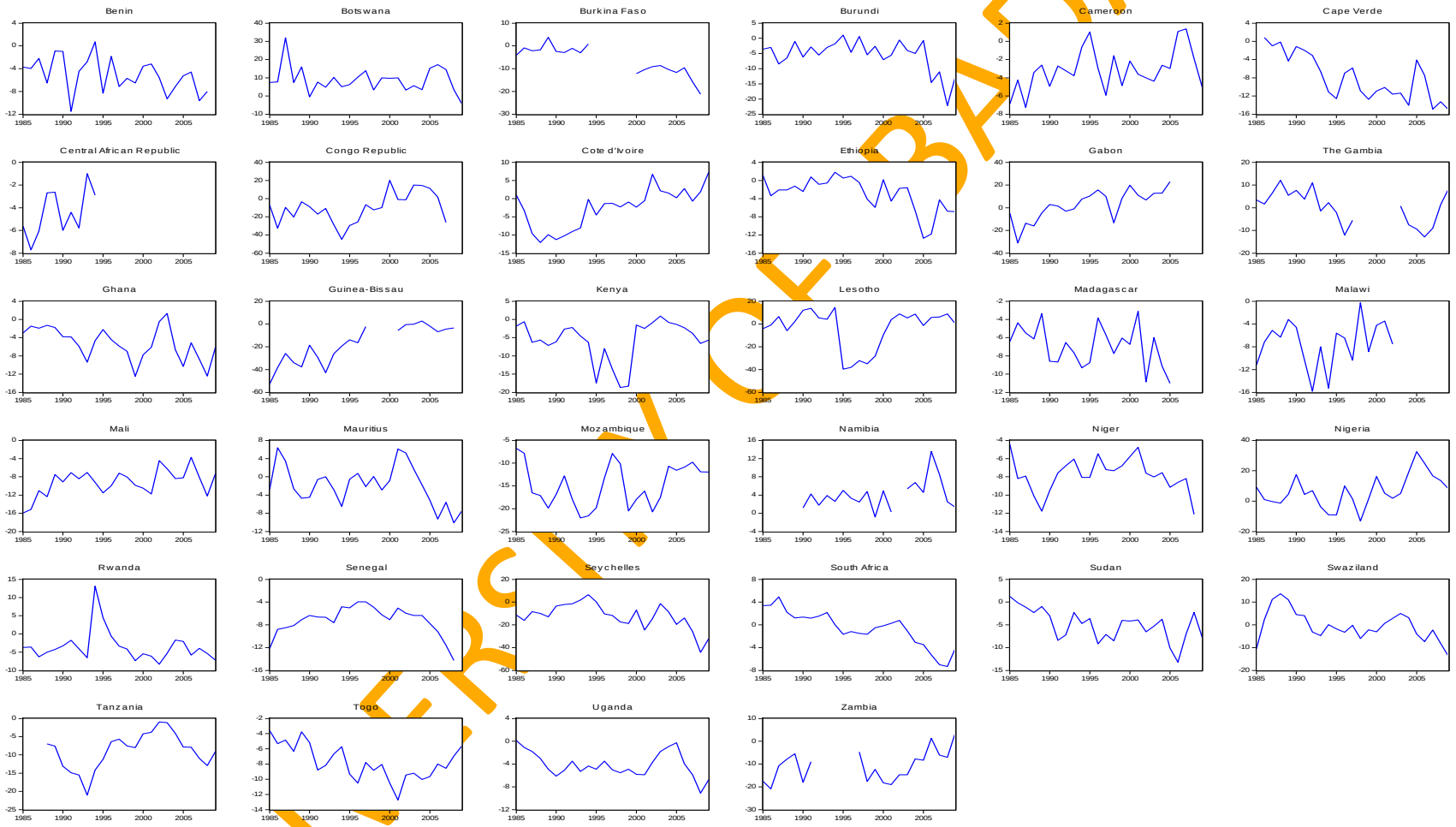
Source: Drawn with data from WDI (2010)

Figure 2. 7: The Trend of Government Expenditure (% of GDP) in the Selected Countries between 1985 and 2009

2.3.2: Patterns of the Current Account Balance[6]

Sub-Saharan African countries as a whole ran relatively persistent current account deficits over the period covered by this analysis. However, there are some similarities, as well as differences among countries, in the pattern exhibited by the current account balance in the region. Hence, it becomes imperative to observe these similarities and differences in the selected economies. The first to consider is Figure 2.8, which presents the current account balance as a percentage of each economy's GDP for the selected countries in SSA over the period 1985-2009. A glance at Figure 2.9 brings some features to the fore. Since the advent of Structural Adjustment Programmes (SAP), the SSA economies' current account balance has exhibited quite heterogeneous characteristics till date. Over the sample period, some countries ran a relatively stable and balanced current account for most of the period. Such countries include Benin, Burundi, Cameroon, Namibia and South Africa, to mention a few. On the other hand, some countries experienced diverse spikes in their current account balance over the sample period. Democratic Republic of Congo, The Gambia, Nigeria, Guinea-Bissau and Zambia, to mention a few, are good examples of such countries.

[6] See Appendix B8 to B13 for the pictorial representations of other determinants of the current account balance in sub-Saharan African countries. The determinants include trade openness, external debt, aid, real exchange rate, savings and growth rate of GDP.



Source: Drawn with data from WDI (2010)

Figure 2. 8: The Trend of Current Account Balance (% of GDP) in the Selected Countries between 1985 and 2009

Countries like the Democratic Republic of Congo, Mali, Togo, Guinea, Senegal, Seychelles and Madagascar are good examples of economies that had a persistent current account deficit. The cases of the Democratic Republic of Congo and Seychelles are of particular interest among this class, they experienced diverse perturbations in the evolution of their current account balance. Only a few a countries experienced current account surplus for most of the years considered in this study. Such countries include Botswana, Gabon, Nigeria, South Africa and Namibia. In Lesotho, the current account balance plunged in 1995 and the deficit persisted till 2000. Over the years, Guinea-Bissau and Gabon have been able to improve on their current account balance positions that were in deficit during the early period covered by this study.

2.4: Specific Experience of Fiscal Policy and the Current Account Balance in SSA

The following section highlights the peculiarity and nature of SSA countries when considered in terms of resource abundance and development. In more specific terms, this section considers the evolution of the government expenditure and the current account balance in some selected economies which include Kenya, Botswana, Cameroon, South Africa and Nigeria.

Almost all the countries in sub-Saharan Africa has one resource or the other. However, some have more resources than the others, and as such they are often referred to as resource abundant economies. The resource abundant economies in SSA have not been able to diversify their economies. The two fundamental symptoms that trail such economies are the heavy dependence on the extractive sector, to the detriment of other sectors, and the excessive expansion of the public sector. This began in most of these countries in the 1970's through 1980's when the over dependence on the extractive sector trickily lured the governments of the economies away from focusing on other sectors, especially agriculture, which is the largest employer of labour in the region given the basic agrarian structure of their economies. This became a problem as production could not match the pace of population growth, resulting in over dependence on importation of staples, raw materials, as well as of manufactured goods. This ultimately induced negative effect on trade openness, since the gains that were supposed to accrue to the region as a result of opening the economy were eroded by non-complimentary imported from other parts of the world.

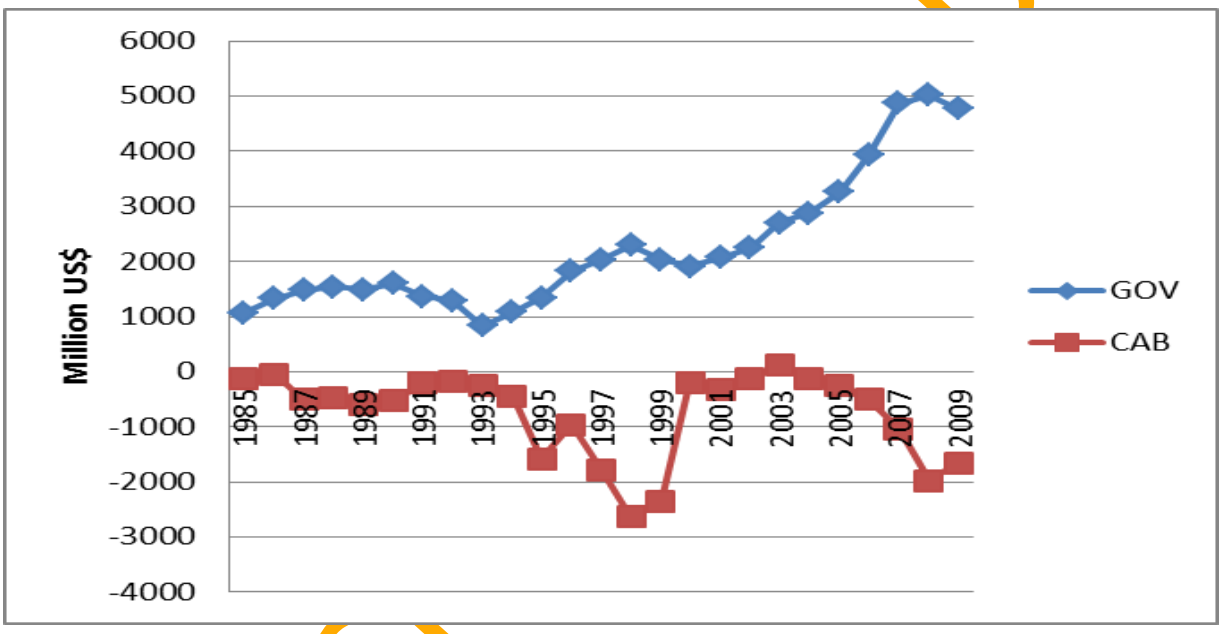
However, the recent development shows that some resource abundant countries are making efforts to diversify their economy away from such resources, to develop other sectors, especially those in which they have comparative advantage, and to further stabilise, as well as promote good governance. For instance, in Botswana, a development strategy tagged "a Long Term Development Vision 2016", which is a strategy to propel her socioeconomic and political development into a competitive, winning and prosperous nation, has been developed and is currently being implemented. The Vision 2016 is underpinned by seven pillars aimed at attaining: i) an educated and informed nation; ii) a prosperous, productive and innovative nation; iii) a compassionate, just, and caring nation; iv) a safe and secure nation; v) an open, democratic and accountable nation; vi) a moral and tolerant nation; and vii) a united and proud nation (IMF, 2012). Nonetheless, the global economic slump that hit demand for Botswana's main export, diamonds, led to a severe decline in government revenue, and this has threatened to stall the hard-earned progress in achieving the aspirations of its Vision 2016 programme. Also in Nigeria, Vision 2020 is an on-going development programme that the government is earnestly working to achieve.

2.4.1: Kenya

Kenya, often referred to as the economic hub of East Africa, enjoyed consistent economic growth over the period covered by this study. Kenya's economy continues to enjoy gradual stability, but it still remains vulnerable to internal and external shocks. Better macro-economic conditions in the past decade helped improve the welfare of Kenyans, but the poor remain vulnerable to drought and other crises induced by climate change. Rural and urban poverty also remain a challenge.

The size of government in the economy has also increased with time. In 1985, the total government spending was total US$1.07 billion and by 1989, it had risen to a peak of US$1.6 billion. Thereafter, the government spending dropped to its lowest value (US$832.9 million) in 1993. It persistently rose from US$1.83 billion in 1996 to US$2.29 billion in 1998. There was a slight drop in government expenditure to US$1. 9 billion in 2000, but the need for rapid infrastructural development made the size of government, which has been just US$2.9 billion in 2004, to rise to US$5.01 billion (the highest) in 2008. It was US$4.8 billion in 2009. The current account balance was in deficit all through the

years except in 2003, when it recorded a surplus of US$132.4 million. The trends of government expenditure and the current account balance moved in opposite directions as depicted in Figure 2.9. In the years when the government expenditure was increasing, the current account balances were reduced and vice versa.



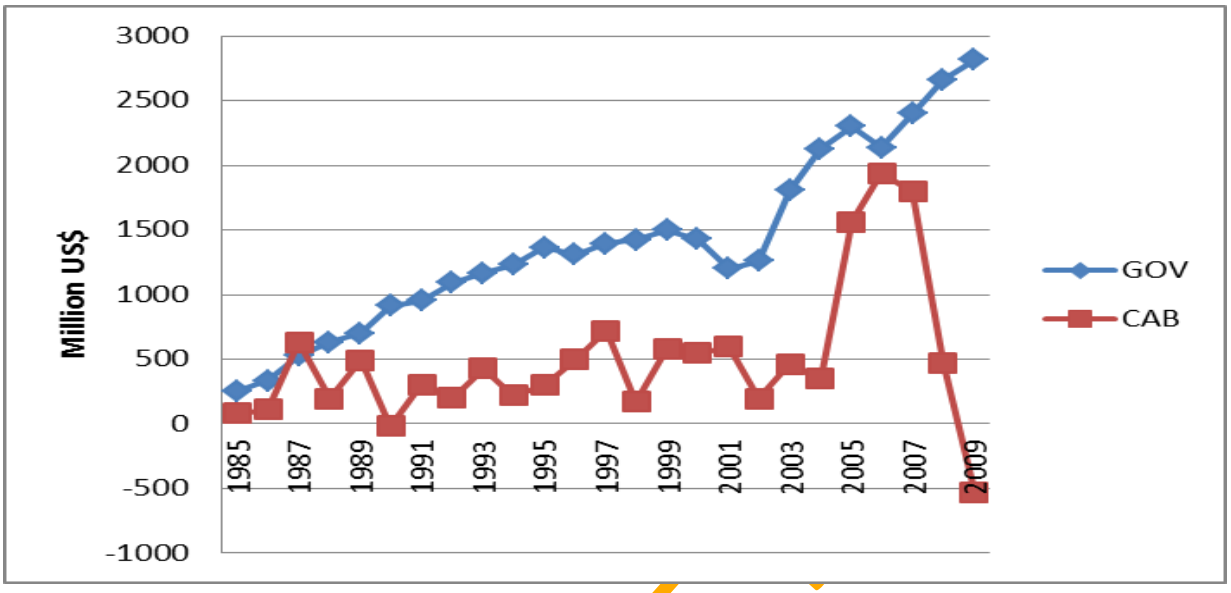
Source: Drawn with data from WDI (2010)

Figure 2. 9: Government Expenditure and the Current Account Balance in Kenya

2.4.2: **Botswana**

Botswana has been acclaimed to be a success story in Africa, in terms of development success story in Africa. Despite being a small, landlocked country with a population of about two million people, its status changed from one of the poorest countries in Africa with a per capita GDP of about US$70 when it gained independence from Britain in 1966. In the nearly five decades since, Botswana has transformed itself, moving into the ranks of upper middle-income status to become one of the fastest growing economies in the world, with an average annual growth rate of about nine per cent (World Bank, 2013). Botswana's impressive track record of good governance and economic growth supported by prudent macroeconomic and fiscal management, stands in contrast to the country's high levels of poverty and inequality and generally low human development indicators. Over the years, the size of government spending in Botswana increased. For instance, the government's spending, which was just US$265.1 million in 1985, rose through US$1.1 billion in 1992 to US$1.5 billion in 1999. Although, it fell to US$1.2 billion in 2001, from US$1.81 billion in 2003, it rose through US$2.3 billion in 2005 to US$2.14 billion in 2006. It continued soaring higher thereafter, from US$2.4 billion in 2007 to US$2.66 billion and US$2.82 billion (the highest during the period covered) in 2008 and 2009 respectively.

The current account balance registered substantial surpluses for all the period covered, except in 1990 and 2009, when it was US$-19.3 million and US$-525.9 million respectively. However, unlike the government expenditure, the rhythm of the frequencies was highly unstable ranging from US$-19.3 million to US$1.94 billion in 2006. The plot of the government expenditure and the current account balance in Botswana, depicted in Figure 2.10, showed no departure from the trend observed in other SSA economies. As government expenditure increased over time, the current account balance seems to have retarded.



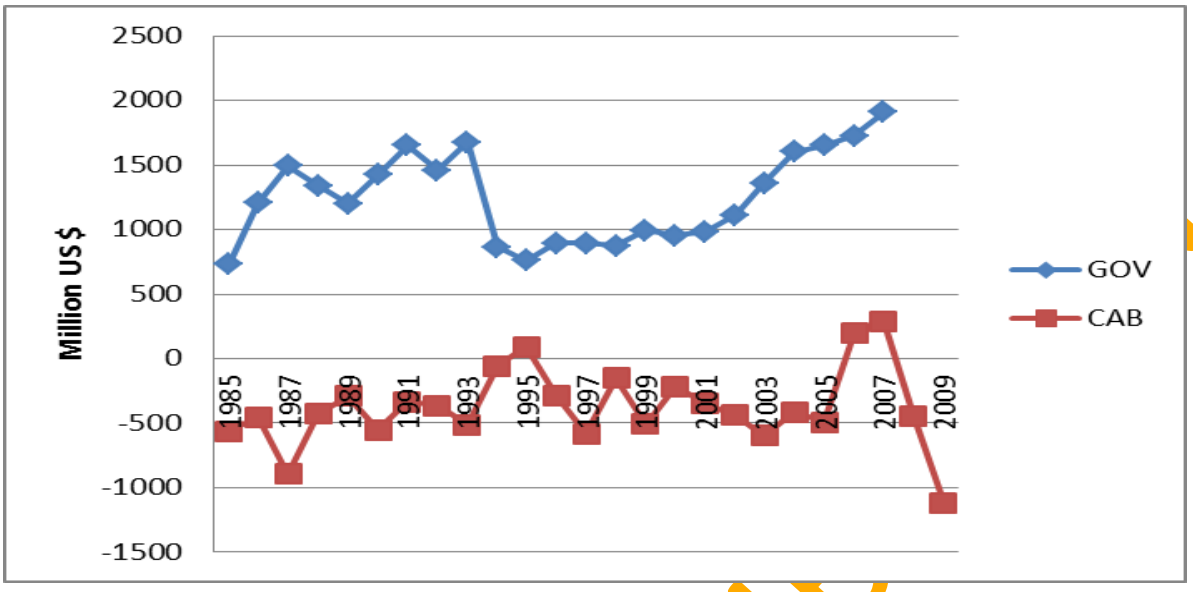
Source: Drawn with data from WDI (2010)

Figure 2. 10: Government Expenditure and the Current Account Balance in Botswana

2.4.3: Cameroon

Cameroon, a country in Central Africa, relied on agriculture and exportation of timber, rubber latex as well as cocoa to earn foreign currencies. Petroleum has been exported since the 1970s and presently accounts for much of the country's export earnings. Like many African countries, Cameroon still faces serious problems such as endemic corruption, poverty, uneven distribution of income and a difficult climate for business. The evolution of government expenditure in Cameroon followed a trajectory that is not similar to what were obtainable in most of SSA countries until 1995, when it followed the usual pattern. In 1985, government expenditure stood at US$732.9 million and it rose to a peak of US$1.5 billion in 1987. Thereafter, it fell to US$1.2 billion in 1989. From US$1.6 billion in 1991, it dropped to US$1.4 billion in 1992 and rose to US$1.68 billion in the year that followed. There was a drastic slip in government spending to US$757.7 million in 1995; It latter rose to US$1.3 billion in 2003 and further to US$1.9 billion in 2007.

There was no substantial deviation from the usual pattern of the current account balance in other SSA countries aside that it was in deficit for most of the period considered, except in 1995, 2006 and 2007, with US$ 89.9million, US$193.3 million and US$285.7 million respectively. The current account balance frequency seemed unstable over the period experiencing frequent perturbation. The movement in both government expenditure and the current account balance were inverse duplication of one another as depicted in Figure 2.11. In the years when the government expenditure was increasing, the current account balances were reduced and vice versa.



Source: Drawn with data from WDI (2010)

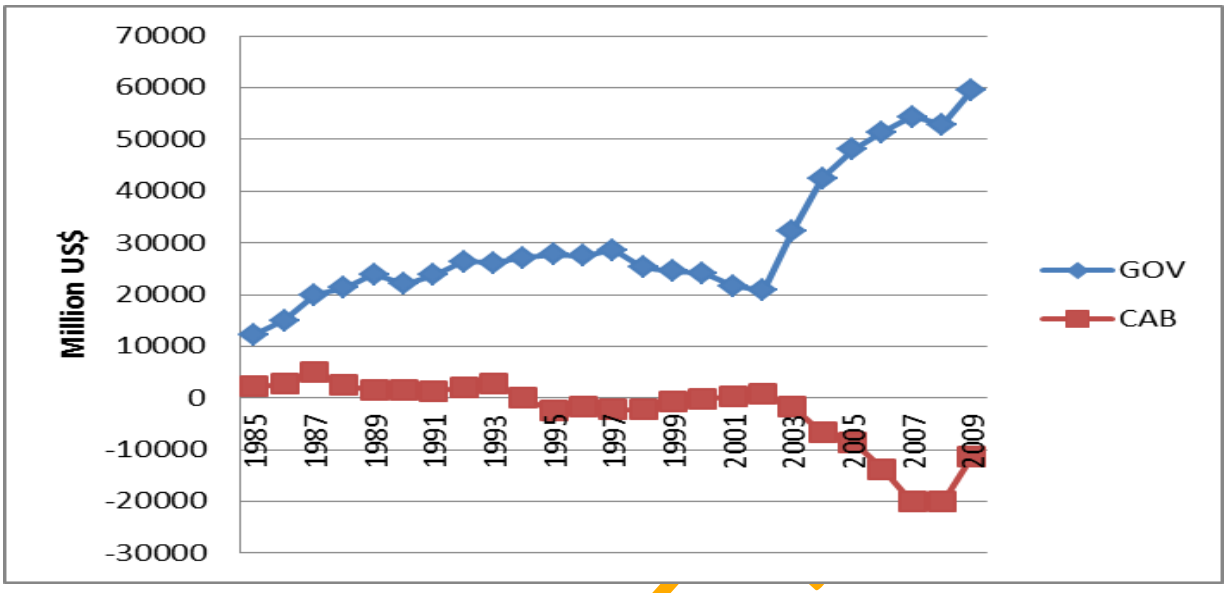
Figure 2. 11: Government Expenditure and the Current Account Balance in Cameroon

2.4.4: South Africa

South Africa enjoyed favourable growth over the years in comparison with other countries in Africa. It is universally believed to be the economic hub of Southern Africa. The South African economy, with its close linkages with the world economy, has suffered from worsening global economic conditions, in particular after the global financial crunch witnessed in 2008/09.

In 1985, the government expenditure, which was US$12.2 billion rose through the year to a peak of US$24 billion in 1989. It subsequently ranged between US$20.8 billion and US$28.6 billion from 1990 to 2002. The magnitude of government spending in South Africa grew rapidly thereafter. From US$32.3 billion in 2003, it rose through US$48.1 billion in 2005 to a peak of US$54.4 billion in 2007. Although, the global financial crisis of 2008 made the government spending to abate to US$52.9 billion, it rose afterwards to a peak of US$59.6 in 2009.

The current account balance registered a substantial surplus in 1985-1994, deficit from 1995-2009 (except in 2002 when it stood at US$884.4 million). Juxtaposing the evolution of both the government expenditure and the current account balance gave the usual picture portrayed by most of the countries in SSA. This is illustrated in Figure 2.12



Source: Drawn with data from WDI (2010)

Figure 2. 12: Government Expenditure and the Current Account Balance in South Africa

2.4.5: Nigeria

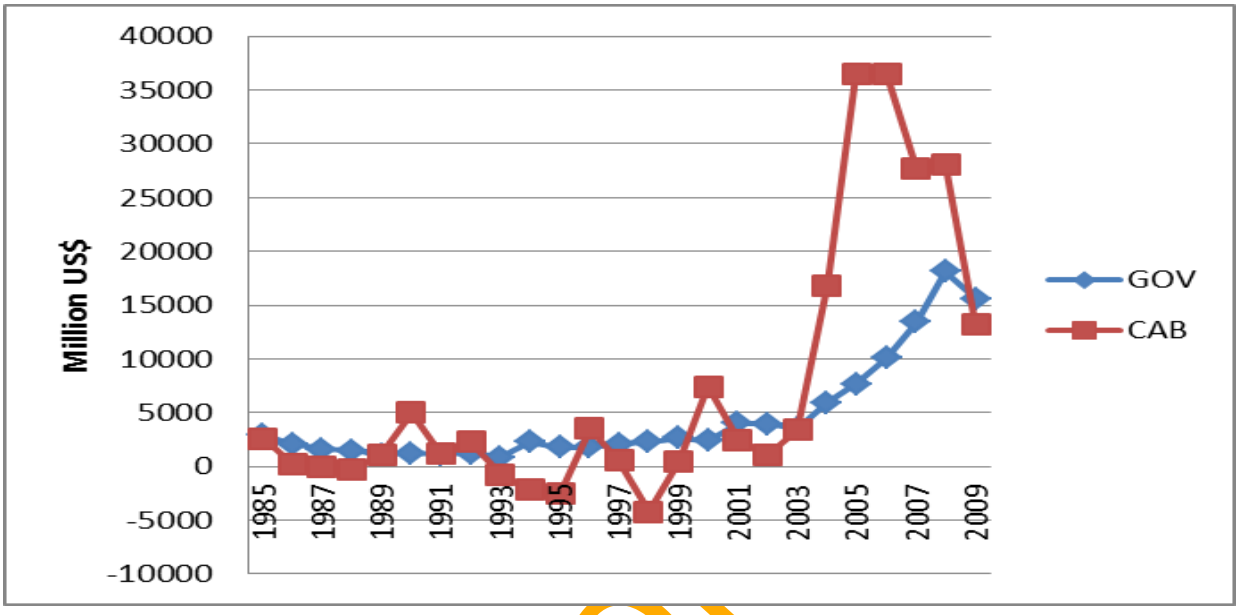
Nigeria is an oil-exporting country and the largest oil exporter in Africa. Nigeria also has the largest natural gas reserves in the continent (World Bank: 2013). Aside these, it has many other natural resources. Nigeria is often seen as the giant of Africa and it is one of the economic hubs in West Africa. Nigeria is the largest country in Africa. It has a population of about 158 million, representing about 47percent of West Africa's population, connoting a vast market potential.

Over the last ten years, Nigeria has had an ambitious reform agenda. This puts pressure on government to invest in social and economic infrastructures with consequent implication on its size in the economy. According to studies from the World Bank (2013), growth in Nigeria continued to be broad based, oriented primarily toward the domestic market, and driven by strong performance of the agricultural, trade, telecommunications, and manufacturing sectors. Nevertheless, the strong economic growth has not translated into higher employment rates. Employment remains the major issue for Nigeria with an estimated 50 million underemployed youth.

The history of government size in Nigeria is a very fascinating one. In 1985, government expenditure was US$2.9 billion. It reduced gradually thereafter until 1993 when it reached US$839.2 million. It rose to US$2.3 billion in 1994. Thereafter, it ranged between US$1.75 billion and US$3.98 billion in 2001. The high propensity to spend inherent in the government became evident thereafter when government spending, which was only US$3.48 billion in 2003, had risen through US$10.1 billion in 2006 to US$18.1 billion in 2008. It slightly dropped to US$15.6 billion in 2009 as a consequence of the global financial crunch. The current account balance recorded a substantial deficit in 1987, 1988, 1993-1995 and 1999. It was surplus in other period ranging between 1.09 billion (1989) and US$3.65 billion in 2005.

Unlike other SSA countries, the evolution of government expenditure and the current account balance in Nigeria seems to move in the same direction. From 1985 to 2004, the experience was mixed, the current account balance overtaking the government expenditure and vice versa. But, from 2004, the current account balance rose above government

expenditure, but government expenditure overtook the current account balance in 2009. This evolution is depicted in Figure 2.13.



Source: Drawn with data from WDI (2010)

Figure 2. 13: Government Expenditure and the Current Account Balance in Nigeria

CHAPTER THREE
REVIEW OF RELATED LITERATURE

3.1: Introduction

This section is a review of the theoretical and empirical literature on fiscal policy and the current account as well as their interactions. For clarity and ease of appreciation, it is divided into four major sub-sections. The first part examines the current account and its determinants, the second piece inspects Fiscal Policy and its measures, and the third relates to the Inter-temporal Model of the Current Account. The final part concentrates on Fiscal Policy and the Current Account. Each of the sub-sections is further divided. A Synthesized summary of the some empirical studies is also presented.

3.2: The Current Account and its Determinants

3.2.1: Introduction

Every economy strives to achieve internal and external balances. Internal balance is geared toward achieving the basic macroeconomic goals of price stability, full employment, equitable distribution of income and economic growth among others. As stipulated by the theory, external balance is automatically achieved in an economy with a flexible exchange rate, although its automatic mechanism breaks down whenever authorities intervene in the foreign exchange market to peg the exchange rate. Furthermore, external balance is attained when the balance of payments is zero. This balance of payments has two major components which are the capital and current account balance.

The capital accounts, records transactions concerning the movement of financial capital into and out of the country. Whereas the current account balance is defined as the sum of visible trade balance and the invisible balance. The visible trade balance shows the difference between the revenue received from export of goods and payments for import of goods, while invisible balance shows the difference between the revenue received from exports of services and payments made for imports of services as well as receipts and payment from abroad including unilateral payments.

Vinals *et al.* (1986) suggested that the relevant indicator of the external position is not the balance of payments as a whole, but rather the current account balance. They further reiterate the importance of the current account balance in that, the long-run external balance constraint of the economy can only be understood in terms of the current account

balance. This is because, in a stationary economy, the "long-run" current account balance is expected to be zero. This idea relates to solvency[7], which implies that an economy's trade deficit today necessarily implies a need for a trade surplus in the future.

Solvency requires that the present value of the sum of the current and future trade balances is zero. This solvency condition can be extended in two ways. The first relates to when an economy begins with a net stock of foreign debt. It is expected that the present value of the future trade surpluses is at least as great as the initial net external debt (Vinals *et al.*, 1986). The second suggests that, if the real interest rate is negative[8], the present value of foreign exchange earnings is effectively infinite, and the external constraint evaporates (Cohen, 1985). Thus, a country is solvent no matter how large its initial foreign debt is.

In an ideal economy, the path of the current account and foreign debt levels would be privately and socially optimal. Authorities would not care about the need for "maintaining external balance," "improving the current account," "increasing international competitiveness," or "avoiding the external leakages of domestic expansion." However, in the real world, assumptions of an ideal economic break down. This gives authorities several reasons to be concerned about the short-run behaviour of the current account balance. The need for the concern of the authorities is further sustained by the following arguments:

i. **Divergence between Private and Social Costs**: Harberger (1985) stressed that an externality has imposed on the country as a whole and on future borrowers by the marginal borrowers (see Cooper and Sachs, 1985; Gersovitz, 1985).
ii. **Sticky Wages and Prices**: A worsening of the current account is often interpreted as a leakage in demand that boosts the foreign economy and slows down the domestic economy when output is demand-determined (see Salop and Spitäller, 1980).
iii. **Future Flexibility**: Of the many paths which satisfy long-run solvency, those that are excessively profligate today imply severe constraints in the future, which may be wiser to avoid (see Cooper and Sachs, 1985).

[7]Solvency deals with the ability of a country to generate sufficient net export surpluses (inclusive of services) in the future in order to repay the existing foreign liabilities.
[8] Or, more generally, if the growth rate of foreign currency earnings exceeds the real interest rate.

iv. **Impact on the Current Account on Financial Markets**: The current account balance evolution affects market sentiments and the capital account in the short-run. For fixed exchange rate regimes, prevention of the current account balance from speculative attack through a suitable policy, such as regulating short-term capital outflow, is essential (see Rogoff, 1985; Giavazzi and Giovannini, 1986). Under a flexible exchange rate, the exchange rate adjustment follows a deterioration of the current account balance which is likely to have adverse effects on resource allocation.

v. **Protectionism**: This may emerge after a period of current account deficit (Dooley *et al.*, 2007).

In the literature, there are some concepts that also help to further appreciate the extent of surpluses or deficits. These include solvency, sustainability and excessiveness. Solvency relates to the ability of a country to generate sufficient revenues in the future to repay the existing liabilities. In terms of current account, solvency deals with the ability of a country to generate sufficient net export surpluses (inclusion of services) in the future to repay the existing foreign liabilities. In terms of fiscal policy, solvency will infer the ability of a country to generate sufficient revenue in the future to repay the existing liabilities. Solvency criterion has come under severe criticism because of its inherent weakness (Milesi-Ferretti and Razin, 1996). The first argument relates to its inability to distinguish between the willingness and the ability to pay and lend. The second argument ensues from the uncertainty in predicting the ability of a country to generate sufficient future revenue to repay the current debt obligations. Although from theoretical view, a country may be able to pay its current debt but in reality, the lender may not be willing to continue lending, given the possibility of debt default (see Adedeji *et al.*, 2005).

Sustainability addresses if the current debt position is sustainable under the current policy position without significant policy shift, otherwise crisis supervene. Affirmative response to the above implies sustainability of the imbalance. This makes sustainability more stringent than solvency. Excessiveness on the other hand expresses the deviation of the actual balance from the optimal or benchmark. The deviation between the optimal and

actual can be used to look into how close a given path of current imbalances may be to unsustainability (see Adedeji *et al.*, 2005).

3.2.2: Theories of Current Account Balance Determinations

Various approaches have been adopted to analyse the behaviour of the current account balance. These include traditional models and the modern/dynamic model of the current account balance. The dynamic model of the current account balance, otherwise called the inter-temporal model is based on the consumption smoothing hypothesis. This approach is further explained in section 3.4.

On the other hand, Traditional approaches to the current account balance[9] do not specify the process governing the formation of expectations and, thus, neglect the inter-temporal framework. This implies that they are static in nature. Using traditional approaches to modelling the current account balance, Khan and Knight (1983), Pastor (1989), and Adedeji *et al.* (2005) identified real effective exchange rate, world real interest rate, domestic budget balance as a ratio of GDP, real output in the industrial countries, and terms of trade as determinants of the current account balance expressed as a percentage of GDP. Their results suggest that these variables affect the current account balance.

The three traditional approaches to current account modelling that are identified in the literature are the elasticity, absorption, and monetary approaches. The elasticity approach emphasises the trade balance component of the current account balance, thus, relative international prices are the central determinants of the current account balance[10]. The absorption approach examines the income effect of the responses of imports and exports to a reduction in the value of a country's currency (see Meade, 1951; Alexander, 1952). It attempts to eliminate external imbalance through adjustment in absorption of goods and services. The absorption approach also focuses on the income effects of the same policy as postulated by the elasticity approach. However, it ties current consumption to current income, which makes it a static analysis. The monetary approach can be traced to the pioneering works of Polak (1957), Frankel and Johnson (1976), and IMF (1977). This approach views the balance of the payment determination as a monetary phenomenon, thus,

[9] See Hooper and Marquez (1995) and Mwau and Handa (1995) for further details on the traditional approaches to modelling the current account.
[10] See Adedeji et al (2005) for more explanation on the traditional approaches to the current account balance.

disequilibrium in the money markets will be associated with balance of payments disequilibrium. The testable implication of this approach is that a government that engages in continuous money supply expansion experiences a reduction in the level of official reserves.

The modern model of the current account balance is based on the inter-temporal framework. The current account balance (surplus or deficit) is seen as the outcome of forward-looking, dynamic savings and investment decisions driven by expectations of productivity growth, government spending, interest rates, and several other factors. Within this framework, the role of the current account balance as a buffer against transitory shocks in productivity or demand is stressed (Sachs, 1981; Obstfeld and Rogoff, 1995 and Ghosh, 1995, among many others).

The inter-temporal model can be used to examine the excessiveness of persistent deficits. The model implies that unanticipated temporary declines in output in a small open economy will produce deterioration in the current account balance. The early test of inter-temporal current account models is based on the notion that the current account balance depends on deviations of output, government spending, and investment from their permanent levels when the subjective discount factor equals the world market interest rate. Their major focus was to examine the relative impact on the current account balance of temporary and permanent changes in government expenditures. Another test focuses on the implications of the present-value model that links today's current account balance to the expected future changes in the economy's net output. This implies that unanticipated temporary fall in output in a small open economy will produce deterioration in the current account balance (see Campbell and Shiller, 1987; Sheffrin and Woo, 1990; Milbourne and Otto, 1992; Otto, 1992).

One of the distinguishing features of this approach is that it assumes zero for the permanent change in a variable, which implies that the model is restricted to testing the temporary change in the current account balance determinant. Another relates to its use of consistent treatment of the data time series properties.

Some of the economic determinants of the current account balances identified in the literature include fiscal policy[11], real exchange rate[12], terms of trade fluctuations[13], capital controls; Global productivity shocks[14], among many others.

3.3: Fiscal Policy and its Measures

Fiscal policy is the part of national economic policy which is primarily concerned with the receipts and expenditure of the central government. It refers to the policy of the government with regards to taxation, public expenditure and public borrowing. Fiscal policy involves the use of government spending, taxation and borrowing influence the pattern of economic activity as well as the level and growth of aggregate demand, output and employment. Changes in fiscal policy affect both aggregate demand and aggregate supply; therefore, it is a powerful weapon in the hands of government through which it can achieve the development objectives.

The principal objective of fiscal policy is to ensure rapid economic growth and development. This objective can be achieved through mobilisation of financial resources through taxation, public savings, and private savings. Fiscal policy can also be used to ensure efficient allocation of financial resources, especially for the generation of goods and services which are socially desirable. It can also be used to reduce inequalities of income and wealth, balance the regional development, development of infrastructure, increase the national income and enhance capital formation, generate employment, influence foreign exchange earnings, price stability and control inflation. Fiscal policy can in addition serve as a policy instrument to adjust the imbalances in the Balance of Payments.

Fiscal policy attempts to encourage more exports by way of fiscal measures like the exemption of income tax on export earnings, exemption of central excise duties and customs, and exemption of sales tax and control, among many others. All these measures affect the Balance of Payments and thus can be used to adjust it. Fiscal policy can be used to conserve foreign exchange earnings by providing fiscal benefits to import substitution industries and imposing customs duties on imports. The foreign exchange earned by way of

[11] See Alli Abbas et al. 2010.
[12] See Calendron et al. 2002
[13] See Obsfeld, 1982; Svensson and Razin, 1983; and Tornell and Lane, 1999
[14] See Glick and Rogoff, 1995 and Razin, 1995.

exports and saved by way of import substitutes helps to solve balance of payments problems. In this way, adverse balance of payment can be corrected either by imposing duties on imports or by providing subsidies to export.

Traditionally, fiscal policy has been viewed as an instrument of demand management. This implies that changes in government spending, direct and indirect taxation and the budget balance, can be used to cushion some of the volatility of real national output, particularly when the economy has experienced an external shock (for instance, the experience during the period of Great depression). The Keynesian school argues that fiscal policy can have powerful effects on aggregate demand, output and employment when the economy is operating below full capacity national output, and where there is a need to provide a demand-stimulus in the economy. Keynesians believe that there is a clear and justified role for the government to make active use of fiscal policy measures to manage the level of aggregate demand. Monetary economists on the other hand, believe that government spending and tax changes can only have a temporary effect on aggregate demand, output and jobs and that monetary policy are a more effective instrument for controlling demand and inflationary pressure.

As regards the measurement of fiscal policy, it has been measured in the literature by three basic variables: government spending, government revenue and public borrowing (see Adedeji *et al*., 2005 and Alli Abbas *et al.*, 2010, among many others). Government (or public) spending each year takes a larger part of gross domestic product in developed and developing economies. It can be broken down into three main areas, namely transfer payments[15], current government spending[16] and capital spending[17]. The following reasons justify government spending in every economy. Government spending provides a socially

[15] Transfer payments are government welfare payments made available through the social security system including the Jobseekers' Allowance, Child Benefit, the basic State Pension, Housing Benefit, Income Support and the Working Families Tax Credit. The main aim of transfer payments is to provide a basic floor of income or minimum standard of living for low income households in our society. And they also provide a means by which the government can change the overall distribution of income in a country.

[16] Spending on state-provided goods & services that are provided on a recurrent basis every week, month and year, for example salaries paid to people working in the government establishment and resources used in providing state education and defence. Current spending is recurring because these services have to be provided day to day throughout the country.

[17] Capital spending includes infrastructural spending such as spending on new motorways and roads, hospitals, schools and prisons. This investment spending by the government adds to the economy's capital stock and clearly can have important demand and supply side effects in the medium to long term.

efficient level of public goods and merit goods; it provides a safety-net system of welfare benefits to supplement the incomes of the poorest in the society, it provides necessary infrastructure through capital spending on transport, education and health facilities and it can be used as a means of managing the level and growth of aggregate demand to meet the government's main macroeconomic policy objectives, such as low inflation and high levels of employment.

Government revenue is revenue received by a government. Government revenue could either be from taxation or non-taxation sources (such as revenue from government-owned corporations or sovereign wealth funds). Government debt (public debt, national debt, sovereign debt) is money (or credit) owed by the government. It is an indirect debt of the taxpayers. Government debt can be categorized as internal debt (owed to lenders within the country) and external debt (owed to foreign lenders). Governments usually borrow by issuing securities, government bonds and bills. Less creditworthy countries sometimes borrow directly from international institutions. A broader definition of government debt considers all government liabilities, including future pension payments and payments for goods and services the government has contracted but not yet paid for. Another common division of government debt is by duration until repayment is due. Short term debt is generally considered to be for one year or less, long term is for more than ten years. Medium term debt falls between these two boundaries.

In empirical studies, fiscal policy has been measured by various variables such as budget deficit (Egwaikhide, 1997; Tchokote, 2005), government debt-to-GDP ratio (Nickel and Vansteenkiste, 2008), government spending (Chete, 2000; Adedeji *et al*., 2005; Alli Abbas *et al*., 2010), the domestic budget balance as a ratio of GDP (Adedeji *et al*., 2005; Pastor, 1989; Khan and Knight, 1983), government spending-to-GDP ratio (Kim and Roubini, 2008), wage government consumption, non-wage government consumption and cyclically adjusted labour taxes (Lane and Perotti, 1996). In this study, government spending is used as the measure of fiscal policy because it is an exogenous variable (as government revenue is), a policy variable independent of any feedback from the economy as against other measure of fiscal policy (government deficit or surplus) that is influenced by policy as well as performance of the economy.

In instances where fiscal policy is not well formulated, economic tensions are aggravated and policy flaw may arise. Such policy flaws reflect perverse political economy incentives, whereby attempting to correct them requires not only political leadership but also institutional solutions, including well-designed fiscal rules. It has been argued that fiscal policy biases are aggravated by the excessive focus of authorities, markets, and international financial institutions on short-term indicators of fiscal health-such as government debt and cash flows- that capture liquidity trends but can be misleading for tracking inter-temporal solvency (Perry *et al.*, 2008). A very important aspect of fiscal policy as regard tracking inter-temporal solvency is its consequences for macroeconomic stability and long-term growth.

Two basic problems arise with the conduct of fiscal policy. The first relates to the pro-cyclical bias of fiscal policy, and the second relays the anti-investment bias of fiscal discipline, also known as the "fiscal space" problem (see Perry *et al.*, 2008). Macroeconomics theories suggest that since pro-cyclical fiscal policy amplified economic fluctuations, fiscal policy should be countercyclical, that is, fiscal balance should increase during economic booms and decrease during economic recessions to smooth out fluctuations in aggregate income. Empirical studies on industrial economies support this line of reasoning (Wyplosz, 2002), but some empirical evidences in Latin America however reveal the contrary (Talvi and Vegh, 2000; Tornell and Lane, 1999).

Taylor (2000) suggests that monetary policy should take charge of cyclical stabilisation, because of the workings of automatic stabilizers. This is because monetary policy has some edge over fiscal policy, such as its lower political constraints, its shorter implementation lags, and greater flexibility. However, if the automatic stabilizers, which are meant to smooth out economic fluctuations, are weak or ineffective, such economy would be left at the mercy of external and domestic shocks.

Fatas and Mihov (2003) argued that the fiscal policy discretion harmed macroeconomic stability and orchestrated deterioration of long-term growth in some countries in Latin America. Their study separated the three characteristics of discretionary fiscal policy which are pro-cyclicality, persistence and pure volatility. In their attempt to understand how these features affect business fluctuations and economic growth, they found out that

macroeconomic volatility was significantly affected by discretionary fiscal policy volatility, but not fiscal pro-cyclicality. Discretionary fiscal policy volatility increases output volatility, which in turn reduces growth prospect. They also suggested that the budget and political institutions should be strengthened to limit the frequency and size of expenditure shocks. This is because implicit institutional and political constraints are effective to improve macroeconomic performance and restrict the volatility of public expenditure.

Another interesting issue as regards fiscal policy is to examine its capability in exerting a stabilizing effect. One quick way of examining this is to ascertain the nature of the relationship that exists between government sizes and output volatility (see Suescun, 2005). A positive relationship indicates that the fiscal policy fails to exert a stabilizing effect, the converse is also true. A corrective measure as suggested by the author to correct these undesirable features would be to improve the size and effectiveness of automatic stabilizers. This can be achieved by adopting a tax structure that is more responsive to the business cycle. Another way is for the countries consider adopting transfer schemes that behave counter cyclically in an automatic fashion, for example, unemployment insurance, self-selecting workfare programs, and the likes. However, such programmes should be designed in a way that reduces their potentially adverse incentive effects.

3.3.1: Meaning and Economic Implications of Fiscal Policy Position and its Sustainability

Fiscal policy, sustainability refers to the future implications of current fiscal policies. Assessing the concept requires answering the question of whether the government can continue to pursue its set of budgetary policies with or without endangering its solvency. Solvency in this framework requires answering whether the government can continue to pursue its set of budgetary policies with or without endangering its solvency. It also requires the adoption of a forward-looking approach, which involves forecasting GDP growth, real interest rate, future government revenue and spending to determine whether the inter-temporal budget constraint is satisfied (Buiter, 1985; Blanchard, 1990). However, solvency is only a necessary condition for fiscal sustainability. In addition, sustainability requires that solvency is achieved under unchanged fiscal policy stance (Hamilton and Flavin, 1986). It is also of paramount importance that there should be appropriate coverage,

good quality and timely provision of data for assessing sustainability under any framework (IMF, 2002).

Empirical literature has proposed two main approaches to assess sustainability: sustainability tests and sustainability indicators. Sustainability test infers lessons for the future by verifying whether the solvency condition has held true for past budgetary policies or not (Hamilton and Flavin, 1986). Sustainability tests are very sensitive to the quality and quantity of data used and to the statistical procedures applied to the data (Croce and Juan-Ramon, 2003). The empirical findings as regard sustainability tests have not been consistent, even when applied to the same countries and periods (see Croce and Juan-Ramon, 2003). The main limitation of these tests, as guides to policymaking is that solvency today does not necessarily guarantee solvency tomorrow.

Sustainability indicators, on the other hand, allow for using synthetic indicators to gauge fiscal sustainability in a way that allows for a simple interpretation of the results. This is done through knowing if the current fiscal policies can stabilize either the ratio of public sector net worth of GDP (Buiter, 1985) or the debt-to-GDP ratio (Blanchard, 1990). The debt-to-GDP criterion is favoured above the ratio of public sector net worth of GDP because of the difficulties in obtaining reliable information on the latter. These indicators are calculated by projecting government revenue and expenditure based on current policies. The estimated primary deficits and tax ratios are then compared with the permanent primary deficit or the permanent tax ratio (primary gap and tax gap indicators respectively) required in order, to keep the debt ratio constant. The resulting gaps provide a measure of the sustainability of the current fiscal policy stance.

The debt-to-GDP approach to measuring sustainability has been extended in the framework of an operationally simple recursive algorithm that is derived from the law of motion of the debt-to-GDP ratio, subject to the government's reaction function (Croce and Juan-Ramon, 2003). One advantage of this approach is that no estimations of future GDP and interest rates are required. It generates its results based on current, past, and target values of relevant variables. Another advantage is that it can easily be calculated, thus, it enables frequent updates. All these help increase fiscal transparency, because adoption of such an explicit target debt ratio requires government commitment to policy consistency, following

a rule-based strategy and allows government discretion to be applied on how to respond to unforeseen shocks.

Bohn (1998) demonstrated that a positive (and at least linear) response of the primary surplus-to-output ratio to the debt-to-output ratio is a sufficient condition to satisfy the long-run government budget constraint (sustainability test). This implies that when an economy fails to tighten discretionary fiscal policy and when public debt ratios increase, as required for long-term sustainability, it has failed to systematically adjust to the requirements of long-term sustainability.

3.4: The Inter-temporal Model of the Current Account

The dynamic model of the current account balance, otherwise called the inter-temporal model, came to the limelight in the early 1980s. This approach is based on the consumption smoothing hypothesis that treats the current account of the balance of payments as a buffer for smoothing consumption in the face of shocks affecting output, investment and government expenditures. This approach to current account determination has its origin in Campbell and Shiller's (1987) seminal work on the relationship between current saving and the expected change in labour income. This model is based on the life cycle hypothesis or, the permanent-income hypothesis. What comes under this section introduce the seminal work on the approach. After this come the assumptions and the applicability of the approach to the SSA economies.

3.4.1: Seminal works on the Inter-temporal Model of the Current Account[18]

Early studies of the approach can be classified into four schools of thought. The first school of thought relates to establishing the major factors influencing the flows of international capital (see Buiter 1985 and Obstfeld 1986). The school of thought argued that countries differing preferences are the major factor underlying international capital flows and consumption tilting. These differing preferences depend, among other factors, on the difference between the subjective discount factor and the world interest rate, and are viewed as important in explaining the behaviour of the current account balance. It is, thus, argued that the desire to smooth consumption must be taken into consideration in current account balance's modelling.

[18] See Adedeji *et al*. (2005) for more on this section.

The second school of thought focuses on the impact of changes in terms of trade on the current account balance, with the major conclusion that the responsiveness of the latter to the former depends on whether such changes are anticipated or not, and whether they are temporary or permanent. It is, thus, argued that changes in terms of trade need to be incorporated into the models used to analyse the behaviour of the current account balance (See: Obstfeld 1982; Svensson and Razin 1983; and Persson and Svensson 1985).

The third school of thought relates to the impact of temporary and permanent changes in government expenditures on the current account balance. It was argued, using a continuous time model, that temporary and permanent shocks to government expenditures have different effects on the current account balance. Temporary disturbances affect the current account balance through their impact on the optimal inter-temporal consumption path of households, and the effect of permanent changes is different (Sachs, 1982). Finally, the fourth school of thought used an inter-temporal framework to examine the optimal time path of consumption and external borrowing. Together, the four schools of thought provided a framework that used the current account balance as an input into the derivation of the optimal time path of external liabilities (Dornbusch 1983; Hercowitz 1986).

3.4.2: Assumptions of the Inter-temporal Model of the Current Account and the Applicability of the Model to the SSA Economies.

The standard version of the inter-temporal model of current account assumes that the home country and the rest of the world produce goods that are identical, a constant real interest rate, zero transport cost and all goods are tradable across countries. These assumptions impose greater restrictions on the applicability of the model to any economy. For instance, the assumption that the home country and the rest of the world produce identical goods implies that there is no direct role in the terms of trade. Also, the assumption of a constant real interest rate implies that there is no room for consumption tilting of trade and the assumption that all good can be traded across countries implies that it excludes non-tradable goods and a role for movement in the real exchange rate.

Mibourne and Otto (1992) suggested introducing interest rates and relative prices (the terms of trade and exchange rates) into the inter-temporal model. This suggestion was made because the Australian data could not be explained by the standard version of the

model. Similarly, Chete (2000) examined, whether Nigeria's current account deficit was sustainable using an inter-temporal consumption-smoothing model. He concluded that the basic consumption-smoothing hypothesis model does not explain properly the fluctuation of the current account balance.

Otto (1992) investigated the extent to which consumption-smoothing hypothesis can explain the current account behaviour. In the study, he observed that consumption-smoothing hypothesis failed to provide sufficient explanation for the dynamic behaviour of the small open economy. The study also suggests the inclusion of the interest rates (resource prices) and terms of trade in the inter-temporal model.

Adedeji *et al.* (2005) argued that the empirical investigations of the standard form of the model have not yielded pleasant experiences. For instance, all the statistical restrictions implied by the models have been rejected for a number of countries. Furthermore, many studies have found that the optimal current account is less volatile compared to the actual current account. A more realistic analysis needs to relax several of these assumptions and possibly introduce new ones. Exchange rate and interest rate pass through have been identified to be very relevant in the literature, thus the need to relax the assumptions of a single good and constant real interest rate.

Ghosh (1995) found some support for the inter-temporal model in five major industrial countries, namely Canada, Japan, Germany, United Kingdom and United States. Markrydakis (1999) observed from his study on Greece's economy that the consumption-smoothing hypothesis model failed to account for the full magnitude of the economic fluctuation but capable of explaining all major cyclical movement in the economic current account. This disparity between the implications of consumption-smoothing hypothesis in developed and developing economies could be explained by the study of Gersovitz (1988) and Deaton (1989). They argued that household consumption behaviour in developing countries may be different from that of the developed countries. The first reason relates to the resource sharing attitude exhibited by the household members. The older generation supports the younger one by lowering their consumption. Also in developing economies, especially in SSA, the household lives forever through resource transfer from one generation to another (Adedeji *et al*., 2005). This characteristic is enshrined in their culture.

The second factor is the high volatility of income in developing economies. Also a typical household in developing countries is often liquidity constrained. This implies that households in the developing economies may not be able to smooth consumption in the face of negative income shocks.

However, there are some factors that support the use of the permanent income hypothesis in developing economies especially in SSA. A high number of the households in SSA operate near-subsistence income levels. This reinstates the need to smooth consumption over time.

There have been scenarios of periods of increasing real government expenditure across SSA. Since these expenditures would have been viewed as a temporary phenomenon, deficits in the current account, as a result of an unexpected temporary increase in government expenditures, generates a current account deficit.

SSA can be viewed as small open economies. The theoretical model of a small open economy should be applied to current account determination in the SSA economies. Also, all across the SSA (except in a few instances), recurrent account deficits are common. This recurrent current account coupled with the evolution of external debt shows the need for a framework for assessing the excessiveness of the current balance.

Given all the suggestions and debates about the likely applicability of the inter-temporal current account balance framework for analysing the dynamic determinants of the current account balance, this study empirically validates the applicability of the framework to understand the dynamics of the current balance in SSA, modifying the framework to account for some peculiar fundamentals that characterised the sub-region.

3.5: Fiscal Policy and the Current Account

3.5.1: Theoretical Studies

The pursuit of expansionary policies has two basic constraints: the internal constraint and the external constraint (Vinals *et al.*, 1986). The internal constraint refers to the inflationary pressure caused by an attempt to fight unemployment through an expansion of demand, while the external constraint refers to the adverse effects of demand expansion of the external balance of the economy. These two "constraints" are not independent but they are

important in policy-making decisions. Emerging from these two classifications are the two possible channels through which fiscal policies can affect the current account balance. The first relates to when government directly borrows from abroad to finance its consumption. The second relates to when government spending crowds out domestic investment and induces importation from foreign countries. The channels through which government finance through bank credit affects the economy in developing countries are also identified in the literature (Egwaikhide, 1997). First, credit to the public sector expands aggregate demand through its impact on government expenditure. This expansion tends to raise private sector income and the demand for goods and services through the multiplier process. Second, the growth of bank credit expands the growth of money supply, which leads to inflation in the domestic economy.

From another perspective, various theoretical studies have sought to explicate the channels through which fiscal policy affects the current account balance. Some of the mechanisms identified in the literature include demand channel, real exchange rate channel, interest rate channel, and macroeconomic and the country's risk premium conditions, each of which is further expounded on what follows[19].

Fiscal policy exerts much direct influence on the current account through government demand. Changes in the government's consumption demand as well as government's investment demand affect the external balance/ current account through direct channels. Since government activities constitute a larger portion of the activities in a given economy, changes in government demand behaviour transmute into movements in the trade balance. This direct effect can result either in trade surplus or deficit depending on how the agents react. If the agents act in Keynesian context, fiscal expansion, irrespective of how carried out, expands demand and trade deficit resulting in twin deficit. On the other hand, Ricardian's behaviour of the agents to expansionary fiscal policy results in what is termed "twins divergence". Twins divergence is a situation where fiscal expansion decreases demand from the agents, thus increases trade surplus. This occurs because the agents envisage future penalty for the present government consolidation as opined by the Ricardian equivalent hypothesis/ theorem.

[19] See Alli Abass *et al.* 2010 for more insight on this line of reasoning.

One of the factors that can account for the alteration of the relative price on nontradables is fiscal policy. Real exchange rate channel of fiscal policy interference with the current account balance can be viewed through changes in international relative prices. This alteration of relative price affects the real exchange rate, which subsequently influences the current account balance (see Alli Abbas *et al.* 2010). For instance, mammoth government spending on tradables can induce real exchange rate depreciation. The resultant effect of this depreciation on the economy is tilting of private consumption away from and production toward tradables. The end results of all these are prolonged current account imbalance because resource shifts are not easily reversed due to varying degrees of capital mobility in real life scenario.

The interest rate channel of the effect of fiscal policy on the current account balance has also been identified in the literature. In a small open economy, contractionary fiscal policy can reduce interest rates. This can translate into reduction in both domestic and external debt. This somehow improves the current account balance. The converse is also true. However, there is possibility of an interest rate pass through not being observed in developing economies since market forces are not given a free hand to adjust prices.

The prevailing macroeconomic situation goes a long way in informing the country risk premium. A fiscal policy that is deemed unsustainable can generate capital flight and induce a drastic external adjustment. A good example is the case of balance of payment crises that is incited by profligate fiscal conduct. In sum, the net impact of fiscal policy on the current account is determined-to an extent-by the assumptions underlying the model. Alternatively, the relative strength of the effectiveness of, the identified channels of fiscal policy impact on the current account balance is determined by model's assumptions. In real life, countries characteristics go a long way in determining the extent of fiscal policy impact on the current account balance.

It is also important to note that the degree of capital mobility can also inform the extent to which fiscal policy can influence the current account balance. To further appreciate this, a better grasp of the standard Mundell-Fleming framework can shed light on the sophistications of how fiscal policy can influence the current account balance under various capital mobility regimes. Based on Mundell-Fleming framework, elaborated in the

publications of James Fleming (1962) and Robert Mundell (1962, 1963), an often-heard popular belief is that fiscal expansion causes output and employment to increase, but leads to a deteriorating current account balance. These authors' major contribution was to integrate international capital movements into formal macroeconomic models based on the Keynesian IS-LM frameworks on which the effectiveness of fiscal and monetary policies for the attainment of internal and external balance can be studied. In the model, the output is determined by demand and international capital mobility is assumed to be perfect, imperfect, or somewhere in-between the two extremes. Mundell-Flemming framework captured the increase in consumption as a result of an increase in public consumption, but failed to account for the observed real depreciation of the exchange rate that occurred in the process (Ravn *et al.*, 2007). An increase in government size led to an expansion in aggregate demand and increase in interest rate. The high interest rate induced foreign capital inflows that increase the demand for domestic currency resulting in a nominal appreciation of the exchange rate. Due to rigidity of product prices in the short run, the nominal appreciation translated into a real appreciation.

Another framework that has been used to analyse the effect of fiscal policy on the current account balance is the inter-temporal disequilibrium model of the small open economy (Cuddington and Vinals, 1986; Persson, 1982; and van Wijnbergen, 1985). The underlying assumptions of the model include: wages and the price of non-tradable do not react to policy changes in the short-run, which implies that employment and non-tradable output are both demand-determined; the prices of tradable are determined by foreign competitors' prices and depend upon the exchange rate regime. However, in the long-run, all wages and prices are flexible and full employment of labour and other resources is achieved. Other assumptions include: financial markets are fully integrated; no uncertainty; firms and consumers act optimally; and government spending is only on non-tradable, which can be financed by any combination of taxes, debt and money creation. Based on these assumptions, disequilibrium can only occur in the market for non-tradable since there are inbuilt mechanisms to correct either classical unemployment or Keynesian unemployment in the model. If the economy in aggregate, suffers from excessive real wages (classical unemployment), demand measures, which depreciate the exchange rate, will reduce the real (product) wage in the tradable sector, thus, increasing output and employment. On the other

hand, even when the economy experiences a lack of demand (Keynesian unemployment), a reduction in nominal wages can still expand output and employment because the production of tradable will increase.

In the view of Vinals *et al.* (1986), three important policy implications emerge from the inter-temporal disequilibrium model. The first is that an economy suffering from Keynesian unemployment can expand output and employment without a worsening of the current account through a temporary increase in government purchases of non-tradable financed by money creation (under fixed and flexible exchange rates), or taxes (under fixed exchange rates). The second suggests that changing the level of government spending in non-tradable is a useless policy for expanding output and employment in an economy suffering from classical unemployment. However, if the economy follows a flexible exchange rate policy, a temporary tax cut financed by money creation can expand output and employment while improving the current account balance. Finally, once government bonds constitute net wealth, there is a strong connection between bond-financed (temporary) budget deficits and current account deficits. However, this connection fails to hold in the case of money-financed budget deficits. In the model, the following sectors[20] are identified: producer sector, household sector, government sector, foreign sector, and an equation for interest rate parity. Foreign income, prices, and interest rate are exogenously given. There are various versions of the model[21], which Vinals *et al*. (1986) argue, leads to two important conclusions. The first suggests the invalidity, at all times, of the presumption that an economy can always expand through a loose fiscal policy, provided it is willing to accept a worsening of the current account. The second suggests that a bigger budget deficit (however financed)[22] necessarily leads to current account deterioration under fixed exchange rates, and only happens under flexible exchange rates, if it is debt-financed. Furthermore, a balanced budget fiscal expansion leads to a current account deficit only under flexible exchange rates.

[20] For proper elucidation on the equations of the various sectors identified in the model, see Vinals et al (1986).

[21] Among many others, one of the simplest versions of the model treats domestic prices as given (see, Vinals et al, 1986). For modern extensions, which introduce interest parity and anticipated exchange rate changes and hence, a need to model changes in domestic interest rate (see, Dornbusch, 1980). Exchange rates can also be assumed to either be fixed or flexible.

[22] This could be by Tax-financed, Bond-financed, and Money-financed.

3.6: Methodological Issues[23]

Quite a number of methodologies have been adopted in investigating the determinants of the current account balance. Some of the methodologies employed in the literature include: Slutsky's decomposition framework (Kusi, 1995), Macroeconometric model (Egwaikhide, 1997), VAR methodology (Chete, 2000; Kim, 2003; Bussiere *et al*., 2004; Adedeji *et al*., 2005), cointegration analysis/impulse response analysis (Nkuna and Kwalingana, 2010), ordinary least square (Adedeji e*t al*., 2005; Khan and Knight, 1983; Pastor, 1989), among many others.

In investigating the impact of fiscal policy on current account, some methodologies have also been employed. Abbas *et al*. (2010) examined the relationship between fiscal policy and the current account balance. They used panel regressions, vector-auto-regressions, and an analysis of large fiscal and external adjustments to carry out their investigation. Nickel and Vansteenkiste (2008) analysed the empirical relationship between fiscal policy and the current account balance of payments and how Ricadian equivalence changes the relationship using the dynamic panel threshold model. Dungey *et al.* (2007) developed a framework that jointly identified the effect of both fiscal and monetary policy shocks in an open economy. In the Caldara and Kamps (2008) attempt's to unravel the effects of fiscal policy shocks on U.S. over the period 1955 and 2006, they employed vector autoregressive model, controlling for differences in specification of the reduced-form model. In Kim and Roubini (2008) frantic efforts to understand the relationship between fiscal policy, the current account balance and real exchange rate in the U.S. during the flexible exchange rate regime period, VAR model was adopted and it was identified that there exist "exogenous" fiscal policy shocks. This occurred after controlling for business cycle effects on fiscal balances which is in contrast to the predictions of most theoretical models that an expansionary fiscal policy shock improves the current account and depreciates the real exchange rate.

It is obvious that most of the methodologies adopted to empirically validate the behaviour of the current account balance to its determinants, focus on static framework with little attention paid to the dynamic process that may be responsible for the behaviour of the

[23] See Chapter Four for more on methodological issues.

current account balance. This study, thus adopted methodologies that are capable of estimating the dynamic behaviour of the current account balance, taking key cognisance of the factors that could matter in determining the current account balance in SSA. Most especially, the study employed methodologies that are capable of limiting the likely bias that may arise when data from many cross sections are pooled.

3.7: Synthetic Summary of some Empirical Literature[24]

Some empirical studies on the behaviour of the current account balance determinants are considered in this section.

Lenart-Odoran and Reppa (2011) investigated the transmission mechanisms as well as the relationship between the external position and the budget deficit in Hungary. The study applied VAR technique and impulse responses to scrutinize the dynamic impact of a positive government expenditure shock on the external path of Hungary between Q1 1995-Q3 2010. The model developed within the inter-temporal framework included government spending, net tax, gross product, the current account deficit, private consumption expenditure, household saving, private investment, real interest rate and the real effective exchange while external demand was introduced as exogenous variables. The study observed that most of the mean impulse responses were correctly signed but were not statistically significant. However, the current account deficit responded negatively to fiscal expansion, while at the same time private consumption increased. This suggested that fiscal policy contributed to the external imbalances, and this contribution most likely occurred through the non-Ricardian behaviour of the households.

Ghosh and Ostry (1995) empirically verified the plausibility of the current account balance, in forty five (45) developing countries, to act as a buffer to smooth consumption in the face of shocks to national cash flow. The study was predicated on the modern inter-temporal approach to current account determination that has been extensively employed to investigate similar phenomena in developed countries by Sachs (1982), Sheffrin and Woo (1990), among others. The study covered the period between 1950 and 1991. The technique of vector autoregression analysis, introduced by Sims (1980), was employed to estimate the

[24] See Appendix C1 for summary of Some Selected Studies on Fiscal Policy, the Current Account Balance and its other Determinants

optimal consumption-smoothing current account in the sampled economies. The authors found that the hypothesis of full consumption smoothing cannot be rejected in most of the countries, implying that the degree of capital mobility was very high in the selected countries. They concluded that the consumption-smoothing model provides a natural benchmark against which to judge actual current account movements in developing countries. This finding corroborated the studies of Mathieson and Rojas-Suarez (1992) as well as that of Monteil (1994), which suggested that the effective degree of capital mobility in developing countries has increased, especially in recent time. It was also observed that domestic interest rates moved closely with international interest rates adjusted for the expected exchange rate despite the extensive capital controls in some of the countries.

Yang (2011) investigated long- run and short-run impacts of real exchange rate, relative income, trade openness and initial stock of net foreign assets on the current account balance of eight emerging Asian economies between the period 1980 and 2009. A model conceptualised within the inter-temporal approach to the current account was estimated through the cointegrated vector autoregression (VAR) technique. Findings showed that the behaviours of the current account balance was heterogeneous in the sample economies, while trade openness and initial stock of net foreign assets were significant in explaining the long-run behaviour of the current account balance. There was an inherent self-adjusting mechanism in the current account balance of the entire sampled countries with the exception of China. The author reported a steady short-run adjustment towards long-run equilibrium and identified the disequilibrium term as the main determinant of the short-run current account balance variations.

Calderon *et al.*, (2002) considered the empirical links between current account deficits and some macroeconomic variables identified in the literature. The economic variables considered in the study included domestic output growth rate, private saving, exports, real effective exchange rate, terms of trade, black market premium, industrialized output growth rate and world real interest rate. The study adopted the GMM estimator technique, proposed by Arellano and Bond (1991) and Arellano and Bover (1995) for dynamic-panel models, to estimate an unbalanced panel of 44 developing countries within 1966 and 1995. Some striking results emanated from the empirical analysis. The current account deficit

was found to be persistent, while a rise in domestic output growth led to a substantive current account deficit in developing countries. It was also reported that an increase in savings rates and higher international interest rates reduced the current account deficit in developing economies.

Khan and Knight (1983) investigated the determinants of current account balances of non-oil developing countries. The authors examined the influences of external and domestic factors on the evolution of the current account of non-oil developing countries during the 1970s. A model that expressed the current account balance as a function of internal factors (fiscal deficits and real effective exchange rates) and external factors (the deterioration in the terms of trade, the growth rate of industrial countries, foreign real interest rates) was formulated. The findings from pooled regression analysis for thirty two (32) non-oil developing countries from 1973 to 1980 showed that both factors were important determinants of the current account balance in the selected countries. The author reported a positive effect of terms of trade and growth in industrial countries on the current account balance, while real foreign interest rate, real effective exchange rate and fiscal position had adverse effects on the current account balance. The coefficient of the time trend included in the model, to take account of the factors that were not explicitly included in the specified model, was significant and negative, indicative of possibility of exclusion of some factors that could account for the variations in the current account balance in this class of economies.

Doroodian (1985) however, argued that the study of Kahn and Knight (1983) could be modified to take account of the heterogeneity of the variables employed in the analysis across the countries. Dorrodian (1985) also argued that some key variables (such as ratio of total reserves to the nominal value of imports and fiscal position ratio) were missing in the model estimated by Khan and Knight. The study of Khan and Knight (1983) was modified to include the two additional variables. The author found, after incorporating these new variables and taking account of the heterogeneity problem that all the variables other than real exchange rate have the expected signs. He also reported that the deterioration in the current account balance as a result of a reduction in the terms of trade was pronounced in

the low-income countries and that the deterioration due to the growth rate differential was worst for the major exporters of manufactured products.

Chinn and Prasad (2003) investigated the determinants of current account balance in 18 industrial and 71 developing countries from 1971 to 1995. However, the study emphasised the roles of the medium-term determinants of saving and investment levels on the current account balance, rather than factors influencing the short-run dynamics of the current account balance. A model precipitated on the approach that viewed the current account balance as long-run saving-investment balances were formulated. The model expressed the current account balance as a function of government budget balance, net foreign assets, relative income, relative dependency ratio, financial deepening, terms of trade, openness, growth rate of output and capital control. The cross-section and panel regression techniques were employed to characterise the variation of the current account balance over time and across countries. The authors found that the current account balance was positively correlated with net foreign assets and government budget balances. The researchers found that industrial countries that had relatively large stocks of net foreign assets ran larger current account surpluses, while the coefficient of net foreign assets was also positive for developing countries but smaller and not significant in the analysis. It was also reported that for the developing countries, openness was negatively correlated with the current account balance while financial deepening was positively associated with the current account balance.

Furthermore, the authors found a significant role of terms of trade volatility in the current account balance determination for developing countries excluding African countries. Higher terms of trade volatility were associated with larger current account balance, suggesting that the volatility induce more precautionary saving and /or lower investment. The converse effect of terms of trade volatility was true of industrial countries, while there was no clear relationship between average output growth and the current account balance for the full sample. The panel regression result showed that government budget balance, net foreign asset, financial deepening, terms of trade volatility, capital controls and dummy for oil-exporting countries were positively related to the current account balance of the full sample while relative income, the relative dependency ratio for old and young, output

growth and openness ratio were negatively signed in the full sample model. The model for the developing countries showed that government budget balance, net foreign assets, relative income, financial deepening, terms of trade volatility, capital control on the current account and dummy for oil-exporting countries were positively signed while relative dependency ratios, output growth rate, openness ratio and capital control on capital account were inversely related to the current account balance.

Some specific studies that examined the effect of fiscal policy on the behaviour of the current account balance are also considered in what follows. On the relationship between the current account balance and fiscal policy, two theoretical arguments are prominent. One is the twin-deficit hypothesis that posited that wider fiscal deficits should be accompanied by significant current account deficits. This is so because of the assumption that the relationship between fiscal deficits and private consumption is positive, suggesting that higher fiscal deficits would result in higher private consumption, in line with the Keynesian model. Keynesian economic models assume that a shift of tax to debt financing increases private consumption. On many Keynesian models private consumption depends on disposable income, which is income minus taxes. Therefore, fiscal deficits with lower taxes would increase private consumption and the current account deficit (see: Kim and Roubini, 2004 and Nickel and Vansteenkiste, 2008).

This line of thought has been challenged by another referred to as Ricardian equivalence theorem. This equivalence theorem states that for a given path of government expenditures, the timing of taxes should not affect the consumption decision made by individuals paying the taxes. The simple idea behind the theorem is that rational agents realise that substituting taxes today for taxes plus interest tomorrow via government debt financing is the same (Barro, 1974). Therefore, the financing of government spending via debt or taxes should not affect the current account balance either given the rational behaviour of the economic agents. The private agents can as well discern a proliferating fiscal situation as unsustainable and reduce consumption. Alternatively expressed, implementation of a drastic fiscal consolidation can induce higher private consumption and thus a negative relationship between fiscal deficit and private consumption. Based on the postulation of the Ricardian equivalence theorem, a high debt level would be associated with a stable or lower consumption, suggesting a negative relationship between the fiscal deficit and the

current account deficit. Thus, empirical studies on the relationship between fiscal policy and private consumption have generated varied results, as well as the growing body of literature on the expansionary effects of fiscal consolidations (see Briotti, 2005; Bussiere, Fratzscher and Ricciuti, 2005 and Cavallo, 2005).

As a result of the inconclusiveness of the empirical work on the relationship between the current account balance and fiscal policy, Nickel and Vansteenkiste (2008) investigated the relationship between fiscal policy and the current account balance. They also examined how Ricardian equivalence changes the relationship. A dynamic panel threshold model was estimated for 22 developed countries during the period 1981 and 2005, where the relationship was allowed to alter according to the government debt level. The findings showed that in low debt and medium debt countries (up to a debt level of 44% of GDP) the relationship was positive, implying that an increase in the fiscal deficit would lead to a higher current account deficit as posited by the Keynesian model. Furthermore, the authors reported a positive relationship between the government and the current account balances for the countries with debt to GDP ratio of about 90 per cent, but much less compared to low debt and medium debt countries. This implied that higher current account deficit in these countries could be attributed to increase in the fiscal deficit. However, the relationship turned negative and insignificant for countries with very high debt profile, suggesting no causal relationship between government and the current account balances for this group of countries. The same analysis was carried out in the 11 largest euro area and the finding showed that the relationship turned statistically insignificant when the debt to GDP ratio exceeded 80 per cent. The authors argued that the relationship between the current account balance and fiscal policy changes, depending on whether consumers react in a Keynesian or Ricardian manner.

Alli Abbas *et al.*, (2010) examined the relationship between fiscal policy and the current account. A model that expressed the current account balance as a function of government balance, real GDP per capita, trade openness and financial openness was formulated. The model was predicated on saving-investment identities, which expressed the current account balance as the summation of the difference between government savings and investment (fiscal balance) as well as private savings and investment. A panel regressions and panel

VARs estimation techniques were used to analyse the model using data for 124 countries over 1985 and 2007. The analysis distinguishes between advanced, emerging and low-income countries; between oil exporters and non-oil exporters; between more open and less open economies; and between country-years with large output gaps and those where the gap was smaller. The authors reported that changes in fiscal policy over the period covered, were associated with changes in the current account balance, but the relationship was less than one-for-one. The result from the panel regression analysis showed that a strengthening in the fiscal balance by 1 percentage point of GDP was associated with improvement in the current account balance of 0.3 percentage points of GDP, while that of panel VAR suggested an increase in government consumption by 1 percentage point of GDP immediately worsens the current account balance by 0.2 percentage points of GDP and thereafter, the effect receded during the next five years. The findings suggested that fiscal policy, as measured by the fiscal balance/GDP ratio or the log of real government consumption, was significantly associated with the current account during the sampled period.

Ravn *et al.* (2007) investigated the effects of government spending shocks on output, the real exchange rate, consumption and the trade balance in four industrialised countries over the post-Bretton Woods period (1975q1 to 2005q4). Conceptualised within the deep habit mechanism framework, developed by Ravn, Schmitt-Grohe, and Uribe (2006), the authors advanced and tested a theoretical explanation for the observed effects of government spending shocks on output, the real exchange rate, consumption and the trade balance through a structural vector autoregressive (SVAR) representation of the data, similar to that of Blanchard and Perotti (2002). Findings from the estimate of the structural parameters defining the deep-habit mechanism using a limited information approach substantiated the presence of deep habits in private and public consumption with the attendant implications of the private and public saving. It was reported that a positive innovation in government spending led to expansion of output and consumption, while it caused a depreciation of the real exchange rate, and a deterioration of the trade balance.

The empirical literature on the effects of government spending shocks has resulted in diverse conclusions. One of such was pioneered by Ramey and Shapiro (1998). They used

a narrative approach to the identification of government spending shocks and concluded that in response to an increase in government spending, consumption and wages failed to increase. Another branch, which sprouted from Blanchard and Perotti (2002) identification scheme in the context of SVAR models, concluded that consumption and real wages increase in response to a positive government spending shock. On finding common ground for these diverging strands in the empirical literature, Ravn *et al.* (2007) submitted that the findings of the narrative and SVAR identification schemes do not necessarily contradict each other. While the narrative approach pinpointed the anticipated increases in government spending, the SVAR approach identified the unanticipated innovations in public spending. Thus, a successful theoretical explanation of the effects of government spending shocks must induce dynamics that are in line with those estimated, using SVAR (unanticipated perturbation) and the narrative (anticipated perturbation) approaches.

Freund and Warnock (2005) examined the dynamics of the current account balance adjustment among industrial countries to evaluate if there was threshold level of a current account deficit at which it becomes unsustainable. The author also examined whether it was possible to characterise episodes of adjustment. They examined 25 episodes of current account reversals among industrial countries since 1980. Employing simple regression technique on data from all industrialised countries between 1970 and 1997, Freund examined the extent to which movements in the exchange rate and GDP are significantly different from long-run averages. The results showed that output is demand determined and that a real exchange rate adjustment is necessary to reduce an external deficit and that the relationship between current account dynamics and the business cycle suggested that the current account is largely a symptom of the business cycle.

Bergin and Sheffrin (2000) developed a testable intertemporal model of the current account, which allowed for variables interest rates and exchange rates. The intertemporal model developed was empirically validated with data from Canada, Australia and United Kingdom over the range 1961:Q4 to 1996:Q2. The authors submitted that the current account of a small open economy may be affected by shocks to domestic output or government expenditure, and by external shocks to the economies of large neighbours. Such external shocks should be expected to affect the domestic economy through changes

in the world interest rate and the country's real exchange rate, variables that set the terms that the small open economy can trade intertemporally with the rest of the world. The findings showed that including the interest rate and exchange rate improved the fit of the intertemporal model over what was found in previous studies. The model predictions better replicated the volatility of current account data and better explained historical episodes of current account imbalance.

Hassan (2006) examined the behaviour of the current account deficit of Bangladesh in response to budget surplus, domestic saving, domestic income growth, foreign income growth, foreign interest rate, terms of trade, export and real exchange rate. Conceptualised within saving-investment identity, a model estimated with Ordinary Least Square (OLS) and Error Correction Model (ECM) using data from 1989 to 2004, was formulated. The result showed a long-run equilibrium relationship is found between the current account deficit and its determinants. Among all the variables introduced in the formulated model, only terms of trade, export and foreign interest rate were found to have significant impact on the current account deficit, suggesting that domestic economic policy has little to do with correcting the current account deficit, both in the long and short run, in Bangladesh as all significant factors are related to the external economic conditions.

Liesenfeld et al. (2009) examined the determinants and the dynamics of current-account reversals for an unbalanced panel of developing and emerging countries, comprising of 60 low and middle income countries from Asia, and Latin America and the Caribbean. The data set employed in the analysis ranged from 1975 to 2004. A dynamic panel probit model of the current account balance was formulated and estimated with pooled probit, random country-specific effects and AR (1) estimation techniques. The authors submitted that countries with high current account imbalances, low foreign reserves, a small fraction of concessional debt, and unfavourable terms of trades are more likely to experience a current account reversal.

Herrmann and Jochem (2005) investigated the determinants of the current account deficits in central and eastern Europe, specifically examined if the empirical findings provided indications that the existing and high deficits would decline over time, with particular attention to the effect of development gaps in comparison with Germany. The

macroeconomic balance approach, an offshoot of saving-investment identity, formed the theoretical underpinning for the model formulated in the study. Feasible Generalised Least Squares (FGLS) technique was used to estimate the model with quarterly data of the eight central and east European countries that joined the European Union in May 2004 from 1994:Q1 to 2004:Q4. The findings showed that the relative per capita income has a significant effect on private saving and can therefore explain a large part of the past deficits. Thus, a continuing catching-up process would lead to falling current account deficits. The authors were of the view that existing current account deficits do not require fundamental policy reversals according, but remain a source of risk, particularly in the countries with deficits clearly exceeding the levels, which are assessed to be in line with their stage of development.

CHAPTER FOUR

THE THEORETICAL FRAMEWORK, THE MODEL AND DATA SOURCES

4.1: Introduction

This chapter presents the theoretical framework for the research. Specifically, the theoretical relationship between fiscal policy, the current account balance and its other determinants is explored. Furthermore, the empirical model, and the estimation procedures are examined. In addition, the chapter considers the nature, types, and sources of data used for the empirical analysis.

4.2: Theoretical Framework

Several theories of the current account balance are identified in the literature. However, for the purpose of this study, the main focus is on the theory that examines the factors that influence the dynamics of current account balance. The framework adopted in this empirical study is the inter-temporal theory of the current account. Empirical work on the inter-temporal approach to the current account balance has lagged behind in the theoretical literature. This theory has been extensively elucidated in several studies (see, Campbell, 1987; Campbell and Shiller, 1987; Obstfeld and Rogoff, 1996; Bussiere et al. 2004, Adedeji et al 2005).

The inter-temporal approach to the current account balance, in its simplest form, focuses on the optimal saving decision of a representative household as it smoothen consumption. Put differently, the standard form of this theoretical approach views current account surpluses or deficits as national savings or borrowing vis-à-vis the rest of the world and the current account balance, itself, as the outcome of the inter-temporal choices of households, firms and governments. Thus, imbalances in the current account balance also reflect inter-temporal choices and, as a result, the expectations of future events are a decisive factor in determining the size of deficits and surpluses.

The idea articulated above can be represented by a simple model. In a small open economy that lends and borrows at a constant real world interest rate (r^*), produces a single product (Y_t) where the representative agent is assumed to have rational expectations. It follows that an infinitely lived household will have the expected inter-temporal utility function given by:

$$E_T U = \left\{ \sum_{i=T}^{\infty} \beta^{i-T} \left[u(C_t) \right] \right\} \qquad u'(C_t) > 0, u''(C_t) < 0, 0 < \beta < 1 \qquad (4.1)$$

β is the subjective discount factor, E is the expectation operator and $u(.)$ represents the period or temporal utility function. The marginal utility of consumption is expected to be positive while the second derivative of consumption is assumed to be strictly negative. $E_T U$ is the expected utility, while C_t stands for the consumption of the single good in period t.

The relationship between the net foreign asset and the current account balance is given as:

$$B_{t+1} - B_t = r^* B_t + Y_t - C_t - G_t - I_t \equiv CA_t \qquad (4.2)$$

As expressed in equation (4.2), B stands the net foreign assets, C and G are private and government expenditures, I is the sum of private and government investment, and CA is the current account balance.

Equation (4.2) holds as equality, thus imposing a solvency condition (transversality or no ponzi game condition) on the expected value of equation (4.2) will yield:

$$E_T \left\{ \sum_{t=T}^{\infty} \left(\frac{1}{1+r^*} \right)^{t-T} Y_t + (1+r^*) B_t \right\} = E_T \left\{ \sum_{t=T}^{\infty} \left(\frac{1}{1+r^*} \right)^{t-T} [C_t + I_t + G_t] \right\} \qquad (4.3)$$

Invoking Second Welfare Theorem (Mascollel *et al*., 1995, pp.551-558), the competitive equilibrium of this model is similar to the social planner's solution which maximizes equation (4.1) subject to the constraint expressed in equation (4.3). This is derived by arranging equation (4.2) as:

$$C_t = Y_t + (1+r^*) B_t - B_{t+1} - I_t - G_t \qquad (4.4)$$

Substituting equation (4.4) into equation (4.1), the resulting equation will be:

$$V(B_t) = E_T\left\{Max(B_t)_{t=T}^{\infty}\sum_{t=T}^{\infty}\beta^{t-T}[u(Y_t + (1+r^*)B_t - B_{t+1} - I_t - G_t)]\right\} \quad (4.5)$$

The value function in equation (4.5) is continuous and differentiable. Because of the complexity of solving this equation, it can be written in Bellman equation to make it compliant to differentiation between two periods. This is done by first transforming equation (4.5) into:

$$V(B_t) = E_T\left\{Max\left\{[u(Y_t + (1+r^*)B_t - B_{t+1} - I_t - G_t)] + \beta Max(B_t)_{t=T}^{\infty}\sum_{t=T}^{\infty}\beta^{t-T}[u(Y_t + (1+r^*)B_t - B_{t+1} - I_t - G_t)]\right\}\right\} \quad (4.6)$$

The above can further be re-expressed as:

$$V(B_t) = E_T\left\{Max(B_{T+1})\left\{[u(Y_t + (1+r^*)B_t - B_{t+1} - I_t - G_t)] + \beta Max[(B_{T+1})_{t=T+1}^{\infty}]\sum_{t=T}^{\infty}\beta^{t-(T+1)}[u(Y_t + (1+r^*)B_t - B_{t+1} - I_t - G_t)]\right\}\right\} \quad (4.7)$$

The second term on the right hand side of equation (4.7) has the same terms as equation (4.5) with B_{t+1} in place of B_t. Therefore equation (4.7) can be re-specified as:

$$V(B_t) = E_T\{Max(B_{T+1})\{[u(Y_t + (1+r^*)B_t - B_{t+1} - I_t - G_t)] + \beta V(B_{T+1})\}\} \quad (4.8)$$

The representative agent maximizes equation (4.8) given that the current or initial net foreign asset position was optimally chosen by deciding on the net foreign assets for the next period. Differentiating equation (4.8) with respect to B_{T+1}, and using the definition of consumption in equation (4.4) yields:

$$-u'(C_T) + \beta V'(B_{T+1}) = 0 \quad (4.9)$$

Differentiating equation (4.8) with respect to B_T gives:

$$u'(C_T)(1 + r^*) = 0 \quad (4.10)$$

Shifting equation (4.10) forward by one period will result in:

$$(1 + r^*)E_T\{u'(C_{T+1})\} = 0 \quad (4.11)$$

Equation (4.11) and equation (4.9) can be rearranged as:

$$u'(C_T) = (1 + r^*)\beta E_T\{u'(C_{T+1})\} = 0 \quad (4.12)$$

If the value of β, the subjective discount factor, is assumed to be $\frac{1}{1+r^*}$, inverse of the compounding factor, equation (4.12) becomes:

$$u'(C_T) = E_T u'(C_{T+1}) \quad (4.13)$$

Equation (4.13) implies that the representative agent plans for a constant stream of consumption. Thus, consumption tilting is zero. Equation (4.13) is referred to as Euler equation.

Understanding the impact of rates of return on consumption is important since consumption is responsive to the rate of return. When this is given consideration in the analysis we intend to pursue, it simplifies the analysis to assume that the instantaneous utility function takes the constant-relative-risk aversion form given as $u(C_t) = \frac{C_t^{1-\theta}}{1-\theta}$ where θ is the

coefficient of relative risk aversion which is the inverse of the elasticity of substitution between consumption at different dates. Under this kind of assumption the infinitely lived household has the expected inter-temporal utility function given by:

$$u = \sum_{t=T}^{\infty} \frac{1}{(1+\beta)^{t-T}} \frac{C_t^{1-\theta}}{1-\theta} \tag{4.14}$$

Considering a decrease in consumption in some period t, accompanied by an increase in consumption in the next period by $(1+r^*)$ times the amount of the decrease, optimisation in this scenario requires that a marginal change of this type has no effect on lifetime utility. This will result in:

$$\frac{1}{(1+\beta)^{t-T}} C_t^{-\theta} = (1+r^*) \frac{1}{(1+\beta)^{t-T+1}} C_{t+1}^{-\theta} \tag{4.15}$$

Rearranging this condition yields:

$$\frac{C_{t+1}}{C_t} = \left(\frac{1+r^*}{1+\beta}\right)^{\frac{1}{\theta}} \tag{4.16}$$

Equation (4.16) implies that once there is the possibility of the real interest rate (r^*) and discount rate (β) not equal, consumption need not be a random walk. Consumption will rise over time if r^* exceeds β and fall if β exceeds r^*. Thus, if there are variations in the real interest rate, there will be variations in the predictable component of consumption growth. It has been empirically validated that the consumption growth responds relatively little to variation in the real interest rate, that is θ is relatively large. This implies that the inter-temporal elasticity of substitution is low (see: Hall, 1978; and Campbell and Mankiw, 1989)

The equation for the consumption function is essential to derive the equation of the current account balance. If a quadratic utility function is assumed for this purpose, utility function has thus become:

$$u(C) = C - \frac{\propto_0}{2} C^2 \qquad \propto_0 > 0 \tag{4.17}$$

The assumption made above implies that consumption is determined based on the Certainty Equivalence Principle. This type of utility function has been criticised based on the inherent weakness of its marginal utility becoming negative as well as the absence of additional benefits from precautionary savings since the third derivative of the utility function will be zero (Handa, 2000).[25] Differentiating equation (4.17) with respect to C results in:

$$u'^{(C)} = 1 - \propto_0 C \qquad (4.18)$$

Substituting equation (4.18) into the Euler Equation (Equation (4.13)) yields:

$$(1 - \propto_0) C_T = (1 - \propto_0) E_T C_{T+1}$$
$$E_T C_{T+1} = C_T \qquad (4.19)$$

The open economy rational expectation consumption function is given by equation (4.19). The planned consumption is constant, but the actual consumption will change as the stochastic process in the economy emerges.

The optimal current account balance can be obtained by substituting equation (4.19) into equation (4.2)

$$CA_t = Y_t + r^* B_t - \frac{r^*}{1+r^*}\left[(1+r^*)B_t + \sum_{t=T}^{\infty}\left(\frac{1}{1+r^*}\right)^{t-T} E_T[Y_t - I_t - G_t]\right] - I_t - G_t \qquad (4.20)$$

Equation (4.20) can be simplified further as:

[25] These shortcomings are adequately taken care of by another form of utility function called Isoelastic Period Utility function.

$$CA_t = Y_t - \frac{r^*}{1+r^*}\sum_{t=T}^{\infty}\left(\frac{1}{1+r^*}\right)^{t-T} E_T Y_t - I_t + \frac{r^*}{1+r^*}\sum_{t=T}^{\infty}\left(\frac{1}{1+r^*}\right)^{t-T} E_T I_t - G_t + \frac{r^*}{1+r^*}\sum_{t=T}^{\infty}\left(\frac{1}{1+r^*}\right)^{t-T} E_T G_t \qquad (4.21)$$

The expression in equation (4.21) is obtained following definition of a permanent variable as proposed by Obstfeld and Rogoff (1996)[26]. Put differently, equation (4.21) implies that:

$$CA_t = \left(Y_t - E_T\widehat{Y_t}\right) - \left(I_t - E_T\widehat{I_t}\right) - \left(G_t - E_T\widehat{G_t}\right) \qquad (4.22)$$

Equation (4.22) provides the basis for the inter-temporal model of the current account balance. The current account balance serves as a buffer through which private agent can smooth consumption over time in response to temporary disturbances to output, investment and government expenditures. A rise (fall) in the current output above (below) its expected permanent value leads to an improvement (a deterioration) in the current account balance, reflecting consumption smoothing. A temporary increase (decrease) in the current output above (below) its long run discounted average will induce individuals to accumulate (deplete) interest-bearing foreign assets to smooth consumption over future periods. Likewise, profitable opportunities in the domestic economy can be financed by foreign borrowing. A temporary increase in government expenditure has the same effect as a temporary negative productivity shock. A higher current account deficit enables individuals to minimize the impact of such a shock in any particular period by spreading that impact over the entire future. Most structural time-series studies of the inter-temporal approach to the current account balance essentially tests the fundamental equation expressed in equation (4.22).

[26] In which the relationship between the permanent value of a variable and its current value is expressed as: $\sum_{t=T}^{\infty}\left(\frac{1}{1+r^*}\right)^{t-T}\hat{Z}_T = \sum_{t=T}^{\infty}\left(\frac{1}{1+r^*}\right)^{t-T} Z_t$. Using this definition, the permanent value of Z_t is given as: $\hat{Z}_T = \frac{r^*}{1+r^*}\sum_{t=T}^{\infty}\left(\frac{1}{1+r^*}\right)^{t-T} Z_t$

Since the main objective of this study is not to examine the sustainability of the current account which equation (4.22) is basically designed for, there is a need to express the fundamental equation in a form that would warrant the estimates of impact analysis expected to carry out. However, in the context of this study, an approach adopted by Calderon *et al.* (2002) would be pursued. For that reason, equation (4.22) can be re-specified as:

$$CA_t = f(Y_t, I_t, G_t) \qquad (4.23)$$

Equation (4.23) expresses the current account balance as a function of output, investment and government expenditure.

4.3: Empirical Implementation

The theoretical framework presented in the previous section, identified the nature of the relationship between fiscal policy, the current account balance and its other determinants in SSA. In this section, the empirical models are specified, and the estimation techniques are articulated.

4.3.1: Models Specification

The model employed draws from the basic inter-temporal current account model expressed in equation (4.23). The model has been extended in the literature to include exchange rate and terms of trade, interest rates, non-traded goods, and even monetary policy[27]. Furthermore, in the context of SSA countries, Adedeji et al. (2005) has extended the framework to reflect some of the salient features of the region, like an incessant increase in external debt, the terms of trade, exchange rate, among others. This is because in explaining the current account balance behaviour of a small open economy, it may be important not only to model shocks to domestic output, but also shocks arising in the country's larger neighbours or the world in general[28]. These external shocks would generally affect the small open economy via sources of financing, degree of openness and movements in exchange rate among others. Thus, in this study, it is assumed that investment is a function of relative prices of domestic goods (RP), degree of openness (DO) and sources of financing (SF). Accordingly, equation (4.23) could be re-specified as:

[27] See Obstfeld and Rogoff (1996) for an insightful outline of this extensive literature.
[28] This idea is strongly supported by Bergin and Sheffrin (2000).

$$CA_t = f[Y_t, I_t f(RP_t, DO_t, SF_t), G_t] \quad (4.24)$$

Equation (4.24) states that the current account balance depends on domestic output, relative prices of domestic goods, degree of openness, sources of financing and government expenditure. Based on this equation, the current account balance is expected to be zero if there is no deviation of the variables from their actual values. Otherwise, the value of the current account balance will depend on the direction of the fluctuation(s) in the variables, positive or negative, as well as temporary or permanent.

Investment can be affected by the relative prices (Hsu and Chang, 1990; Calderon *et al*., 2002). These relative prices can be proxy by the terms of trade and the real exchange rate. Dornbusch (1983) demonstrated that an anticipated rise in the relative price of internationally traded goods can raise the cost of borrowing from the rest of the world, when interest is paid in units of these goods. This assertion suggests that the real exchange rate can stimulate substitution in consumption between periods, and it can have inter-temporal effects on a country's current account balance similar to those of changes in the interest rate.

Investment projects are expected to be financed with either domestic or foreign resources. Feldstein and Bacchetta (1991) argued that an increase in national saving has a substantial effect on the levels of investment. Calderon *et al.* (2002) opined that the domestic sources of financing investment can be a proxy by domestic savings while foreign sources can be a proxy by external debt and foreign aid. Especially in developing countries, external debt and foreign aid exert significant influence on their economic activities[29].

Accordingly, equation (4.24) can be re-specified as:

$$CA_t = f[GGDP_t, I_t f(OPN_t, TOT_t, RER_t, SAV_t, ED_t, AID_t), GOV_t] \quad (4.25)$$

Written in a specific form within panel framework, equation (25) can be further re-specified as:

[29] See Adedeji et al. (2005) in the book tittle "The Balance of Payments Analysis of Developing Economies: Evidence from Nigeria and Ghana", published by Ashgate Publishing Limited for more on this.

$$CA_{i,t} = \beta_1 + \beta_2 GGDP_{it} + \beta_3 OPN_{it} + \beta_4 TOT_{it} + \beta_5 RER_{it} + \beta_6 SAV_{it} + \beta_7 ED_{it} + \beta_8 AID_{it} + \beta_9 GOV_{it} + \mu_{it} \qquad i = 1, \dots, N; \;\; t = 1, \dots, T \tag{4.26}$$

Where $i = 1, \dots, N$ is the number of groups, $t = 1, \dots, T$ is the number of periods

Equation (5.26) is the model that forms the fulcrum of this thesis. CA is the current account balance in the selected countries. It is measured in real term as the percentage share of the current account balance in GDP. GGDP represents percentage changes in the domestic output. It is measured as the growth rate of GDP. OPN represents the degree of trade openness measures in real term as the percentage share of the sum of exports and imports in GDP. TOT stands for terms of trade, an index that measures the ratio of export prices to import prices. It is measured at constant value, fixing its value in 2000 at 100. RER represents the real exchange rate. It is measured in real term as the end of period official exchange rate adjusted by the ratio of domestic price and the foreign price (the US consumer price index). SAV represents domestic savings. It is measured as the percentage share of the net national savings of gross national income (GNI). ED stands for external debts; it is also measured in real term as the percentage share of external debt in GDP. AID represents the aid inflow into the SSA countries. It is measured in real term as the net official development assistance and official aid received as the percentage share in GDP. GOV represents the government expenditure which in this study is the measure of fiscal policy. It is measured as general government final consumption expenditure as the percentage share in GDP. A *priori*, it is expected that the coefficients of AID and SAV would be positive, GOV, ED and ER are all expected to be negatively signed while OPN and TOT are ambiguous, they could either be positive or negative, depending on the prevailing circumstances. Data for the current account balance, government expenditure, savings, openness, aid and external debt are obtained from the World Development Indicators (World Bank). Exchange rate and consumer prices for home and abroad (The United States) are obtained from the International Financial Statistics (International Monetary Fund) while terms of trade is obtained from Africa Development Indicators (Africa Development Bank). Table 4.1 gives the detailed definitions, descriptions, unit of measurement and sources of the employed variables.

Table 4. 1: Definitions and Sources of Variables

Variable	Description	Units	Database
CAB	Current account balance is the sum of net exports of goods, services, net income, and net current transfers. $((ca > 0\ surplus; ca < 0\ deficit)$	% of GDP	WDI[30]
OPN	Trade openness: Sum of exports and imports	% of GDP	WDI
ED	Total external debt is debt owed to non-residents repayable in foreign currency, goods, or services. It is the sum of public, publicly guaranteed, and private nonguaranteed long-term debt, short-term debt, and use of IMF credit. Data are in current U.S. dollars.	% of GDP	WDI
GGDP	GGDP is the growth rate of the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products.	Index number	WDI
GOV	General government final consumption expenditure	% of GDP	WDI
AID	Net official development assistance and official aid received	% of GDP	WDI
RER	Real exchange rate is the end of Period official rate	Index number	IFS[31]
TOT	Terms of trade is the ratio of export prices to import prices	Index number (2000=100)	ADI[32]
SAV	Adjusted savings: net national savings	% of GNI	WDI

Source: Compiled by the author

[30] World Development Indicators
[31] International Financial Statistics
[32] Africa Development Indicators

One of the estimation techniques employed in this research is the Generalized Method of Moments (GMM) by Arellano and Bover (1995) and Blundell and Bond (1997). The GMM is dynamic in nature and it is applauded for its ability to cater for possible endogeneity among variables. It is an econometric framework which allows the estimation of the parameters of modern macroeconomic models, which are typically based on the inter-temporal optimization and rational expectations. It allows for the independent effect of the lagged dependent variable. It is an estimation procedure that allows economic models to be specified while avoiding often unwanted or unnecessary assumptions, such as specifying a particular distribution for the errors. One of the reasons why it is widely applicable is because it requires little structure.

Within the GMM framework, equation (26) is written as:

$$CA_{i,t} = \beta_1 CA_{i,t-1} + \beta_2 GGDP_{it} + \beta_3 OPN_{it} + \beta_4 TOT_{it} + \beta_5 RER_{it} + \beta_6 SAV_{it} + \beta_7 ED_{it} + \beta_8 AID_{it} + \beta_9 GOV_{it} + \mu_{it} \quad (4.27)$$

The error term μ_{it} has two components: the unobserved country specific effects (V_i) and the observed specific error (e_{it}). Introducing this into equation (4.27) yields.

$$CA_{i,t} = \beta_1 CA_{i,t-1} + \beta_2 GGDP_{it} + \beta_3 OPN_{it} + \beta_4 TOT_{it} + \beta_5 RER_{it} + \beta_6 SAV_{it} + \beta_7 ED_{it} + \beta_8 AID_{it} + \beta_9 GOV_{it} + v_i + e_{it} \quad (4.28)$$

Several econometric problems may arise from estimating equation (4.28). These problems include correlation of the explanatory variables with the error term, correlation of time-invariant country characteristics with independent variables, autocorrelation due to the presence of the lagged dependent variable $(CA_{i,t-1})$ and possibility of the panel dataset to have a longer time dimension in relation to country dimension. The estimation technique of Generalized Method of Moment (GMM) for panel data analysis proposed by Arellano and Bond (1991) adequately caters for all the identified difficulties. Beck *et al.* (2000) argued that the GMM panel estimator is good at exploiting the time-series variation in the data by accounting for unobserved individual specific effects and therefore provide better control

for endogeneity of all the explanatory variables. Introducing the lagged level of the regressors into the right hand side of equation (4.28) gives:

$$\begin{aligned}(CA_{i,t} - CA_{i,t-1}) \\ &= \beta_1(CA_{i,t-1} - CA_{i,t-2}) + \beta(Q_{i,t} - Q_{i,t-1}) + (v_i - v_i) \\ &+ (e_{i,t} - e_{i,t-1}) \quad (4.29)\end{aligned}$$

Where Q and β are vectors representing $[GDP, OPN, TOT, RER, SAV, ED, AID, GOV]$ and $[\beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7, \beta_8, \beta_9]$ respectively. The above equation expresses the explanatory variables as predetermined and therefore, not correlated with the error term in equation (4.27). Re-arranging equation (4.29) or transforming equation (4.27) using first-differences results in:

$$\Delta CA_{i,t} = \beta_1 \Delta CA_{i,t-1} + \beta \Delta Q_{i,t} + \Delta e_{i,t} \quad (4.30)$$

Equation (4.30) reveals that the fixed country specific effects are removed because it does not vary with time. Similarly, the lagged dependent variable that may give rise to autocorrelation has been taken care of.

The use of instruments is required to avail the possibility that the error term (e) is not serially correlated and that the explanatory variables are weakly exogenous. These assumptions make the following moment conditions given in equations (4.31) and (4.32) applicable.

$$E[CA_{i,t-s}(e_{i,t} - e_{i,t-1})] = 0 \; for \; s \geq 2; \;\; t = 3, \ldots, T \quad (4.31)$$

$$E[Q_{i,t-s}(e_{i,t} - e_{i,t-1})] = 0 \; for \; s \geq 2; \;\; t = 3, \ldots, T \quad (4.32)$$

The Differences estimator[33] (another type of GMM estimator) is based on the moment conditions in equations (4.31) and (4.32). Although the estimator is asymptotically consistent, it has large biases in small samples and low asymptotic precision. Additional

[33] Difference GMM estimator first proposed by Holtz-Eakin, Newey and Rosen (1998).

moment conditions are required for system GMM and they are specified in equation (4.33) and (4.34)[34].

$$E\left[CA_{i,t-p} - CA_{i,t-p-1}\left(\vartheta_i + e_{i,t}\right)\right] = 0 \; for \; p = 1 \tag{4.33}$$

$$E\left[Q_{i,t-p} - Q_{i,t-p-1}\left(\vartheta_i + e_{i,t}\right)\right] = 0 \; for \; p = 1 \tag{4.34}$$

Employing the moment conditions stated in equations (4.31), (4.32), (4.33) and (4.34), in addition to suggestions of Arellano and Bond (1991) and Arellano and Bover (1995), consistent estimates of the parameters of interest can be generated through a GMM procedure. The consistency of the GMM estimator depends on whether lagged values of the explanatory variables are valid instruments in the current account balance regression. Amid the GMM estimators, the system GMM is preferred above other GMM estimators. For instance, the pooled OLS estimator does not control for the joint endogeneity of the explanatory variables nor for the presence of country-specific effect; the within OLS estimator eliminates the country-specific effect but does not account for joint endogeneity of the explanatory variables; the levels GMM estimator controls for joint endogeneity but not for country-specific effects; and the difference GMM estimator accounts for both joint endogeneity and country-specific effects but eliminates valuable information and uses weak instruments. Some of these shortcomings are well taken care of in the system GMM estimator. To be specific, the system GMM estimator joins in a single system the regression equation in both levels and differences given in equations (4.28) and (4.30), respectively, using the moment conditions given in equations (4.31), (4.32), (4.33) and (4.34).

Another estimation technique that has been widely used in the context of panel analysis in analysing the dynamic response of a variable to shocks in other variable(s) is panel vector autoregressive (PVAR). The technique has become increasingly popular in recent decades. It is a viable tool to summarize the dynamics of macroeconomic variables. VAR models are estimated to give empirical evidence on the response of macroeconomic variables to various exogenous impulses in order to discriminate between alternative theoretical models

[34] Equation (36) and (37) are conditional on the stationary property given as:
$\mathrm{E}\left[CA_{i,t+r}.\vartheta_i\right] = \mathrm{E}\left[CA_{i,t+s}.\vartheta_i\right]$ *and* $\mathrm{E}\left[X_{i,t+r}.\vartheta_i\right] = \mathrm{E}\left[X_{i,t+s}.\vartheta_i\right]$ *for all r and s*

of the economy. VAR has been used in the literature to identify shocks and to determine the lag length. Furthermore, the simple framework of VAR provides a systematic way to capture rich dynamics in multiple time series. The statistical toolkits that are embedded in VARs are easy to use and to interpret. As opined by Sims (1980), VARs has the potential of providing a coherent and credible approach to data description, forecasting, structural inference and policy analysis.

To analyse the impact of unanticipated policy shocks on the macro variables in a more convenient and comprehensive way, Sims (1980) proposed the use of impulse response functions (IRFs) and forecast error variance decompositions (FEVDs). Sims (1980) and other influential papers on VAR argued that the impulse response functions provide the platforms to analyse the dynamic behaviour of the target variables due to unanticipated shocks in the policy variables. Impulse responses trace out the response of current and future values of each of the variables to a one-unit increase (or to a one standard deviation increase, when the scale matters) in the current value of one of the VAR errors, assuming that this error returns to zero in subsequent periods and that all other errors are equal to zero. The IRFs mark out the reaction of all the variables in the VAR system to innovations in one of the variables and therefore it is a viable tool used to analyse the effects of structural innovations.

FEVDs represent the decomposition of forecast error variances and therefore give estimates of the contributions of distinct innovations to the variances. Thus, they can be interpreted as showing the portion of variance in the prediction for each variable in the system that is attributable to its own innovations and to shocks to other variables in the system. Forecast variance decomposition separates the variation in an endogenous variable into the component shocks to the VAR. Thus, the variance decomposition provides information about the relative importance of each random innovation in affecting the variables in the VAR.

Expressed in terms of PVAR framework, equation (4.26) can be written as:

$$Ay_{i,t} = \sum_{k=1}^{p} B_k y_{i,t-k} + \epsilon_{i,t} \qquad (4.35)$$

Where

$$Z_{i,t} = \left[GOV_{i,t}\,, GGDP_{i,t}\,, OPN_{i,t}\,, TOT_{i,t}\,, RER_{i,t}\,, SAV_{i,t}\,, ED_{i,t}\,, AID_{i,t}\,, CAB_{i,t}\right]$$

$$\in_{i,t} = \left[\in_{i,t}^{GOV}\,, \in_{i,t}^{GGDP}\,, \in_{i,t}^{OPN}\,, \in_{i,t}^{TOT}\,, \in_{i,t}^{RER}\,, \in_{i,t}^{SAV}\,, \in_{i,t}^{ED}\,, \in_{i,t}^{AID}\,, \in_{i,t}^{CAB}\,,\right]$$

The current account balance is placed last in the ordering of the PVAR model in order to capture primarily, the exogenous component of the current account balance shock when calculating variance decompositions and impulse response functions. This ordering also accounts for the possibility of movements in the current account balance, which may respond subsequently to changes in other variables after the initial exogenous shock from fiscal policy variable.

Persaran and Smith (1995), Im, Persaran, and Shin (2003) and Phillips and Moon (2000) argued that in carrying out panel analysis, the assumption of homogeneity of slope parameters is often inappropriate. Thus, in order to explore the heterogeneity across the pooled countries and test for the existence of long run and the speed of adjustment in the short run in this study, equation (4.26) can be re-specified in its dynamic form assuming an autoregressive distributive lag $(p, q_1, \ldots, q_k)$ as:

$$CA_{i,t} = \sum_{j=1}^{P} \lambda_{i,j} CA_{i,t-j} + \sum_{j=0}^{q} \delta'_{i,j} Q_{i,t-j} + \nu_i + e_{i,t} \qquad (4.36)$$

where $\delta'_{i,j}$ are Kx1 coefficient vectors and $\lambda_{i,j}$ are scalars.

It is expected that the error term $e_{i,t}$ in equation (4.36) follows a $I(0)$ process for all i, as long as the variables in the equation are cointegrated. It follows from this that an error correction model that captures the short run dynamics of the variables in the equation due to any deviation from equilibrium can be specified as:

$$\Delta \mathrm{CA}_{i,t} = \phi_i\left(\mathrm{CA}_{i,t-1} - \theta_i' \mathrm{Q}_{i,t}\right) + \sum_{j=1}^{p-1} \lambda_{i,j}^{*} \Delta CA_{i,t-j} + \sum_{j=0}^{q-1} \delta_{i,j}'^{*} \Delta Q_{i,t-j} + \nu_i + e_{i,t} \qquad (4.37)$$

where $\phi_i = -\left(1 - \sum_{j=1}^{p} \lambda_{i,j}\right)$;

$\theta_i = \sum_{j=0}^{q} \delta_{i,j} / 1 - \sum_k \lambda_{i,k}$;

$\lambda_{i,j}^{*} = -\sum_{m=j+1}^{p} \lambda_{i,m}$, $\quad j = 1,2, \ldots, p-1$ and

$\delta_{i,j}^{*} = -\sum_{m=j+1}^{q} \delta_{i,m}$, $\quad j = 1,2, \ldots, q-1$.

The error correcting coefficient in equation (4.37) is expected to be significantly negative, which implies that there is inbuilt mechanism within the system to correct for any deviation of the variables from their long-run equilibrium. If the error correcting coefficient speed of the adjustment term in equation (4.37) is zero $(\phi_i = 0)$, there is no evidence for a long-run relationship among the variables. The long-run relationships among the variables are expressed in the vector θ_i' and the relationships are often parameters of interest[35]. However, since the interest of this thesis is in understanding the dynamics of the current account balance in SSA, both the long-run and the short-run parameters are considered.

Various approaches have been proposed for the estimation of equation (4.37). One of such approach is Dynamic Fixed-Effect (DFE) estimation. Dynamic fixed effect estimation allows intercepts to differ across groups, but constrains long-run coefficients to be equal across groups. Blackburne III and Frank (2007) argued that DFE estimation relies on pooling of cross-sections but can produce inconsistent and potentially misleading result if slope coefficients are not identical. The two other approaches that can be employed include The Mean Group (MG) estimation, introduced by Pesaran and Smith (1995), and the Pooled Mean-Group (PMG) estimation technique that was introduced by Pesaran *et al.* (1997, 1999). Blackburne III and Frank (2007) argued that the two methods are useful for estimating nonstationary dynamic panels in which the parameters are heterogeneous across groups. The MG estimator estimates time-series regressions for individual pooled countries and averages the coefficients. It relies on averaging of cross-sections. It allows the intercept, short-run coefficients, and error variances to differ across the groups The PMG estimator combined pooling and averaging of coefficients. The PMG estimator allows the intercept, short-run coefficients, and error variances differ across the groups, but constrain

[35] See Blackburne III and Frank (2007)

the long-run coefficients to be equal across groups, thus combining the features of MG and FE estimators.

However, given the nature of data requirement in employing the MG and PMG estimators[36], only DFE estimator is employed to explore the heterogeneity across the pooled countries and test for the existence of long run and the speed of adjustment in the short run.

4.3.2: Estimation Procedures

The characteristics of the unbalanced panel data used in the analysis were first evaluated. The summary statistics of the current account balance, trade openness, external debt, terms of trade, government expenditure, real exchange rate, aid and savings were presented. The statistical properties of the variables provide information about the means, medians, standard deviations, skewness, kurtosis and jarque-Bera statistics of each variable. Mean is the average value of the series, the median is the middle value of the series when the values are ordered from smallest to the largest. Of the two, the median is a robust measure of the centre of the distribution that is less sensitive to outliers. Max and Min represent the maximum and minimum values of the series in the employed sample. Standard deviation measures dispersion in the series. Skewness measures asymmetry of the distribution of the series around its mean and it is expected to be zero for normal distribution. Positive/negative skewness means that the distribution has a long right/left tail. Kurtosis measures the peakedness or flatness of the distribution of the series while Jarque-Bera is a test statistic for testing whether the series is normally distributed. The test statistic measures the difference of the skewness and kurtosis of the series with those of the normal distribution.

Thereafter, the time properties of the data were examined. Two types of panel unit root tests were carried out, namely, the Levin, Lin, and Chu *t*-test, and the Im, Pesaran, and Shin *W*-test, assuming intercept only. Levin, Lin, and Chu (2002) extended the work of Quah (1994) that derived asymptotically normal distributions for standard unit root tests in panels

[36] Blackburne III and Frank (2007) explained that time dimension of the employed variables must be large enough such that the model can be fitted for each group separately. Given that the sample period in this thesis range from 1985 to 2009 (24 years), the condition is not met, thus MG and PMG estimators cannot be employed.

for which the time series and cross-sectional dimensions grew large at the same rate. They considered the case in which both dimensions grew large independently and derived asymptotic distributions for panel unit root tests that allowed for heterogeneous intercepts and trends across individual members. Im, Pesaran, and Shin (2003) developed a panel unit root estimator based on a group mean approach (See: Pedroni, 2004; Levin, Lin, and Chu, 2002; Im, Persaran and Shin, 2003).

As a general rule, non-stationary time series should not be used in regression models in order to avoid the problem of spurious regression. Engle and Granger (1987) pointed out that a linear combination of two non-stationary series may be stationary. The existence of a stationary linear combination of the non-stationary time series is referred to as cointegration and it can be interpreted as a long-run equilibrium relationship among the variables. Given this consideration, the Kao Residual Cointegration test was first conducted testing the null hypothesis of existence of "no cointegration". Kao (Engle-Granger based) Cointegration test follows the same basic approach as the Pedroni tests, but specifies cross-section specific intercepts and homogeneous coefficients on the first-stage regressors. The test was based on the assumption of no deterministic trend.

Probing further on the existence of cointegration among the current account balance and its determinants, residual based panel cointegration test developed by Pedroni (1999, 2004) was employed[37]. Pedroni proposed several tests for cointegration that allow for heterogeneous slope coefficients across cross-sections. The tests are Panel v-Statistic, Panel rho-Statistic, Panel PP-Statistic, Panel ADF-Statistic, Group rho-Statistic, Group PP-Statistic and Group ADF-Statistic. In the alternative hypothesis, the residual is nonstationary which literally implies that there is no cointegrating relationship. In the alternative hypothesis, the residuals are stationary (i.e. there is a cointegrating relationship). In addition, Pedroni's test of cointegration assumed that the residuals of the alternative hypothesis have common autoregressive (AR) coefficients for the first four tests; namely, Panel v-Statistic, Panel rho-Statistic, Panel PP-Statistic and Panel ADF-Statistic; and individual AR coefficients for the last three tests which are Group rho-Statistic, Group PP-

[37] The maximum numbers of variables that can be tested at a time with the available software for Pedroni are seven. Two of the variables introduced through investment (TOT and SAV) were dropped.

Statistic and Group ADF-Statistic. Four of the tests, namely Panel PP-Statistic, Panel ADF-Statistic, Group rho-Statistic, and Group ADF-Statistic, were carried out and their results were reported accordingly.

In order to establish the impact (both in the short run and long run) of government expenditure and other control variables employed in the current account balance in SSA, DFE estimator was employed to estimate the models specified in equation (4.37). Five versions of the DFE results were derived from five sub-groups of the sampled countries. The first version results are obtained from pooled data from all the selected 34 SSA countries, while the remaining four versions were estimated by re-grouping the sampled countries in line with the IMF classification, which is oil-exporting countries, middle-income countries, low-income excluding fragile countries and fragile countries[38].

Furthermore, in estimating the dynamic panel model of the current account balance specified in equation (4.26), several estimation procedures are explored to establish the robustness of the relationship. This approach helps to answer the question of the extent of the impact of the current account determinants on the current account balance. It helps to quantify the extent of the impact exerted by government expenditure and other control variables on the current account balance. The two-step GMM *system* estimator is employed because of its several abilities. Several specifications and diagnostic tests are undertaken to authenticate the results and establish their robustness. The first is a Hansen test of over-identifying restrictions, which test the overall validity of the instruments by analysing the sample analogue of the moment conditions used in the estimation process. Failure to reject the null hypothesis gives support to the model. The second test examines the hypothesis that the error term is first- or second order serially correlated. First-order serial correlation of this error term is expected, while the second-order serial correlation of the differenced residual indicates that the original error term is serially correlated and follows a moving average process at least of order one. Failure to reject the null hypothesis of absence of second-order serial correlation implies that the original error term is serially

[38] Out of the thirty four (34) selected countries, five (5) are from oil-exporting countries, eleven (11) are from middle-income countries, fourteen (14) are from low-income and fragile countries and twelve (12) are from fragile countries. See Appendix D2 for the list of various countries that fall into each group.

uncorrelated and uses the corresponding moment conditions specified in equations (4.31), (4.32), (4.33) and (4.34).

In order to analyse the dynamic impact of fiscal policy changes in the current account balance, PVAR was carried out. PVAR results are presented in the form of the dynamic impulse response and variance decomposition of the current account balance to the Cholesky One Standard Deviation innovations from fiscal policy. However, the lag order selection of the VAR model, which is critical to its analysis, was first carried out. This is because VAR are generally sensitive to lag length. Kilian (2001) as well as Hamilton and Herrera (2004) argued that different lag orders can significantly affect the substantive interpretation of VAR estimates, especially, when those differences are large enough. As pointed out by Kireyev (2000), few lags do not adequately capture the dynamics of the system and lead to omitted variable bias while too many lags lead to loss of too much information, thus appropriate lag length matters.

The selection of the optimum lag length was guided by some pre-specified criterion, basically 5 in this study. They are Sequential Modified Likelihood Ratio (LR) test, Final Prediction Error, Akaike Information Criterion (AIC), the Schwarz Information Criterion (SIC) and the Hannan Quinn Criterion (HQC). The literature suggested that these criteria may draw different conclusions on the lag order. However, Ivanov and Kilian (2005) argued that the SIC is the most accurate criterion for all realistic sample sizes.

Furthermore, in ensuring that the selected lag lengths were appropriate, a multivariate diagnostic test, Portmanteau Tests for Autocorrelations, was applied to test the null hypothesis that "there is no residual autocorrelations up to lag h".

The reactions of other variables to the shock from government expenditure are assumed (Response to Cholesky One S.D. Innovation from government expenditure). The differences in dynamic responses of variables to government expenditure shocks are evaluated by comparing aggregate impulse response functions and variance decompositions over 12 years. The impulse response functions will trace out the time path of variable response to shocks in the error terms for several periods in the future and show the sign and time trajectory of the impact. Variance decomposition describes the percentage of the

variation in other variables, at the same time pointing out the current account balance, in this case, among others, since it is the variable of interest as explained by the fiscal policy measure, which is government expenditure. As suggested by Ramey and Francis (2009), the panel VAR is estimated in level to ensure that relevant information are lost, since over-differencing may remove important information.

4.4: Data Sources

Annual time series data, from *the IMF's annual World Economic Outlook Database, the IMF International Financial Statistics CD-ROM, and the World Bank Social Indicators of Development Database,* is employed. The data for the current account balance, government expenditure, savings, openness, labour force, aid and external debt were collected from the World Development Indicators (World Bank). Exchange rate was obtained from the International Financial Statistics (International Monetary Fund) while terms of trade was obtained from Africa Development Indicators (Africa Development Bank). Table 4.1 gives the detail definitions, descriptions, unit of measurement and sources of the employed variables. Some data points are missing in some countries; this made the panel data to be unbalanced.

CHAPTER FIVE

MODEL ESTIMATIONS, EVALUATION AND INTERPRETATION OF RESULTS

5.1: Introduction

This chapter presents the estimated result of the models specified in the previous chapter. It begins with the summary of statistics of the variables employed. Unit root tests with panel data are discussed to substantiate the compatibility of the series with the inherent characteristics of the model vis-a-vis the estimation techniques employed. Cointegration tests are carried out, thereafter, the correlation analysis, which assesses the association between fiscal policy and the current account balance as well as its other determinants, is presented. The relationship between fiscal policy and the current account balance in SSA, as well as other control variables, are examined. Several diagnostic tests are carried out with a view to ascertain the reliability of the findings as regarding the policy applicability and inferences drawn.

5.2: Statistical Properties of the Variables

The characteristics of the panel data used in the regression analysis are presented in Table 5.1. The table provides clues about the mean, median, standard deviation, skewness as well as the Jarque-Bera statistics of each variable. The variables are systematically distributed. The mean, median as well as values for the maximum and minimum of the variables employed are good evidences supporting this claim. The current account balance averaged -4.88, implying deficit on average. Government spending averaged 15.37. The real exchange rate has the least average, while the terms of trade had the highest (0.77 and 114.02, respectively). It can also be observed from the table that the mean values of all the variables employed are not too different from their respective median values. This is an indication of absence of excessive outliers and stability of the variables employed, which are essential for the analyses carried out in this study. The value of the standard deviation of each of the variables is a further proof of the fact that the distribution of the variables is approaching normal distribution. In addition, the skewness, kurtosis and standard deviation statistics show that the variances of the variables are not unnecessarily large. The current account balance is negatively skewed. This implies a relatively fat-left tail. This is also true of the growth rate of the domestic output and real exchange rate. Other variables have

relatively fat-right tails. The current account balance and other variables are with excess kurtosis which is suggestive of higher peak than a normal distribution.

Table 5. 1: Summary Statistics of the Current Account Balance and Its Determinants

	CAB	OPN	ED	GGDP	GOV	AID	RER	TOT	SAV
Mean	-4.88	71.66	85.21	4.24	15.37	12.29	0.77	114.02	6.12
Median	-4.85	62.07	70.85	4.11	13.9	9.95	0.87	102.04	5.23
Maximum	32.54	256.36	478.18	35.22	47.53	94.41	1.88	315.63	46.84
Minimum	-52.69	10.83	3.22	-50.25	2.68	-0.25	0	20.72	-27.08
Std.Dev	8.99	39.34	67.50	5.73	6.78	11.71	0.35	41.64	10.25
Skewness	-0.57	1.15	2.09	-0.23	1.33	2.17	-0.68	1.79	0.59
Kurtosis	7.10	4.33	9.64	18.04	5.27	10.15	2.75	7.75	4.35
Jarque-Bera	593.31	243.37	2131.92	7967.56	418.17	2438.2	64.07	1168.44	99.58
Probability	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum	-3831.9	59120.8	70812.7	3580.48	12560.2	10282.8	624.6	90300.4	4512.30
Sum Sq. Dev	63428.5	1274949	3781960	27688.5	37527.10	114670.7	98.46	1371596	77283.2
Observations	785	918	831	845	817	837	813	792	737

Source: Author's Computation with data from WDI (2010)

5.3: Stationarity Test

The variables used in the analysis were subjected to two types of unit root tests, Im, Persaran and Shin test and Levin, Lin and Chu test, to determine whether they were stationary or non-stationary series. The two tests were employed to reinforce one another to ensure their robustness and boost confidence in their reliability. The tested null hypothesis for both unit root tests was the presence of a unit root.

The results of the unit root tests as presented in Table 5.2 indicated that all variables under consideration were stationary at level except external debt and real exchange rate for both tests. However, external debt and real exchange rate were found stationary after first differencing. This implies that external debt and real exchange rate variables were integrated of order one.

Table 5. 2: The Unit Root Test Results for the Selected Variables

Variables		Im, Pesaran and Shin *W*-stat	Levin, Lin & Chu t*	Conclusion
CAB	Level	-6.18	-6.17	I(0)
OPN	Level	-4.43	-3.16	I(0)
ED	Level	3.096	2.464	I(1)
	1st Difference	-17.13	-18.13	
GGDP	Level	-16.24	-15.63	I(0)
GOV	Level	-2.15	-2.23	I(0)
AID	Level	-6.03	-5.55	I(0)
RER	Level	9.78	9.5	I(1)
	1st Difference	-6.93	-6.25	
TOT	Level	-1.56	-3.836	I(0)
SAV	Level	-5.386	-5.156	I(0)

Source: Author's Computation with data from WDI (2010)

Note: The critical values are -3.64, -2.95 and -2.61 at 1%, 5% and 10% significance levels, respectively.

5.4: Tests for Cointegration

Cointegration tests were carried out to establish if there was a long-run relationship among variables employed. Two types of the cointegration tests were adopted, namely, Kao Residual Cointegration Test and the Panel Cointegration Test, developed by Pedroni (1999, 2004). Kao Residual Cointegration Test was first conducted, testing the null hypothesis of no cointegration. The test was based on the assumption of no deterministic trend. The result of the test was presented in Table 5.3.

The first observation about the result related to the ADF test, which rejected the null hypothesis of no cointegration, given the very high statistical significance of the ADF statistic, yielding residual variance and HAC variance of 22.54 and 11.69, respectively. This result suggested that there exist cointegration among the current account balance, trade openness, external debt, the growth rate of domestic output, government expenditure, aid, real exchange rate, terms of trade and domestic savings. Thus, the result established the existence of the long run relationship between the current account balance and its determinants in SSA.

Table 5. 3: KAO Residual Cointegration Test for the Current Account Balance and its Determinants

	t-Statistic	Prob.
ADF	-5.916507	0.0000*
Residual variance	35.54317	
HAC variance	22.40899	

*Note: *denote the rejection of the null hypothesis at 1% significance level*

Table 5. 4: Pedroni Panel Cointegration Tests[39]

Tests	Statistic	Probability
Panel PP-Statistic	-1.9555	0.0253**
Panel ADF-Statistic	-1.6859	0.0459**
Group PP-Statistic	-10.4122	0.0000*
Group ADF-Statistic	-7.1757	0.0000*

*Note: * and ** denote the rejection of the null hypothesis at 1% and 5% significance levels, respectively*

[39] The maximum numbers of variables that can be tested at a time with the available software for conducting estimation with the Pedroni technique are seven. Two of the variables introduced through investment (TOT and SAV) were dropped from the test.

In addition, the Pedroni Panel Cointegration Test was also carried out. The test has seven independent statistics predicting if there is cointegration among the variables of interest. Four of the tests were reported in Table 5.4. The first-two are Panel PP and ADF statistics while, the remaining two are Group PP and ADF statistics. The Panel PP and ADF-statistics were significant at the 5 % level while the Group PP and ADF-statistics were significant at the 1 % level. The results showed that the four statistics reported were statistically significant. This suggested that the current account balance, government expenditure and the other determinants of the current account balance were cointegrated, suggesting the existence of long run relationship. Pedroni Cointegration Test result corroborated the earlier Kao Residual Cointegration Test. The conclusion derived from the two tests for panel cointegration was the existence of cointegrating relation(s) among the variables employed in the study. This implied the existence of long-run relation among government expenditure, the current account balance and its other determinants in SSA.

5.4: Correlation Analysis

Correlation indicates the degree of association between variables; it assesses the extent and strength of the association between two variables. The correlation matrix of the current account balance and its determinants in SSA was presented in Table 5.5. The table presented all possible bivariate combinations of the current account balance and its determinants in SSA. This helped to understand patterns of linear association that exists between the current account balance and its determinants; it gave insight into understanding the econometric results and other analyses that were later carried out in this study.

The current account balance had a significant linear association with trade openness, external debt, aid, real exchange rate, and domestic savings in SSA, within the period considered. However, the current account balance did not correlate with a growth rate of domestic output, government spending and terms of trade. There was relatively low, but a positive linear relationship between the current account balance and trade openness. The degree of linear association between the current account balance and external debt was low and negative. Also, aid was inversely related to the current account balance in SSA, although the degree of association between them was low. The degree of association

between domestic saving and the current account was direct and slightly above average. This suggested a positive linear relationship between the two variables. Although, the correlation between government expenditure and the current account was positive, the relationship was not significant. This was also true of the growth rate of domestic output. The terms of trade was negatively associated with the current account balance, but the association was not significant.

Table 5. 5: Correlation Matrices of the Current Account Balance and Its Determinants

	CAB	OPN	ED	GGDP	GOV	AID	RER	TOT	SAV
CAB	1								
OPN	0.086	1							
	(0.028)**	-----							
ED	-0.419	-0.064	1						
	(0.000)*	(0.105)	-----						
GGDP	0.038	-0.036	-0.114	1					
	(0.331)	(0.366)	(0.004)*	-----					
GOV	0.055	0.455	-0.191	-0.118	1				
	(0.163)	(0.000)*	(0.000)*	(0.003)*	-----				
AID	-0.337	-0.227	0.583	0.086	-0.072	1			
	(-0.000)*	(0.000)*	(0.000)*	(0.029)**	(0.07)***	-----			
RER	0.072	0.198	-0.326	0.135	0.129	-0.313	1		
	(0.068)***	(0.000)*	(0.000)*	(0.001)*	(0.001)*	(0.000)*	-----		
TOT	-0.041	-0.208	-0.011	-0.014	-0.083	0.122	-0.037	1	
	(0.301)	(0.000)*	(0.774)	(0.715)	(0.035)**	(0.002)*	(0.350)	-----	
SAV	0.517	0.306	-0.393	0.153	0.299	-0.224	0.085	-0.171	1
	(-0.000)*	(0.000)*	(0.000)*	(0.000)*	(0.000)*	(0.000)*	(0.031)*	(0.000)*	-----

*Note: *, ** and *** denote the rejection of the null hypothesis at 1%, 5% and 10% significance levels respectively. Numbers in parenthesis are the probability-values of the estimated coefficients.*

In order to examine the determinants of the current account balance in SSA and examine the relationship between fiscal policy and the current account balance in SSA, the DFE technique of estimation was employed to estimate Equation (4.37)[40]. The DFE estimates restrict all coefficients, except the country-specific intercepts, to be the same. Put differently, DFE estimator restricts the coefficients of the cointegrating vector to be equal across all panels. It also restricts the speed of adjustment coefficient and the short-run coefficients to be equal.

The result reported in Table 5.6 is the DFE estimates obtained from pooling all the 34 sampled countries together. The long-run estimates of government expenditure was negative (-0.1), conforming to a prior expectation about the effect of expansionary government expenditure that led to the deterioration of the current account balance through its effects on aggregate income and export as elucidated in the theory on the direct effect of fiscal policy on the current account balance[41]. In terms of the magnitude, a percentage increase in the expenditure of government expenditure would result in one-tenth deterioration of the current account balance in SSA countries.

The positive signs of the estimated coefficients for foreign aid and savings also conformed to that of the a prior, while appreciation of real exchange rate resulted in improvement of the current account contrary to the postulation of the theory, although, the coefficient was not statistically significant. This result is counterintuitive, given that a standard international economics framework predicted that depreciation of real exchange rate would make the domestic products attractive to the foreigners due to the competitive advantage that accrue to the exporting countries. The plausible explanation for this observation could be the dominance role play by the exports of the oil-exporting countries among the sampled economies.

The coefficient of the speed of adjustment of the model (-0.512) fell within the postulated range (between 0 and 1), it was rightly signed and statistically significant. The coefficient of the short-run dynamics of the government expenditure in the model was rightly signed and statistically significant. The result implied that in the short-run, any increase in government expenditure would deteriorate the current account balance up to one-fifth of the increase. The

[40] Stata 11 was used to estimate the equation. The code used to execute the task is given as "**xtpmg d.cab d.opn d.ed d.ggdp d.gov d.aid d.rer d.tot d.sav if year >=1985, lr (l.cab opn ed ggdp gov aid rer tot sav) ec(ec) replace DFE cluster(ctrydum)**". This code was also used to carry out other sub-groups DFE estimates (such as oil-exporting countries, middle income countries, low-income and not fragile countries and fragile countries), only that the data used in estimating each group differs from one another.
[41] See Alli Abbas *et al*. (2010)

short-run coefficient of external debt (-0.065) was significant and was rightly signed, while the long-run coefficient had the proper sign but was not significant. This implied that in the short-run, external debt exerted significant negative influence on the current account balance as postulated by the theory, this is also true of the long-run, but the coefficient was insignificant in the empirical analysis.

Table 5. 6: DFE Estimates of the Current Account Balance for All the Selected Countries, 1985-2009

Variable		Coefficient	Standard error	Z	P-value
Long-run estimates					
Ec	**OPN**	-0.0584	0.0574	-1.02	0.309
	ED	-0.0101	0.0231	-0.44	0.662
	GGDP	-0.1784	0.1136	-1.57	0.116
	GOV	-0.1000	0.1398	-0.72	0.474
	AID	0.0035	0.1213	0.03	0.977
	RER	0.0140	2.8607	0	0.996
	TOT	-0.0197	0.0169	-1.16	0.244
	SAV	0.3173*	0.0841	3.77	0.000
Short-run estimates					
SR					
	ec	-0.5120*	0.0567	-8.97	0.000
	opn D1.	0.0416	0.0347	1.2	0.230
	ed D1.	-0.0654*	0.0198	-3.31	0.001
	ggdp D1.	0.0342	0.0614	0.56	0.577
	gov D1.	-0.2066**	0.0867	-2.38	0.017
	aid D1.	0.0261	0.0333	0.78	0.434
	rer D1.	-6.2481	6.2746	-1	0.319
	tot D1.	0.0317	0.0210	1.51	0.131
	sav D1.	0.1496**	0.0662	2.26	0.024
	_cons	1.3179	3.3895	0.39	0.697

*Note: *, ** and *** denote the rejection of the null hypothesis at 1%, 5% and 10% significance levels respectively.*
D1. implies first difference.

A DFE estimator was also used to estimate Equation (4.37) but with data from the five oil-exporting countries among the selected SSA countries. The result of the estimation was reported in Table 5.7. The long-run coefficient of government expenditure had the right sign, but it was greater than the estimate from when all the countries were pooled together. This suggested that in the long-run, the impact of the government expenditure on the current account balance in oil-exporting countries was much higher than that of the other countries. This observation was also true of the short-run impact of government expenditure on the current account balance. The estimated short-run estimates of government expenditure (-0.647) was significant, implying that there was up to six-tenth inverse change in the current account balance as a result of any change in government expenditure.

The long-run coefficient of savings was significant, implying up to 40 per cent improvement in the current account balance as a result of a 100 per cent increase in savings. This was also true in the short-run, but the estimate was not significant in the short-run. Similarly, foreign aid had a significant inverse impact on the current account balance in the long-run, contrary to a prior expectation, as well as in the short-run, but the impact was not statistically significant in the short-run. This result is similar to the finding of Boone (1996). He argued that if foreign aid is devoted to increasing consumption patterns, it would generate a trade-off with declining investment levels. In addition, the increase in disposable income, as a result of foreign aid, exerts upward pressure on domestic interest rate, which encourages domestic savings but discourages investment and ultimately establishes a negative relationship with the current account balance.

The error correction coefficient (-0.594) was rightly signed and significant, suggesting correction of up to 60 per cent of any disequilibrium that may arise in the model as a result of any disturbance to any variable included in the model in the short-run. The significant positive effect of trade openness in the short run is eroded in the long-run, implying that in the long-run, the negative effects of trade openness outweigh the positive effects.

The result also showed that favourable terms of trade significantly improved the current account balance in the short-run. However, in the long-run, the impact turned negative, although not significant.

Table 5. 7: DFE Estimates of the Current Account Balance for the Selected Oil-Exporting Countries, 1985-2009

Variable		Coefficient	Standard error	Z	P-value
Long-run estimates					
ec	**OPN**	-0.0838	0.1359	-0.62	0.538
	ED	-0.0907	0.0637	-1.42	0.154
	GGDP	0.2213	0.7701	0.29	0.774
	GOV	-0.3163	1.1650	-0.27	0.786
	AID	-0.9749**	0.3368	-2.9	0.004
	RER	5.0427	3.7802	1.33	0.182
	TOT	-0.0883	0.1676	-0.53	0.598
	SAV	0.4024***	0.2316	1.74	0.082
Short-run estimates					
SR					
	ec	-0.59364*	0.0826	-7.19	0.000
	opn D1.	0.201453*	0.0296	6.8	0.000
	ed D1.	-0.10324**	0.0413	-2.5	0.012
	ggdp D1.	-0.0691	0.1772	-0.39	0.697
	gov D1.	-0.64689***	0.3371	-1.92	0.055
	aid D1.	-0.0384	0.1478	-0.26	0.795
	rer D1.	-4.6898	17.3097	-0.27	0.786
	tot D1.	0.1532**	0.0598	2.56	0.010
	sav D1.	0.044172	0.1372	0.32	0.748
	_cons	11.97423***	6.2122	1.93	0.054

*Note: *, ** and *** denote the rejection of the null hypothesis at 1%, 5% and 10% significance levels respectively.*
D1. implies first difference.

Middle-income countries, among the selected SSA countries were put together and the DFE estimator was used to derive both long-run and short-run estimates for government expenditure and other determinants of the current account balance. The DFE coefficients estimate of the current account balance for the selected middle-income countries is reported in Table 5.8. The result of the analysis suggested that the impact of government expenditure in the long-run for the middle-income countries was insignificant and marginal (0.09), but positive. However, the short-run impact of the government expenditure on the current account balance (-0.16) was negative and far more than the magnitude for the long-run, but not significant as well.

Long-run estimate for savings and output growth rate turned significant in the model estimated for the long-run. The coefficient of output growth (-0.376) was inversely related to the current account balance, suggesting that the current output in the is Middle-income economies is below the expected permanent value and this induces deterioration in the current account balance, while that of the savings was positively related to the current account balance. The coefficients of foreign aid were positive in both long-and short-run as postulated by the theory, although the magnitude in the short-run was significant and more than that of the long-run, which was not significant. In accordance with the theory, external debt exerted a negative effect on the current account balance in both instances, but the impact was significant in the short-run but not in the long-run.

The error correction term for the current account balance function for the middle-income countries that was expected to be negative, between 0 and 1 and statistically significant, met all the required conditions. The coefficient implied correction of up to 63 per cent in the first period of any disequilibrium that may arise from any of the variables included in the model. The coefficient of adjustment can also be interpreted as the speed of adjustment built into the model to correct for any short-run disequilibrium arising from any of the variables identified as determinants of the current account balance in the study.

Table 5. 8: DFE Estimates of the Current Account Balance for the Selected Middle-Income Countries, 1985-2009

Variable		Coefficient	Standard error	Z	P-value
Long-run estimates					
ec	**OPN**	-0.0188	0.0546	-0.34	0.731
	ED	-0.0304	0.0252	-1.21	0.227
	GGDP	-0.3762**	0.1565	-2.4	0.016
	GOV	0.0911	0.1754	0.52	0.604
	AID	0.1353	0.2267	0.6	0.551
	RER	-3.1705	3.6037	-0.88	0.379
	TOT	0.0006	0.0214	0.03	0.979
	SAV	0.3216*	0.1089	2.95	0.003
Short-run estimates					
SR					
	ec	-0.6315*	0.1011	-6.25	0.000
	opn D1.	-0.0203	0.0461	-0.44	0.659
	ed D1.	-0.0665*	0.0133	-4.99	0.000
	ggdp D1.	0.1175	0.0912	1.29	0.198
	gov D1.	-0.1582	0.1185	-1.34	0.182
	aid D1.	0.2827*	0.1672	1.69	0.091
	rer D1.	-19.7708	13.6589	-1.45	0.148
	tot D1.	-0.0199	0.0289	-0.69	0.491
	sav D1.	-0.0155	0.1117	-0.14	0.890
	_cons	-0.7205	8.1202	-0.09	0.929

*Note: *, ** and *** denote the rejection of the null hypothesis at 1%, 5% and 10% significance levels respectively.*
D1. implies first difference.

All other selected countries excluding the previous sub-groups (Oil-exporting and Middle-income countries) were further divided into two: Low-income excluding fragile countries, and Fragile countries. The DFE estimator was also used to estimate for both groups. For the fragile countries, the adjustment coefficient (-0.695) was significant and this was also true of the low-income excluding fragile SSA countries (-0.417). However, the rate at which the adjustment in the short run takes place was much higher in the estimate for fragile economies as compared to the low-income excluding fragile economies.

The coefficient of government expenditure for the fragile economies was significant and conformed with the expected theoretical prediction for the long run estimate (-0.636), while that of the short run estimate for the same set of countries for government expenditure improved the current account in the short-run but the coefficient was not significant. On the other hand, for the low-income excluding fragile countries, the estimated long and short-run coefficients of government expenditure conformed to the postulation of the theory in terms of signs. A 100 per cent increase in government expenditure would result in about one-tenth reduction in the short-run and about 13 per cent decrease in the current account balance in the long-run. However, the coefficients were not significant in both short and long-run.

Output growth rate significantly improved the current account balance of the sampled low-income excluding fragile countries in the short-run, but the effect turned negative in the long-run. The coefficients were 0.071 and -0.056 for low-income excluding fragile countries in short-run and long-run, respectively. Similarly, it was 0.119 and -0.593 for selected fragile countries in short-run and long-run, respectively. In the case of the fragile countries, the long-run coefficient was significant, while that of the short-run was not statistically significant.

The coefficients of real exchange rate for both sets of countries were positive in both long-run and short-run. However, the magnitudes of real exchange rate in fragile countries were much larger than that of the low-income excluding fragile countries. The estimated coefficients of the selected middle-income countries for savings in the long-run was positive and statistically significant (0.322), while that of the short-run was negative (-0.016) and still not significant. For the fragile countries, the estimated coefficient of the savings in the short-run (0.177) was positive and significant and that of the long-run was positive (0.07) but not statistically significant. Similarly for the low-income excluding fragile countries, long-run estimate for terms of trade was negative (-0.032) and significant, while that of the short-run was negative and insignificant. Terms of trade coefficients were insignificant in both long-

and short-run for fragile countries, but positive in both long-and short-run, 0.025 and 0.019, respectively. Foreign aid exerted negative significant impact on the current account balance of the fragile countries in the short-run (-0.051), the effect turned positive and insignificant in the long-run. While for low-income and fragile countries, foreign aid was also negative in the short-run (-0.03) and positive in the long-run, but in both cases, it was not significant. The DFE estimates of the current account balance for the selected low-income excluding fragile countries and fragile countries are reported in Tables 5.9 and 5.10, respectively.

Table 5. 9: DFE Estimates of the Current Account Balance for the Selected Low-Income and Fragile Countries, 1985-2009

Variable		Coefficient	Standard error	Z	P-value
Long-run estimates					
ec	**OPN**	-0.1312***	0.0768	-1.71	0.088
	ED	-0.0378	0.0352	-1.07	0.283
	GGDP	-0.0564	0.1255	-0.45	0.653
	GOV	-0.1321	0.2611	-0.51	0.613
	AID	0.0952	0.2794	0.34	0.733
	RER	0.0351	2.1037	0.02	0.987
	TOT	-0.0318*	0.0156	-2.04	0.042
	SAV	0.0704	0.1933	0.36	0.716
Short-run estimates					
SR					
	ec	-0.4166*	0.0484	-8.61	0.000
	opn D1.	-0.01754	0.0338	-0.52	0.604
	ed D1.	-0.00805	0.0172	-0.47	0.640
	ggdp D1.	0.0711**	0.0276	2.58	0.010
	gov D1.	-0.10029	0.1114	-0.9	0.368
	aid D1.	-0.02864	0.0340	-0.84	0.399
	rer D1.	0.793651	3.3300	0.24	0.812
	tot D1.	-0.00375	0.0131	-0.29	0.774
	sav D1.	0.176577*	0.0432	4.08	0.000
	_cons	2.867628	2.6451	1.08	0.278

*Note: *, ** and *** denote the rejection of the null hypothesis at 1%, 5% and 10% significance levels respectively.*
D1. implies first difference.

Table 5. 10: DFE Estimates of the Current Account Balance for the Selected Fragile Countries, 1985-2009

Variable		Coefficient	Standard error	Z	P-value
Long-run estimates					
ec	**OPN**	0.0772	0.1165	0.66	0.508
	ED	0.0305	0.0383	0.8	0.425
	GGDP	-0.5931*	0.1471	-4.03	0.000
	GOV	-0.6362***	0.3365	-1.89	0.059
	AID	0.0363	0.1228	0.3	0.768
	RER	12.6088	11.6793	1.08	0.28
	TOT	0.0253	0.0254	1	0.319
	SAV	0.2186	0.1579	1.38	0.166
Short-run estimates					
SR					
	ec	-0.69473*	0.0563	-12.34	0.000
	opn D1.	-0.08203	0.0723	-1.13	0.257
	ed D1.	-0.02754	0.0393	-0.7	0.484
	ggdp D1.	0.118795	0.0945	1.26	0.209
	gov D1.	0.116505	0.2406	0.48	0.628
	aid D1.	-0.05063**	0.0240	-2.11	0.035
	rer D1.	15.13666*	4.3187	3.5	0.000
	tot D1.	0.019469	0.0212	0.92	0.358
	sav D1.	0.128771	0.2563	0.5	0.615
	_cons	-13.8644*	4.5027	-3.08	0.002

*Note: *, ** and *** denote the rejection of the null hypothesis at 1%, 5% and 10% significance levels respectively.*
D1. implies first difference.

A synopsis of the DFE results from all the versions of the groups pooled together were reported in Tables 5.11 and 5.12. The long-run estimates of all the five versions of the DEF estimates were presented in Table 5.11, while the short-run estimates of all the five versions were also presented in Table 5.12. The sign of the overall long-run average of all the sampled countries for government expenditure was negative. Similarly, those of oil-exporting, low-income excluding fragile and fragile countries were negative as well. However, the sign of the government expenditure estimate for middle-income was positive. It was only the long-run coefficient of government expenditure for the fragile countries that was significant among all the sub-groups.

In all the sub-groups, savings has positive long-run impact on the current account balance, but the long-run coefficient of savings for low-income excluding fragile countries and fragile countries were not significant. Trade openness and external debt had negative signs for all the sub-groups except for fragile countries. It was only the estimate of trade openness for low-income excluding fragile countries sub-group that was significant, while none of the long-run coefficients of external debt was significant.

The long-run output coefficients for all the sub-groups were negative, except for the oil-exporting countries, although, it was only the long-run estimates of middle-income countries and fragile countries that were statistically significant. The long-run coefficients of foreign aid in all the sub-group were positive, but not significant, except in oil-exporting countries, where it was negative and significant. The long-run estimate of real exchange rate was negative in middle-income countries; otherwise, it was positive and insignificant in all sub-groups. All the long-run estimates of terms of trade were insignificant except for low-income excluding fragile countries, where it was negative and significant. The coefficient was positive for middle-income countries and fragile countries.

All the estimated adjustment coefficients were rightly signed, statistically significant and their magnitudes were within appropriate range. The short-run coefficients of trade openness were positive for all the selected SSA countries, and oil-exporting countries, but only significant in oil-exporting countries. The short-run trade openness estimates for the other sub-groups were negative and insignificant. The short-run external debt coefficients exerted negative impact on the current account balance, but the effects were only significant for all the selected SSA countries, oil-exporting and middle-income sub-groups.

Table 5. 11: Comparison of the Long-Run Coefficients Obtained from the Sub-Groups in SSA

Variable		ALL	OIL EXP	MID-INC	LOW-INC	FRAG
ec	**OPN**	-0.0584	-0.0838	-0.0188	-0.1312***	0.0772
		(0.309)	(0.538)	(0.731)	(0.088)	(0.508)
	ED	-0.0101	-0.0907	-0.0304	-0.0378	0.0305
		(0.662)	(0.154)	(0.227)	(0.283)	(0.425)
	GGDP	-0.1784	0.2213	-0.3762**	-0.0564	-0.5931*
		(0.116)	(0.774)	(0.016)	(0.653)	(0.000)
	GOV	-0.1000	-0.3163	0.0911	-0.1321	-0.6362***
		(0.474)	(0.786)	(0.604)	(0.613)	(0.059)
	AID	0.00351	-0.9749**	0.1353	0.0952	0.0363
		(0.977)	(0.004)	(0.551)	(0.733)	(0.768)
	RER	0.0140	5.0427	-3.1705	0.0351	12.6088
		(0.996)	(0.182)	(0.379)	(0.987)	(0.28)
	TOT	-0.0197	-0.0883	0.0006	-0.0318*	0.0253
		(0.244)	(0.598)	(0.979)	(0.042)	(0.319)
	SAV	0.3173*	0.4024***	0.3216*	0.0704	0.2186
		(0.000)	(0.082)	(0.003)	(0.716)	(0.166)

*Note: *, ** and *** denote the rejection of the null hypothesis at 1%, 5% and 10% significance levels respectively.*
D1. implies first difference.

The short-run estimates of government expenditure for four of the sub-groups were negative and only two of them were statistically significant. The two that were significant were the estimates from all the sampled countries and the one from the oil-exporting sub-group. The magnitude of the short-run estimate of government expenditure for the oil-exporting sub-group (-0.647) was almost three times higher than the average from all the sampled countries (-0.207). One could infer that the average estimate obtained from all the sample countries was greatly influenced by the presence of oil-exporting countries. This observation is very crucial to this analysis, since one of the focuses of the study is to examine the relationship between fiscal policy and the current account balance in SSA. This implies that government expenditure can be used to adjust the current account balance behaviour in the short-run in SSA, most especially, in the oil-exporting countries. The short-run coefficient of government expenditure in fragile countries was positive but not significant. This suggests that governments have to play key role in revamping the economies because of the need for rapid development in the countries.

The short-run estimates of output growth for all the sub-groups were positive for all sampled countries, middle-income, low-income excluding fragile, and fragile countries sub-groups, but only the coefficient of low-income excluding fragile countries was significant. The sign of the short-run estimate of oil-exporting countries for output growth rate was negative and insignificant. The short-run estimates of foreign aid were positive in the sub-groups of all and middle-income countries, while it was negative in oil-exporting, low-income excluding fragile and fragile countries sub-groups. The coefficients of foreign aid were only significant in middle-income countries and fragile countries sub-groups.

The short-run estimates of real exchange rate were insignificant in all the sub-groups except for fragile countries. The coefficients were positive in low-income excluding fragile countries; this was also true of the fragile countries. The coefficients were negative otherwise. The short-run estimates of terms of trade were positive in oil-exporting and fragile countries sub-groups, while it inversely influenced the behaviour of the current account balance in middle-income and low-income excluding fragile countries. The short-run coefficients of savings were positive in all sub-groups except in middle income countries. The estimated short-run savings coefficients were only significant for the average and low-income excluding fragile countries.

Table 5. 12: Comparison of the Short-Run Coefficients Obtained from the Sub-Groups in SSA

Variable		ALL	OIL EXP	MID-INC	LOW-INC	FRAG
	ec	-0.5120*	-0.59364*	-0.6315*	-0.4166*	-0.69473*
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
	opn D1.	0.0416	0.201453*	-0.0203	-0.0175	-0.0820
		(0.23)	(0.000)	(0.659)	(0.604)	(0.257)
	ed D1.	-0.0654*	-0.10324**	-0.0665*	-0.0081	-0.0275
		(0.001)	(0.012)	(0.000)	(0.640)	(0.484)
	ggdp D1.	0.0342	-0.0691	0.1175	0.0711**	0.1188
		(0.577)	(0.697)	(0.198)	(0.010)	(0.209)
	gov D1.	-0.2066**	-0.6469***	-0.1582	-0.1003	0.1165
		(0.017)	(0.055)	(0.182)	(0.368)	(0.628)
	aid D1.	0.0261	-0.0384	0.2827*	-0.0286	-0.05063**
		(0.434)	(0.795)	(0.091)	(0.399)	(0.035)
	rer D1.	-6.2481	-4.6898	-19.7708	0.7937	15.13666*
		(0.319)	(0.786)	(0.148)	(0.812)	(0.000)
	tot D1.	0.0317	0.1532**	-0.0199	-0.0038	0.019469
		(0.131)	(0.010)	(0.491)	(0.774)	(0.358)
	sav D1.	0.1496**	0.0442	-0.0155	0.1766*	0.1288
		(0.024)	(0.748)	(0.890)	(0.000)	(0.615)
	_cons	1.3179	11.9742***	-0.7205	2.8676	-13.8644*
		(0.697)	(0.054)	(0.929)	(0.278)	(0.002)

*Note: *, ** and *** denote the rejection of the null hypothesis at 1%, 5% and 10% significance levels respectively.*
D1. implies first difference.

To understand the dynamics of the current account balance in SSA, which further relates to its policy implications, the dynamic panel data estimation of two-step system GMM was carried out. The estimation technique adopted, controls for joint endogenity and correlated country-specific effects. To carry out the estimation, all the explanatory variables were allowed to be jointly (weakly) endogenous, except in terms of trade, real exchange rate and aid. The results from the dynamic panel model were reported in Table 5.13. The Hansen test of over-identifying restrictions that tests the overall validity of the instruments failed to reject the null hypothesis. This implied that after analysing the sample analogue of the moment condition used in the estimation process, the instruments adopted in estimating the model were considered valid.

Furthermore, the test for first-order serial correlation of the error term was significant. This was not surprising as it was expected, even if the original error term is uncorrelated when considered in level. The condition under which there would not be first-order serial correlation of the error term is when the error term follows a random-walk. The second-order serial correlation of the differenced residual was not significant, because the test failed to reject the null hypothesis of absence of second-order serial correlation. The insight gained from this result was that the original error term was serially uncorrelated. In conclusion, the specification and the serial correlation tests supported the two-step system GMM panel estimator.

Table 5. 13: Dynamic Panel-Data Estimation Results[42]

	Two-Step System GMM
CA(-1)	0.5317* (0.000)
OPN	-0.0699* (0.000)
ED	0.0228* (0.003)
GGDP	-0.2459* (0.003)
GOV	-0.2008* (0.000)
AID	-0.1289* (0.000)
RER	2.4808* (0.005)
TOT	0.0123* (0.000)
SAV	0.4586* (0.000)
No of Countries	34
Specification Test	
Hansen Test	26.05 (0.351)
Serial Correlation Test	
First-Order	-2.89* (0.004)
Second-Order	-0.35 (0.729)

*Note: * denotes the rejection of the null hypothesis at 1% significance level.*

[42] Stata 11 was used to estimate Equations (4.28) and (4.30), respectively, using the moment conditions given in equations (4.31), (4.32), (4.33) and (4.34). The code used to execute the operation is given as "**xtabond2 cab l.cab opn ed ggdp gov aid rer tot sav, gmm (cab gov ed opn ggdp sav, lag (2 5) collapse) iv (tot rer aid) small noconst twostep**".

The empirical results reported in Table 5.13 showed that trade openness, the growth rate of domestic output, government expenditure, and aid in SSA were negatively associated with the current account balance. On the contrary, one period lagged current account balance, external debt, real exchange rate, terms of trade and domestic savings were positively linked to the current account balance in SSA. The estimated coefficients of trade openness, external debt, government expenditure, the growth rate of output, aid, real exchange rate, terms of trade and domestic savings were statistically significant at the 1 % level. The statistical significance of all of the explanatory variables implied that they are all crucial in explaining the dynamic evolution of the current account balance in SSA.

The lagged value of the current account balance, which shows the extent to which the current account balance is persistent in SSA, was positive and significant. The magnitude of the coefficient (0.5317) implied high rate of persistence in the current account balance for SSA, suggesting that current account balance imbalance may persist if no structural measure is embarked on in SSA. This is in consonance with the study conducted by Calderon *et al.* (2002), which established that the current account balance for all developing countries shows a higher persistence (they estimated the coefficient to be 0.52). The higher persistence exhibited by the current account balance in SSA explained the reason for the greater likelihood of persistency in the trend of the current account balance in SSA (see Milesi-Ferreti and Razin, 1998).

Trade openness exerted negative impact on the current account balance in SSA. The result showed that a 100 per cent increase in trade openness significantly deteriorated the current account by approximately 7 per cent. External debt had a positive significant impact on the current account balance in SSA. Although the impact of external debt on the current account balance was mild, the finding is contrary to a prior expectation. A hundred per cent increase in external debt improved the current account balance by 2 per cent. Domestic saving has a positive and significant effect on the current account balance in SSA. The elementary implication of this for the SSA economies is that higher savings may lead to improvement in the current account balance. This is congruent with the finding of Caledron *et al.* (2002).

Domestic output growth has a negative and significant coefficient in the dynamic model of the current account balance in SSA. A 100 per cent increase in domestic output growth causes a deterioration of the current account balance by approximately 24 per cent. This

result conformed to the theoretical postulation of Obsfeld and Rogoff (1995) as well as the empirical validation of the developing countries as reported in Caledron *et al*. (2002).

Government expenditure has an inverse and significant coefficient in the SSA dynamic panel model. 10 per cent increase in government expenditure reduced the current account balance, approximately by 2 per cent. Put differently, the coefficient of government expenditure, which was -0.2, predicts an inverse change in the CAB of up to one-fifth of any change in government expenditure. This is in line with the postulation of the inter-temporal approach to the current account balance. In accordance with the postulation of the inter-temporal framework, a rise in the government expenditure above its expected permanent value is expected to deteriorate the current account balance. On average, it follows that the level of government expenditure in SSA is above its expected permanent value. This validates the argument that fiscal dominance is evident in SSA. The result is not a departure from the empirical regularities. Beetsma *et al.* (2007) supported this point of view, but the magnitude of the impact obtained in their study differs from the one obtained in this study. Beetsma *et al.* (2007), for selected EU countries, found that a government spending innovation of 1 percentage point of GDP worsened the trade balance by 0.5 percentage points of GDP upon impact and by 0.8 percentage points after two years. In another study, Debelle and Faruqee (1996) and, Leiderman and Razin (1991) empirically validated that fiscal policy has a negative impact on the current account balance. The vast strands of literature on the current account suggest that expansionary fiscal policy that crowds-out investment would induce importation, which subsequently results in current account deficit (see Mundell, 1962; Fleming, 1962; Leiderman and Razin, 1991; and, Debelle and Faruqee, 1996). All the mentioned studies agreed that fiscal policy significantly exert negative impact on the current account balance, but the magnitudes of the impact substantially differ. The inconsistency in the magnitudes of impact may arise from the adoption of different measures for fiscal policy and the differences in the sample size and coverage periods.

Aid had negative significant effect on the current account balance in SSA. The result obtained could be interpreted as deterioration of the current account balance, by approximately 13 per cent as a result of a 100 per cent increase in foreign aid. This finding is contrary to the expected result. However, the result is congruent with the findings of Caledron *et al.* (2002) and Boone (1996). Boone (1996) argued that if foreign aid is devoted to increasing consumption patterns, it would generate a trade-off with declining investment levels. In addition, the increase in disposable income, as a result of foreign aid, exerts upward

pressure on domestic interest rates, which encourages domestic savings, but discourages investment and ultimately establishes a negative relationship with the current account balance. On the other spectrum is the result of Lopez and Olmedo (2005) that found a positive relationship between aid and the current account balance, suggesting that aid could play an important role in resolving the current account balance problems.

The coefficient of the exchange rate was negative and statistically significant at the 1 % level in the model. Under flexible exchange rate regime, the current account deficit is expected to be corrected for by the depreciation of the exchange rate, if accompanied by an increase in the volume of export. However, Dornbusch and Fisher (1980) opined that anticipated disturbance that would ultimately depreciate the exchange rate could initially lead to the combination of an appreciating exchange rate and a current account deficit. The result conformed to the predicted relationship between exchange rate and the current account balance suggested by the standard open economy model. For SSA, a percentage decrease in real exchange rate (which implies a depreciation of the domestic currency) worsens the current account balance approximately by 2.4 per cent. This confirmed the argument put forward by Caledron *et al.* (2002) that real exchange rate movements may have a stronger impact on the current account balance of African economies because exports of African countries appear to be more price sensitive than those of other developing countries, given that they export primary commodities that make them face relatively elastic international demand.

The terms of trade variable had a significant positive relationship with the current account balance in the dynamic model of the current account balance in SSA. This suggests that a positive change in the terms of trade in SSA is linked with an improvement in the current account balance. A rise in the export price of exportable is associated with improvement in the current account balance of SSA economies, while the converse is true. This finding validates the Harberger-Laursen-Metzler effect, which states that adverse transitory terms of trade shocks generate a decline in the ratio of current to permanent income and a deterioration of saving and current account position (see Obstfeld, 1982 and Svensson and Razin, 1983). However, this finding is a departure from the conclusions of studies like Adedeji *et al.* (2005) as well as Debelle and Faruqee (1996). They reported that the terms of trade has an adverse effect on the current account balance.

5.5: Dynamics of the Current Account Balance

To better understand the impact of government expenditure, which is the measure of fiscal policy in this study, and other determinants of the current account balance on the dynamics of the current account balance, panel VAR analysis was carried out[43]. The dynamic responses of the current account balance to a government expenditure shock and other shocks from other determinants were estimated through aggregate impulse response functions and variance decompositions over 12 years. Moreover, since over-differencing may remove important information, as pointed out by Ramey and Francis (2009), the panel VAR was estimated in level.

The selection of the optimum lag length was guided by some pre-specified criteria, basically two in this study. They are the Schwarz Information Criterion (SIC) and the Hannan Quinn Criterion (HQC). These two tests were conducted for 12 periods, each having its own information criterion, and the year with the least information criteria was selected as the appropriate lag length. Table 5.14 reported the results of VAR Lag Order Selection Criteria test conducted. The results of SIC and HQC suggested that the appropriate lag length was 1 (one).

[43] It is worthy to note that the reactions of other variables to the shock from government expenditure are assumed for the impulse response function (Response to Cholesky One S.D. Innovation from government expenditure).

Table 5. 14: VAR Lag Order Selection Criteria

Lag	SC	HQ
0	61.46759	61.3795
1	48.211*	47.33*
2	49.1685	47.49538
3	50.41227	47.94662
4	52.05211	48.79393
5	53.44625	49.39555
6	55.05867	50.21544
7	56.44965	50.81389
8	57.73085	51.30256
9	58.93946	51.71864
10	60.11221	52.09887
11	61.19468	52.3888
12	61.7925	52.1941

** indicates lag order selected by the criterion*
SC: Schwarz information criterion (each test at 5% level)

To ascertain if the VAR model specified is stable, VAR stability Condition Check, Roots of Characteristic Polynomial tests, was carried out. The test, ascertained whether the specified VAR model satisfies the stability condition or not. The result of the test was reported in Table 5.15. The result showed that the VAR model specified satisfies the stability condition, this was because none of the root value exceeds/lies outside the unit circle (Modulus).

The analogous of the Roots of Characteristic Polynomial, the Inverse Roots of AR Characteristic Polynomial test, was also carried out. The decision rule for stability is for the roots to fall within the circle. Any deviation from this implies non-stability of the VAR model. The result of the Inverse Roots of AR Characteristic Polynomial test, depicted in Figure 5.1, also confirmed the stability of the VAR model specified.

Table 5. 15: Roots of Characteristic Polynomial for VAR Stability Condition Check

Root	Modulus
0.980271	0.980271
0.958127 - 0.036125i	0.958807
0.958127 + 0.036125i	0.958807
0.923514	0.923514
0.864066	0.864066
0.80766	0.80766
0.720125	0.720125
0.604338	0.604338
0.516057	0.516057

No root lies outside the unit circle

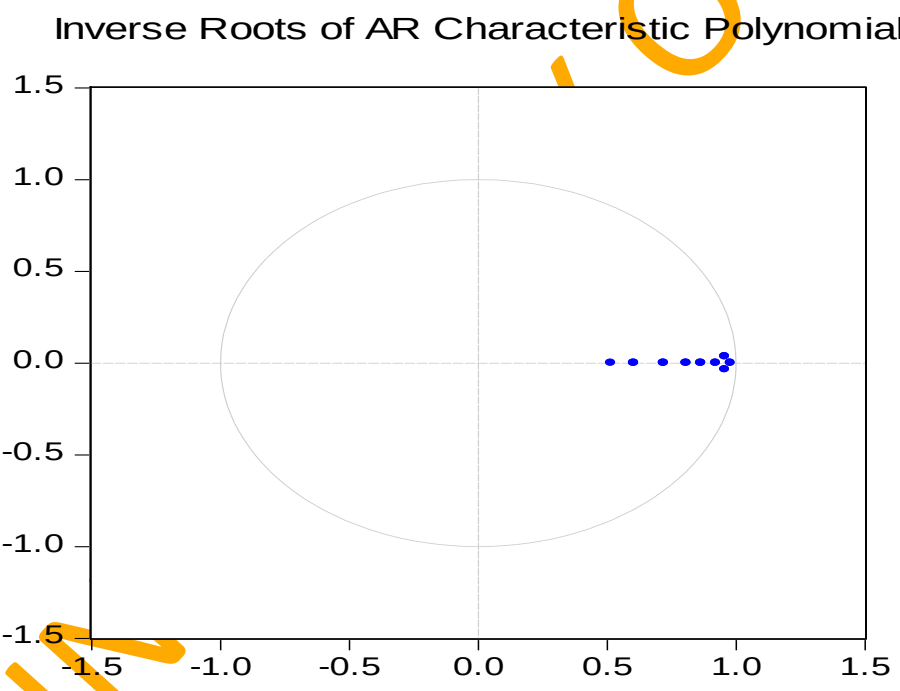


Figure 5. 1: Inverse Roots of AR Characteristic Polynomial for VAR Stability Condition Check

Furthermore, two residual tests were conducted, the Portmanteau test and VAR Residual Normality test. A multivariate diagnostic test, Portmanteau Tests for Autocorrelations, was applied to test the null hypothesis that "There is no residual autocorrelations up to lag h". The result from the analysis implied that the null hypothesis cannot be rejected for lag 1 only. This affirmed the decision reached based on the Schwarz Information Criterion (SIC) and the Hannan-Quinn Criterion (HQC) and further reinforced the result of inverse roots of an AR Characteristic Polynomial as well as Roots of Characteristic Polynomial that ascertained that no root lies outside the unit circle at lag 1 (see Table 5.16).

The second test, VAR Residual Normality test[44], which test the null hypothesis that "The residuals are multivariate normal" rejected the null hypothesis for Skewness and Kurtosis. Similarly, the Jarque-Bera for all the components also rejected the null hypothesis that the residual are multivariate normal. This result suggested that the specified VAR model's error terms were purely white noise. The conclusion that emanated from the two residual tests was not different from one another. The tests implied that the model was well specified such that the error terms were products of random process.

[44] The result is presented in Appendix E1

Table 5. 16: Portmanteau Test for Autocorrelations

Lags	Q-Stat	Prob.	Adj Q-Stat	Prob.	df
1	239.2888	NA*	239.685	NA*	NA*
2	400.8707	0	401.8028	0	81
3	523.2922	0	524.8344	0	162
4	608.2873	0	610.3952	0	243
5	693.0573	0	695.8716	0	324
6	760.0137	0	763.4987	0	405
7	845.4469	0	849.9319	0	486
8	932.2803	0	937.9289	0	567
9	988.9755	0	995.4803	0	648
10	1055.749	0	1063.375	0	729
11	1114.976	0	1123.7	0	810
12	1184.944	0	1195.084	0	891

**The test is valid only for lags larger than the VAR lag order.*

df is degrees of freedom for (approximate) chi-square distribution

The Impulse Response analysis was performed to provide further evidence on the dynamic responses of the current account balance to a Cholesky one standard deviation innovation (±2S. E) from government spending, the growth rate of domestic output, trade openness, terms of trade, real exchange rate, domestic saving, external debt, and aid flow over a certain period of time, in this case 12 years.

The dynamic effect of a Cholesky one standard innovation from government spending on the current account balance in SSA is presented in Figure 5.2. Initially, a positive government spending shock led to a huge deterioration in the current account balance in the first period. The deterioration of the current account balance generated by the shock gradually peters out with time, but the mild-after-effect of the shock still dwindled beyond the twelfth year as depicted in Figure 5.2. Overall, a shock from government spending led to a significant deterioration of the current account balance in SSA, especially in the short-run. The effect persisted into longer time horizon, although not as severe as it was in the short run.

The response of the current account balance to a positive Cholesky one standard innovation shock of output growth was represented in Figure 5.3. Initially, a positive shock to the domestic output significantly improved the current account balance in the first year. Thereafter, before the beginning of the second year, the positive shock to the domestic output had induced deterioration in the current account balance.

Thereafter, the deterioration persisted till the tenth year, after which the current account balance fully recovered from the shock. The obvious observation from this scenario was that in the short-run, a positive shock from output growth would induce the current account deficit in SSA, which would be self-correcting over a period of time, ceteris paribus, not less than ten years.

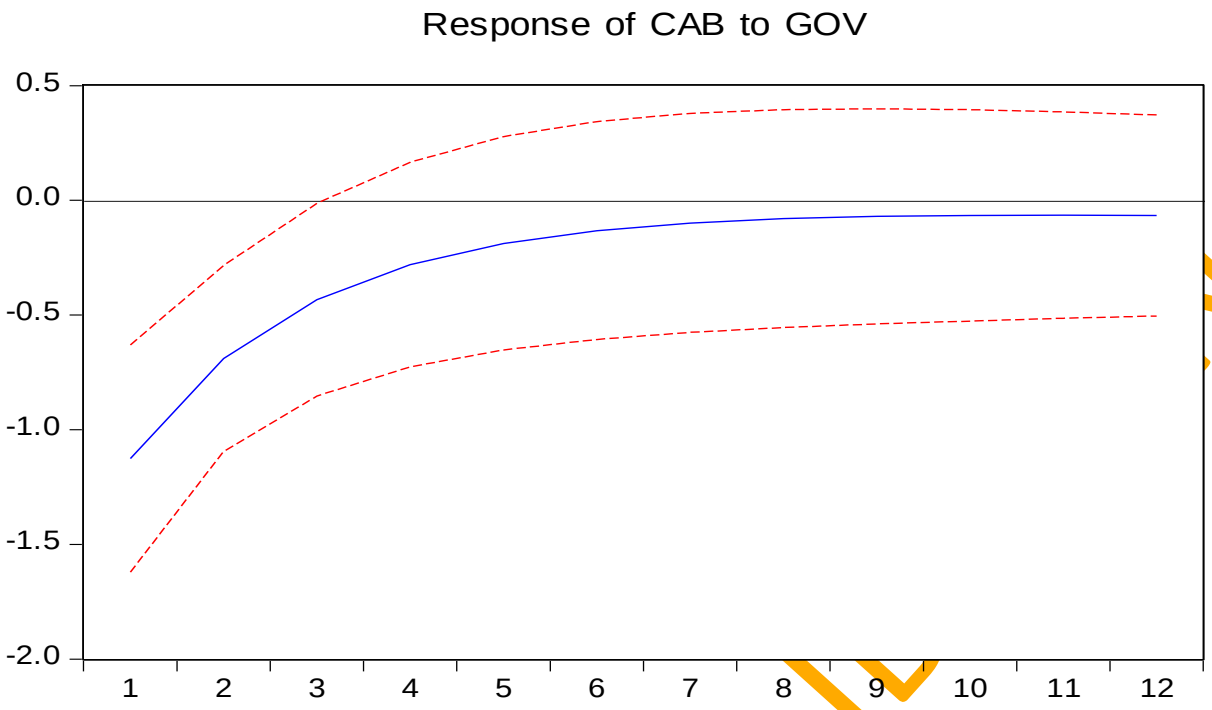


Figure 5. 2: The Current Account Balance Response to Cholesky One Standard Deviation Innovation from Government Expenditure

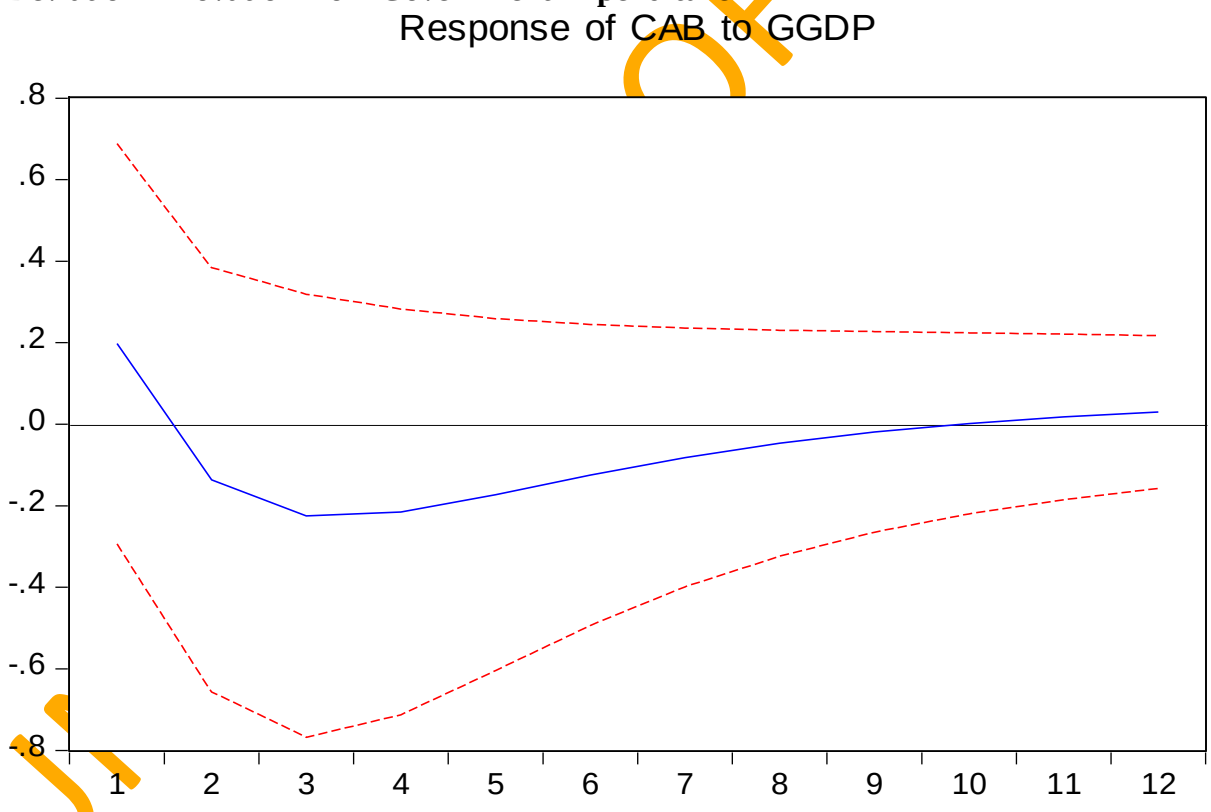


Figure 5. 3: The Current Account Balance Response to Cholesky One Standard Deviation Innovation from Output Growth

The dynamic response of the current account balance to a positive shock to trade openness in SSA was depicted in Figure 5.4. All things being equal, a positive shock to trade openness would persistently deteriorate the current account balance in SSA. The immediate response of the current account in the first period was a significant deterioration that persisted over the time horizon considered in this study. The result emanating from this simulation is not puzzling given the fact that most of the SSA economies import more than they export. Aside from this, the majority of the exports originating from this region are of primary commodities/ raw materials that command little foreign earnings, which are hardly or not sufficient to offset the quantum of imports originating from them. There seems to be no self-correcting mechanism for a shock from trade openness in SSA suggesting the need for structural change to correct this anomaly in SSA countries.

The dynamic response of the current account balance to a shock of the terms of trade is presented in figure 5.5. In the first period, there is significant improvement in the current account balance which persisted until the fourth year. Thereafter, the current account balance deteriorated. The dynamic response of the current account to a positive shock emanating from real exchange rate is illustrated in Figure 5.6. In the first period, the current account balance sharply deteriorated after which it gradually moved towards its initial position. It takes the current account balance not less than ten (10) years to fully recover from the shock. The result of this simulation suggests that a positive shock from real exchange rate to the current account balance is self-correcting in SSA, although it takes relatively not less than ten years for the effect to peter out.

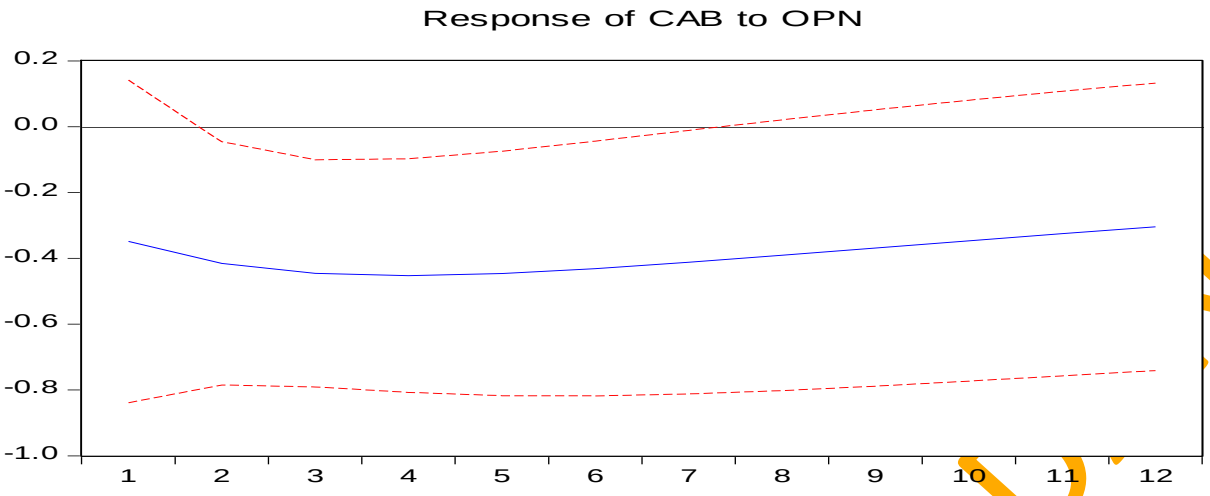


Figure 5. 4: The Current Account Balance Response to Cholesky One Standard Deviation Innovation from Trade Openness

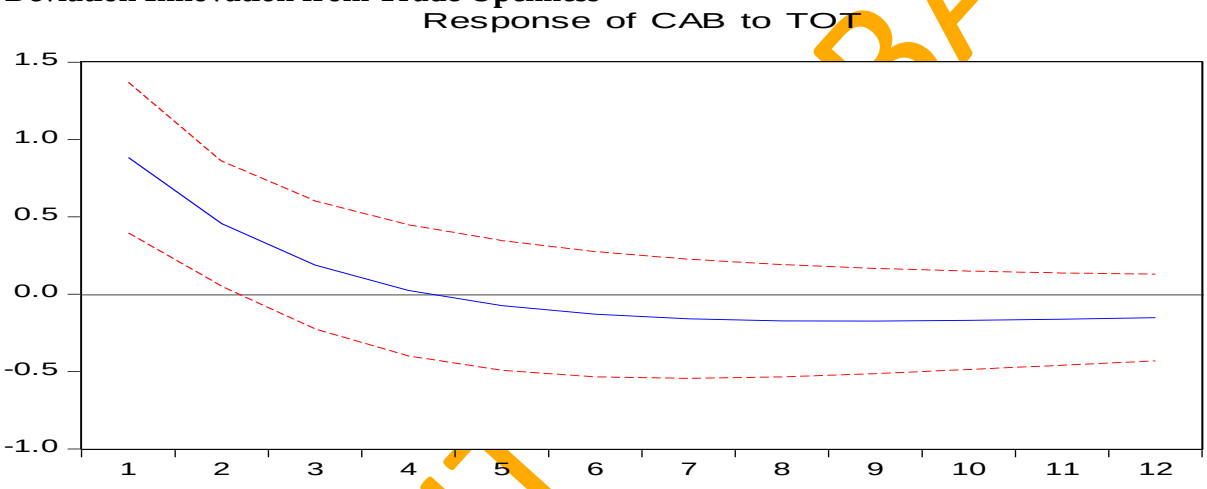


Figure 5. 5: The Current Account Balance Response to Cholesky One Standard Deviation Innovation from Terms of Trade

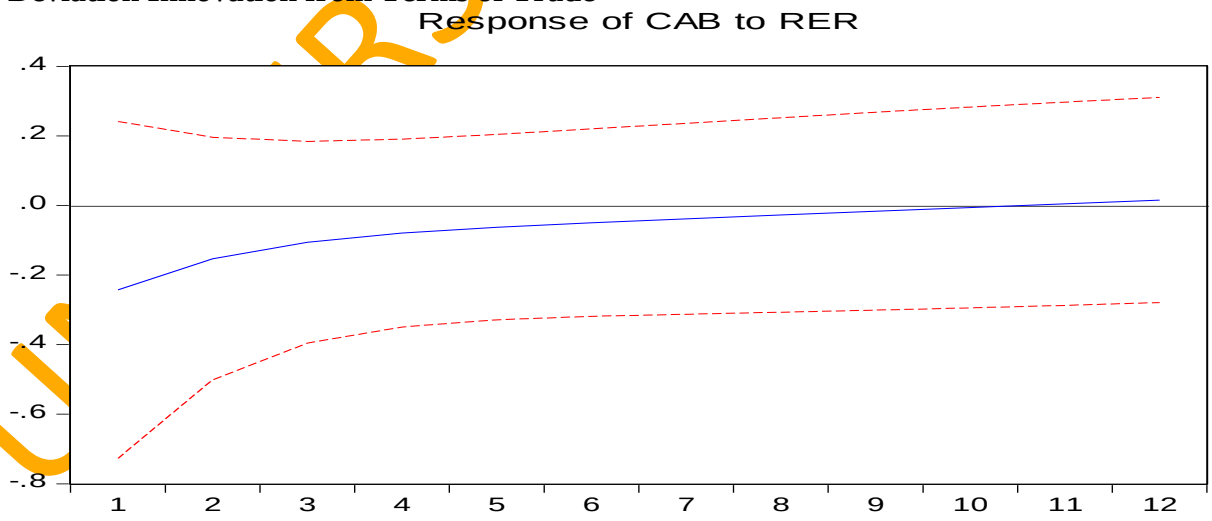


Figure 5. 6: The Current Account Balance Response to Cholesky One Standard Deviation Innovation from Real Exchange Rate

The response of the current account balance to a positive Cholesky one standard innovation shock from domestic saving is represented in Figure 5.7. The figure showed that a positive shock to the domestic saving generated surplus/improvement in the current account balance of SSA. The impact of the effect was very high in the first period. Thereafter, the effect gradually reduced up till twelfth year, the current account balance had not fully recovered from the impact set in motion by a positive shock from domestic saving in the initial period. A positive shock from domestic saving in SSA exerts a positive significant effect (improvement) on the current account balance of the region.

The dynamic response of the current account balance to a shock of external debt is illustrated in Figure 5.8. The current account balance significantly deteriorated in the first period after the perturbation. Thereafter, although the current account balance gradually improved, but the positive momentum generated by the shock to improve the current account balance seemed to be outweighed by the negative impetus resulting from the shock. The current account balance could not fully recover from the shock even up till the end of the twelfth period considered in this simulation. This suggests that the shock from external debt on the current account balance in SSA seems not to be self-correcting; therefore it requires structural restructuring to correct such shock in the region.

The response of the current account balance in SSA to a positive Cholesky one standard innovation shock from aid inflow into the region is depicted in Figure 5.9. During the first year, aid slightly improved the current account balance. Before the beginning of the second year, the current account balance had deteriorated. The deterioration in the current account balance persisted beyond the twelfth period covered by this study. This finding conformed to the result obtained from the dynamic model estimated. Although foreign aid is perceived to improve the current account balance, this is contrary to the trend observed in SSA.

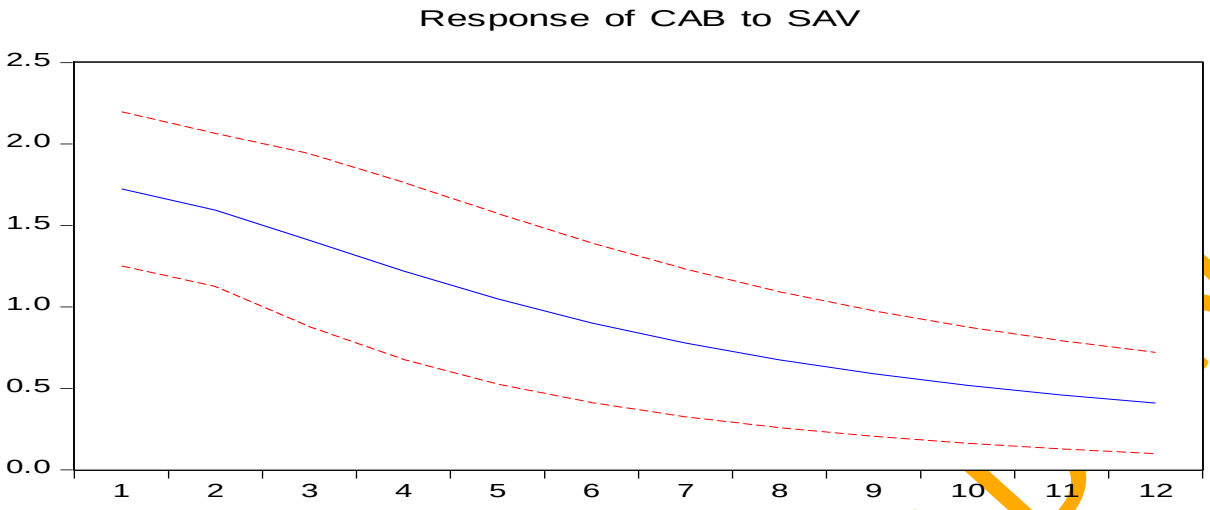


Figure 5. 7: The Current Account Balance Response to Cholesky One Standard Deviation Innovation from Domestic Saving

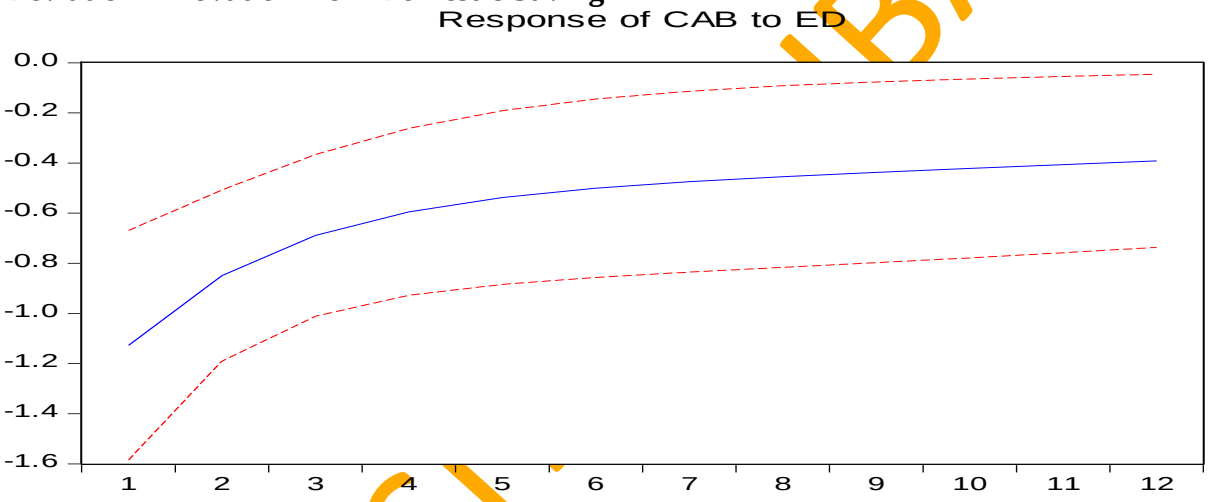


Figure 5. 8: The Current Account Balance Response to Cholesky One Standard Deviation Innovation from External Debt

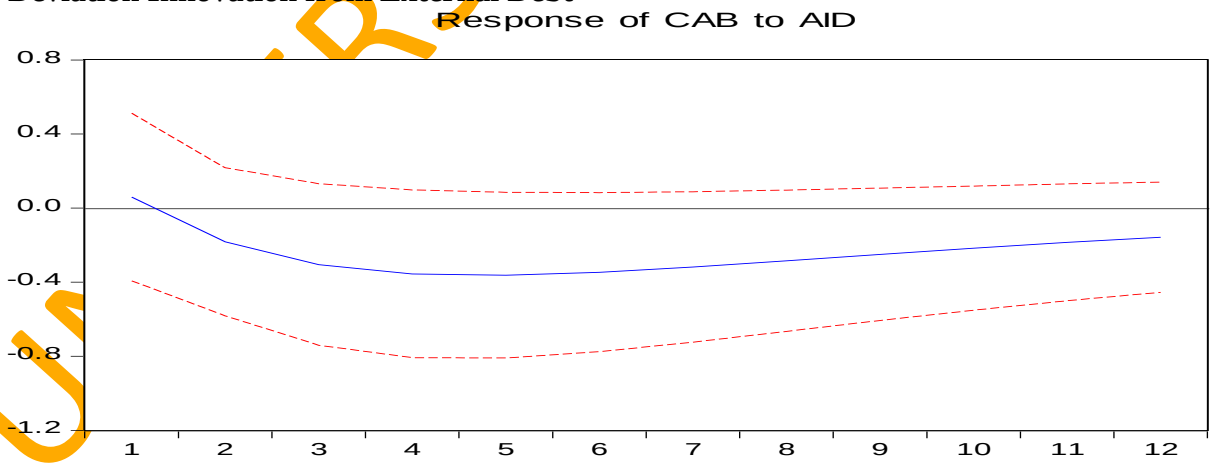


Figure 5. 9: The Current Account Balance Response to Cholesky One Standard Deviation Innovation from Foreign Aid

To further explain the dynamic response of the current account balance to its determinants, the current account balance's variance decomposition was also considered. Variance decomposition provides evidence on the relative importance of each of the independent variable shocks on the dynamics of the current account. Table 5.17 showed the percentage of the forecast error variance due to each shock in the PVAR model over the twelve-year horizon on the current account balance in SSA.

The current account balance was explained mostly by its own shocks during the whole sample period. It accounts for 82.17 per cent in the first year, while saving, external debt and government expenditure account for 8.14 per cent, 3.48 per cent and 3.47 per cent respectively in the same period. During the second year, the current account balance accounts for 80 per cent of its own variation. Domestic saving accounts for 10.27 per cent in the same period while external debt and government expenditure account for 3.71 per cent and 3.25 per cent of the variation in the current account balance. The current account effect further receded in the third year to 78 per cent, while domestic savings account for 11.97 per cent. Government expenditure was able to explain about 3.09 per cent in the third year.

Table 5. 17: Variance Decomposition of the Current Account Balance in SSA

Period	GOV	GGDP	OPN	TOT	RER	SAV	ED	AID	CAB
1	3.47	0.11	0.33	2.13	0.16	8.14	3.48	0.001	82.17
2	3.25	0.11	0.55	1.84	0.15	10.27	3.71	0.07	80.05
3	3.09	0.17	0.79	1.63	0.15	11.97	3.94	0.21	78.06
4	2.97	0.23	1.03	1.51	0.15	13.26	4.16	0.38	76.33
5	2.88	0.26	1.26	1.45	0.15	14.19	4.37	0.55	74.89
6	2.82	0.27	1.48	1.43	0.15	14.87	4.58	0.69	73.71
7	2.77	0.28	1.67	1.43	0.14	15.36	4.79	0.81	72.75
8	2.73	0.27	1.85	1.45	0.14	15.71	4.98	0.91	71.96
9	2.70	0.27	2.00	1.47	0.14	15.97	5.17	0.98	71.31
10	2.68	0.27	2.13	1.49	0.14	16.16	5.34	1.03	70.76
11	2.67	0.27	2.25	1.51	0.14	16.29	5.51	1.06	70.30
12	2.65	0.27	2.35	1.53	0.14	16.40	5.67	1.09	69.91

Source: Author's Computation with data from WDI (2010)

CHAPTER SIX
SUMMARY AND CONCLUSION

6.1: Introduction

This chapter is a synopsis and conclusion of what the whole study contains. In response to little attention devoted to the role of fiscal policy as a determinant of the current account balance, despite a growing body of empirical literature on other determinants like real exchange rate, external debt and terms of trade, among others, the study examined the effects of fiscal policy on the current account balance in thirty four sub-Saharan African countries covering the period between 1985 and 2009. The study examined the determinants of the current account balance, with special focus on the effects of fiscal policy on the dynamics of the current account balance in sub-Saharan African countries. Specific objectives of the study are to examine the determinants of the current account balance in sub-Sahara African countries and to examine the relationship between fiscal policy and the current account balance in sub-Sahara African countries.

An empirically testable dynamic open-economy model within an inter-temporal current account framework was formulated. A dynamic open-economy model, predicated on an inter-temporal framework that considered the current account balance as national savings (borrowing) vis-á-vis the rest of the world and as the outcome of the inter-temporal choices of households, firms and governments, was developed. The model was modified to capture the salient determinants of the current account balance in sub-Sahara African countries The model combined the effects of fiscal policy and other determinants as control variables, such as the real exchange rate, external balance, terms of trade, trade openness, output growth and savings on dynamic adjustments of the current account balance.

The thesis employed dynamic oriented estimation techniques, such as a two-step system generalised method of moment, dynamic fixed effect, Pedroni panel cointegration and panel vector autoregressive, to analyse the dynamic behaviour of the model developed and to improve the understanding of the current account behaviour in sub-Saharan African countries.

6.2: Summary of Research Findings

Presented in this section is the summary of the major findings of the analyses carried out in this thesis. It entails the findings from the statistical properties of the variables, stationarity tests, tests for cointegration, correlation analysis and results from various estimators

employed in examining the relationship between the current account balance and its determinants.

All the variables employed in the analysis were found to be systematically distributed given the distribution of their mean, median and their maximum and minimum observation points. Im, Persaran and Shin and Levin, Lin and Chu unit root tests indicated that the variables were stationary and the results from the two cointegration tests conducted (Kao residual and Pedroni panel cointegration tests) strongly supported the existence of the long-run relationship among the current account balance and its determinants. The current account balance was found to have a significant linear relationship with trade openness, external debt, aid, real exchange rate and domestic savings. However, it did not correlate with government expenditure, output growth and terms of trade.

The estimates of government expenditure from dynamic fixed effect estimator were negative in the short and long-runs when all the sampled countries were pooled together. There were slight changes in the results when the sampled countries were divided into sub-groups. The long-run effects of government expenditure on the current account balance were negative in oil-exporting, fragile and low-income and fragile countries, while the effect was positive in middle income countries, contrary to expectation. The short-run effect of government expenditure on the current account balance was positive in fragile countries, but negative in other sub-groups. In the long-run, trade openness, external debt, output growth, and terms of trade were negatively related to the current account balance, while foreign aid, real exchange rate and savings were positively related to the current account balance. In the short-run, trade openness, output growth, foreign aid, terms of trade and savings had positive coefficients, while external debt, and real exchange rate had negative coefficients, although some coefficients were not significant.

The estimate of government expenditure from the two-step system GMM had a significant adverse effect on the current account balance of up to one-fifth of any change in government expenditure. All other estimates were also statistically significant. The coefficient of external debt implied a change of up to one-fiftieth improvement in the current account balance. Trade openness, output growth and foreign aid were negatively related to the current account balance, while real exchange rate, terms of trade and savings were positive.

A Cholesky one standard deviation innovation from government expenditure led to a huge deterioration in the current account balance in the first period. The deterioration of the current

account balance generated by the shock gradually petered out with time, but the mild-after-effect of the shock still dwindled beyond the twelfth year. The dynamic impacts of other current account determinants of the current account balance evolution in sub-Saharan Africa countries were also carried out. Some were found to be self-correcting (domestic output growth rate and real exchange rate) and some were not self-correcting (trade openness and external debt). The result of the simulation indicates that the response of the current account balance to the shocks from terms of trade, domestic saving and aid flows are mixed.

6.3: Policy Recommendations

The empirical evidence generated from this study supports the assertion that inter-temporal framework can be used to analyse the dynamics of the current account balance in sub-Saharan Africa countries, after appropriate modifications that especially take cognisance of the peculiarities of the region. It was also obvious from the study that two-step system generalised method of moment and dynamic fixed effect estimators performed appropriately in conceptualising empirically the dynamics of the current account balance in the sub-region. All the identified determinants of the current account balance, namely, government expenditure (which is the measure of fiscal policy in the study) trade openness, external debt, foreign aid, terms of trade, real exchange rate and savings exerted significant effects on the current account balance in sub-Saharan African countries. This implied that all of the variables have an influence on the behaviour of the current account balance in sub-Saharan African countries.

The magnitudes of the estimates of government expenditure for the oil-exporting sub-group were significantly higher than the average from all the sampled countries, suggesting that the average coefficients of government expenditure obtained from all the sample countries were greatly influenced by the presence of oil-exporting countries. This reinforced the fact that government expenditure can be used to adjust the current account balance behaviour in sub-Saharan Africa countries, most especially, in the oil-exporting countries.

The impact of the shock from government expenditure on the dynamics of the current account balance suggested that deterioration in the current account balance stemming from government expenditure, ceteris paribus, would need deliberate effort from the government to restore balance in the current account balance. This is also true of shocks from trade openness and external debt.

6.4: Conclusion

The exercise carried out in this study offered reasonable theoretical, methodological and empirical frameworks within which the determinants of the current account balance in sub-Saharan Africa could be validated. In line with the observed peculiar features of the region, factors such as trade openness, external debt, the terms of trade, government expenditure, output growth, foreign aid, real exchange rate and domestic savings were included as explanatory variables. The findings indicated that trade openness, output growth, government expenditure, and foreign aid in sub-Saharan African countries were negatively associated with the current account balance, while external debt, real exchange rate, terms of trade and domestic savings were positively linked to the current account balance in sub-Saharan African countries. It was observed in the study that a positive shock from government spending led to a significant deterioration of the current account balance, especially in the short run and that the effect persisted over a long time horizon. This suggested that government expenditure significantly influenced the behaviour of the current account balance in sub-Sahara African countries. Accordingly, fiscal policy is important in the restoration of equilibrium in the external sector. Therefore, the government should restrain rapid increases in its expenditure in order to check balance of payments deficits.

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APPENDIX

APPENDIX B 1: Geographical Outline of sub-Saharan Africa

Source: Google Earth

APPENDIX B 2: Countries in sub Saharan Africa (Classification Based on Regional Blocks)

CENTRAL	EAST	SOUTH	WEST
Cameroon	Burundi	Angola	Benin
Central African Republic	Comoros	Botswana	Burkina Faso
Chad	Djibouti	Lesotho	Cape Verde
Democratic Republic of Congo	Eritrea	Madagascar	Cote d'Ivoire
Congo Republic	Ethiopia	Malawi	Gambia, The
Equatorial Guinea	Kenya	Mauritius	Ghana
Gabon	Rwanda	Mozambique	Guinea
	Seychelles	Namibia	Guinea-Bissau
	Sudan	South Africa	Liberia
	Tanzania	Swaziland	Mali
	Uganda	Zambia	Niger
		Zimbabwe	Nigeria
			Sao Tome & Principe
			Senegal
			Sierra Leone
			Togo

Source: IMF, African Department database, (2013) and IMF, World Economic Outlook (WEO) database (2013)

APPENDIX B 3: Countries in sub Saharan Africa (Classification Based on Economic Performances)

Oil-exporting countries	Middle-income countries	Low-income excluding Fragile countries	Fragile countries
Angola	Botswana	Benin	Burundi
Cameroon	Cape Verde	Burkina Faso	Djibouti
Chad	Ghana	Ethiopia	Central African Republic
Congo Republic	Lesotho	Gambia, The	Comoros
Equatorial Guinea	Mauritius	Kenya	Democratic Republic of Congo
Gabon	Namibia	Madagascar	Cote d'Ivoire
Nigeria	Senegal	Malawi	Eritrea
South Sudan	Seychelles	Mali	Guinea
	South Africa	Mozambique	Guinea-Bissau
	Swaziland	Niger	Liberia
	Zambia	Rwanda	Sao Tome & Principe
		Sierra Leone	Togo
		Tanzania	Zimbabwe
		Uganda	

Source: IMF, African Department database, (2013) and IMF, World Economic Outlook (WEO) database (2013)

APPENDIX B 4: Summary of World Output[45] (Annual per cent change)

	1995-2004	2005	2006	2007	2008	2009
World	**3.6**	**4.7**	**5.2**	**5.3**	**2.7**	**-0.4**
Advanced Economies	**2.8**	**2.8**	**3.0**	**2.7**	**0.1**	**-3.4**
United States	3.4	3.4	2.7	1.8	-0.3	-2.8
Euro Area	2.2	1.7	3.2	3.0	0.4	-4.4
Japan	1.1	1.3	1.7	2.2	-1.0	-5.5
Other Advanced Economies[46]	3.7	3.8	3.9	4.2	1.0	-2.3
Emerging Market and Developing Economies	**4.9**	**7.3**	**8.3**	**8.7**	**5.8**	**3.1**
Regional Groups						
Central and Eastern Europe	4.0	5.9	6.4	5.4	3.2	-3.6
Commonwealth of Independent States[47]	2.9	6.7	8.8	8.9	5.3	-6.4
Developing Asia	7.1	9.5	10.3	11.5	7.3	7.7
Latin America and the Caribbean	2.5	4.7	5.6	5.7	4.2	-1.2
Middle East, North Africa, Afghanistan, and Pakistan	4.6	6.0	6.7	5.9	5.0	2.8
Middle East and North Africa	4.6	5.5	6.8	5.9	5.0	3.0
Sub-Saharan Africa	4.5	6.3	6.4	7.1	5.7	2.6

Source: IMF World Economic Outlook, World Economic and Financial Survey (2013)

[45] Real GDP
[46] In this table, Other Advanced Economies means advanced economies excluding the United States, Euro Area Countries, and Japan.
[47] Georgia, which is not a member of the Commonwealth of Independent States, is included in this group for reasons of geography and similarity in economic structure.

APPENDIX B 5: Terms of Trade on Goods (Index, 2000=100)

	2004–08	2004	2005	2006	2007	2008	2009
Sub-Saharan Africa	115	103	109	116	120	126	121
Median	98	99	97	100	96	99	98
Excluding Nigeria and South Africa	106	97	100	106	111	116	107
Oil-importing countries	107	102	101	107	111	112	115
Excluding South Africa	97	96	91	96	100	101	99
CFA franc zone	110	97	105	109	112	125	117
WAEMU	100	97	92	97	100	111	116
CEMAC	119	96	117	121	124	137	113
EAC-5	75	76	73	74	76	75	85
ECOWAS	117	105	113	118	119	130	119
SADC	120	108	112	121	127	131	130
SACU	115	107	110	116	119	121	129
COMESA (SSA members)	113	106	103	113	122	119	113
MDRI countries	105	99	98	106	112	113	106
Countries with conventional exchange rate pegs	107	97	104	107	109	120	114
Countries without conventional exchange rate pegs	117	105	111	118	122	128	122

Source: IMF World Economic and Financial Surveys, Regional Economic Outlook SSA (2013)

APPENDIX B 6: External Debt to Official Creditors (Per cent of GDP)

	2004–08	2004	2005	2006	2007	2008	2009
Sub-Saharan Africa	115	103	109	116	120	126	121
Median	98	99	97	100	96	99	98
Excluding Nigeria and South Africa	106	97	100	106	111	116	107
Oil-importing countries	107	102	101	107	111	112	115
Excluding South Africa	97	96	91	96	100	101	99
CFA franc zone	110	97	105	109	112	125	117
WAEMU	100	97	92	97	100	111	116
CEMAC	119	96	117	121	124	137	113
EAC-5	75	76	73	74	76	75	85
ECOWAS	117	105	113	118	119	130	119
SADC	120	108	112	121	127	131	130
SACU	115	107	110	116	119	121	129
COMESA (SSA members)	113	106	103	113	122	119	113
MDRI countries	105	99	98	106	112	113	106
Countries with conventional exchange rate pegs	107	97	104	107	109	120	114
Countries without conventional exchange rate pegs	117	105	111	118	122	128	122

Source: IMF World Economic and Financial Surveys, Regional Economic Outlook SSA (2013)

APPENDIX B 7: Real Effective Exchange Rates (Annual average; index, 2000=100)

	2004–08	2004	2005	2006	2007	2008	2009
Sub-Saharan Africa	107	103	107	109	108	109	111
Median	107	106	107	105	106	110	111
Excluding Nigeria and South Africa	107	100	103	106	109	116	117
Oil-importing countries	99	100	102	100	98	96	99
Excluding South Africa	99	94	97	98	100	106	105
CFA franc zone	114	112	112	112	114	120	122
WAEMU	113	112	112	111	112	119	119
CEMAC	115	113	113	114	115	121	125
EAC-5	91	86	90	91	92	97	98
ECOWAS	118	106	115	120	120	129	122
SADC	102	104	105	104	101	96	103
SACU	100	107	107	103	97	87	94
COMESA (SSA members)	101	90	96	102	104	115	112
MDRI countries	97	92	95	97	98	105	103
Countries with conventional exchange rate pegs	113	111	112	112	112	117	120
Countries without conventional exchange rate pegs	106	101	106	108	107	108	109

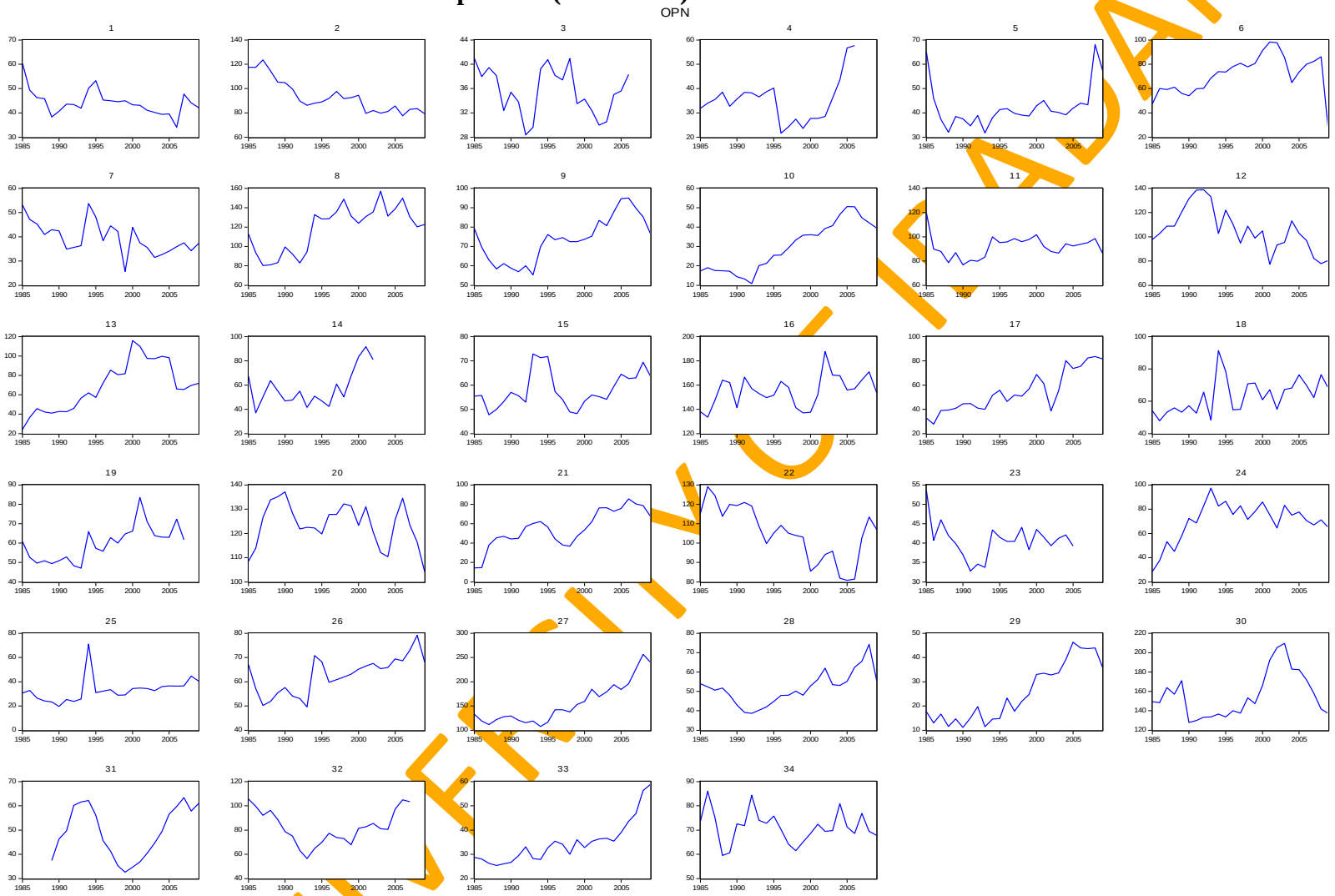
Source: IMF World Economic and Financial Surveys, Regional Economic Outlook SSA (2013)

APPENDIX B 8: Gross National Savings (Per cent of GDP)

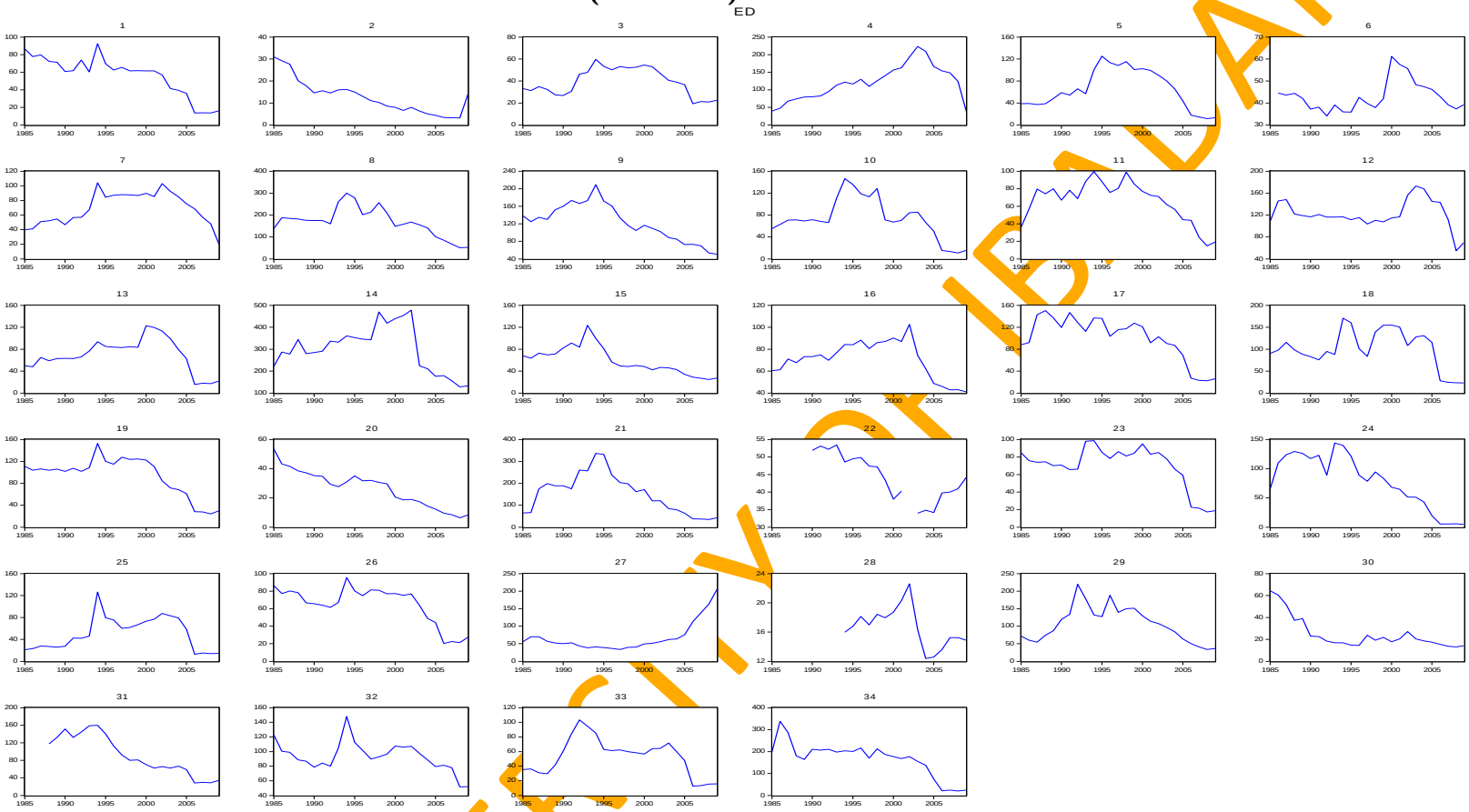
	2004–08	2004	2005	2006	2007	2008	2009
Sub-Saharan Africa	21.3	18.6	19.6	24	23.2	21.3	20.8
Median	15.5	16.1	16	15	15.4	15.1	13.9
Excluding Nigeria and South Africa	18.9	16.5	18.5	20.5	20.4	18.5	16
Oil-importing countries	15.7	16.2	15.4	15.6	15.8	15.4	15.7
Excluding South Africa	16.5	17.3	16.2	16.6	17	15.3	15.8
CFA franc zone	17.7	12.8	17.8	18.9	19.3	19.9	20.6
WAEMU	12	11.4	11.4	12.7	12.1	12.6	15.1
CEMAC	23.7	14.2	24.5	25.6	26.9	27.5	26.5
EAC-5	17	18.4	17.9	16.5	16.1	15.9	16
ECOWAS	28.4	23.1	24.1	34.9	32.1	27.6	30.8
SADC	17.3	15.9	16.3	18.5	18	17.7	14.6
SACU	16.3	16.4	16.1	16.2	16.1	17	16.1
COMESA (SSA members)	16.7	17.8	15.9	16.2	18.4	15.1	15.1
MDRI countries	15.3	16	14.6	15.3	16.1	14.6	15.6
Countries with conventional exchange rate pegs	18.2	13.7	18.2	19.5	19.9	20.1	20
Countries without conventional exchange rate pegs	22	19.6	19.9	24.9	23.8	21.5	21

Source: IMF World Economic and Financial Surveys, Regional Economic Outlook SSA (2013)

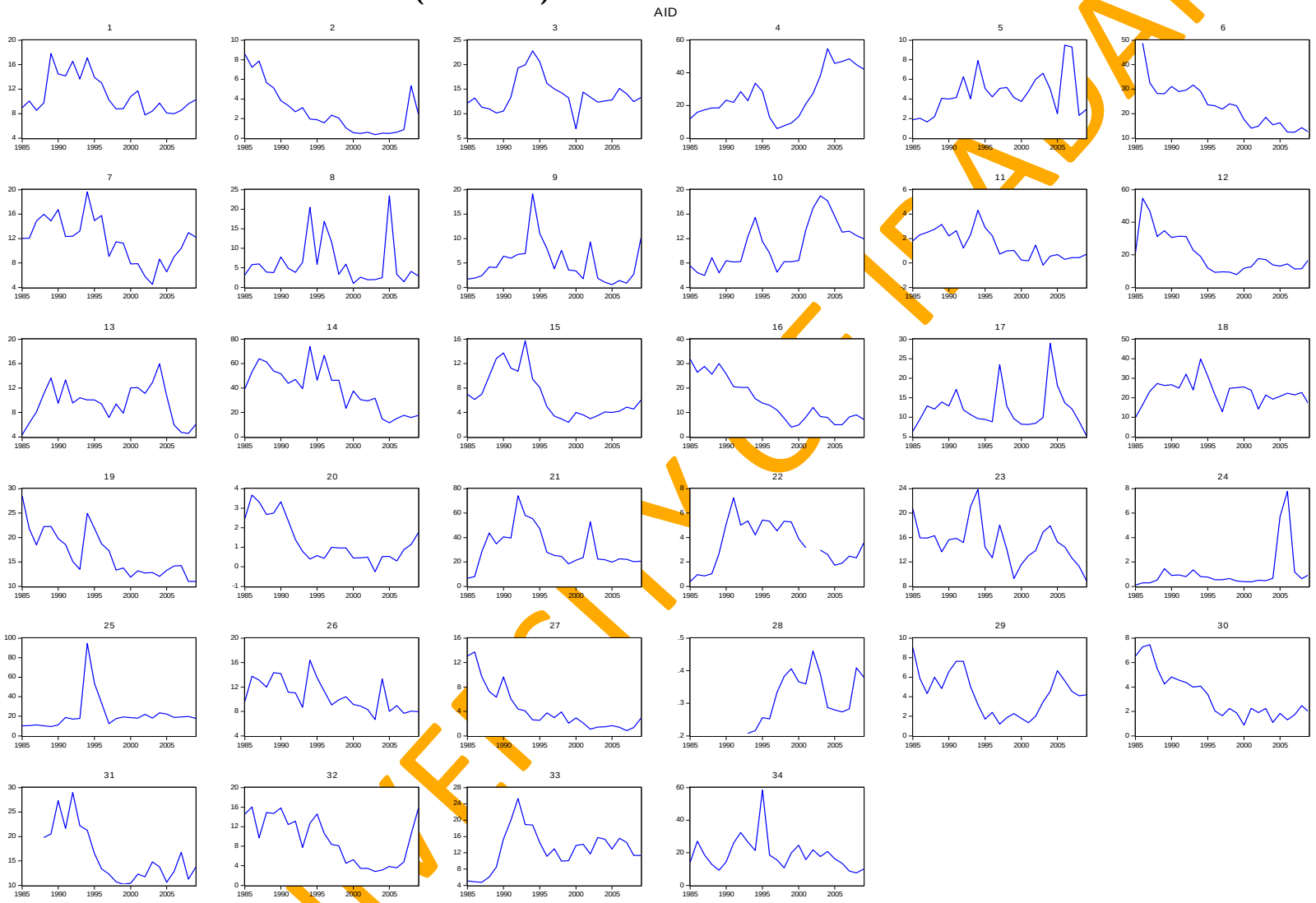
APPENDIX B 9: The Trend of Trade Openness (% of GDP) in the Selected Countries between 1985 and 2009



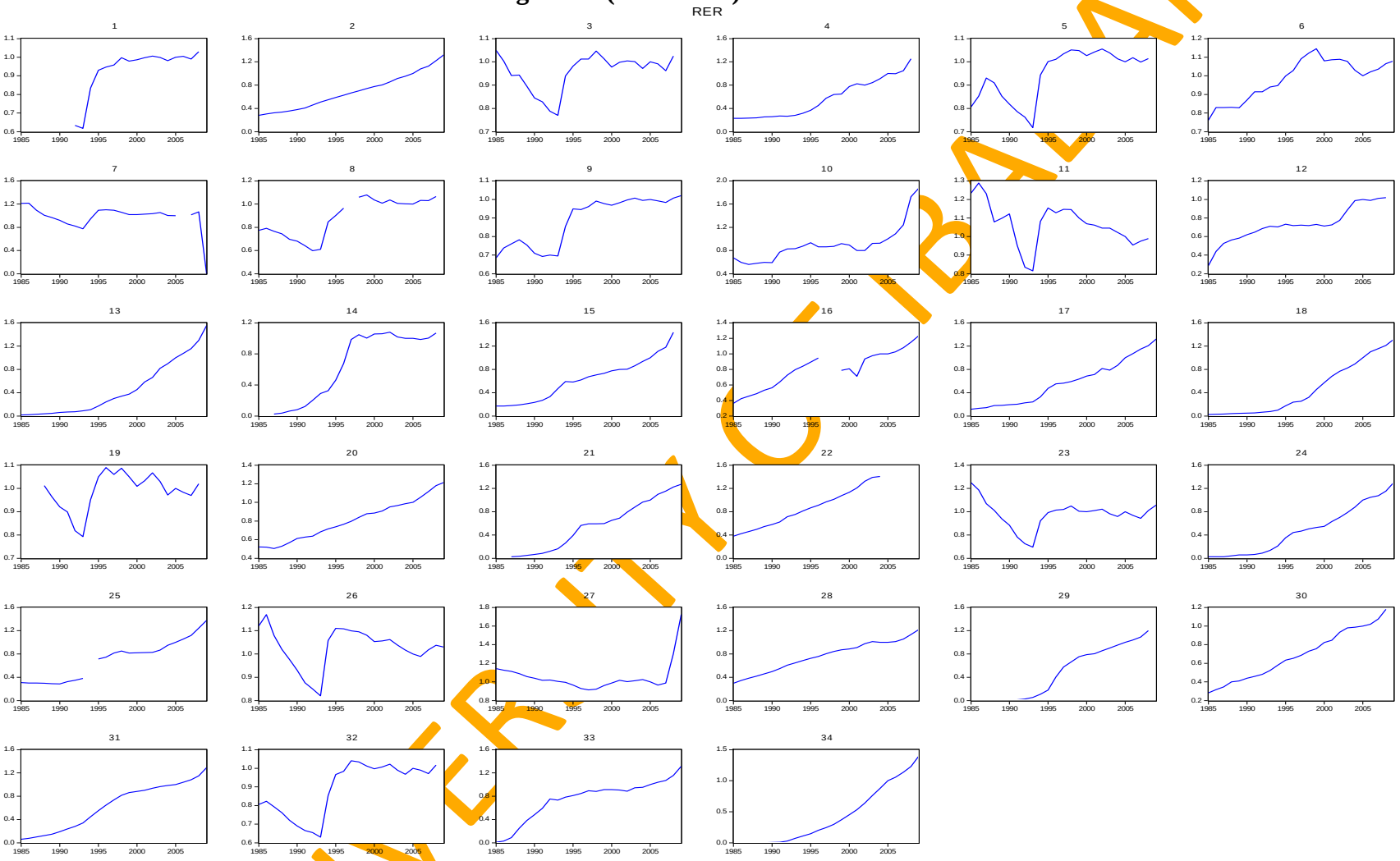
APPENDIX B 10: The Trend of External Debt (% of GDP) in the Selected Countries between 1985 and 2009



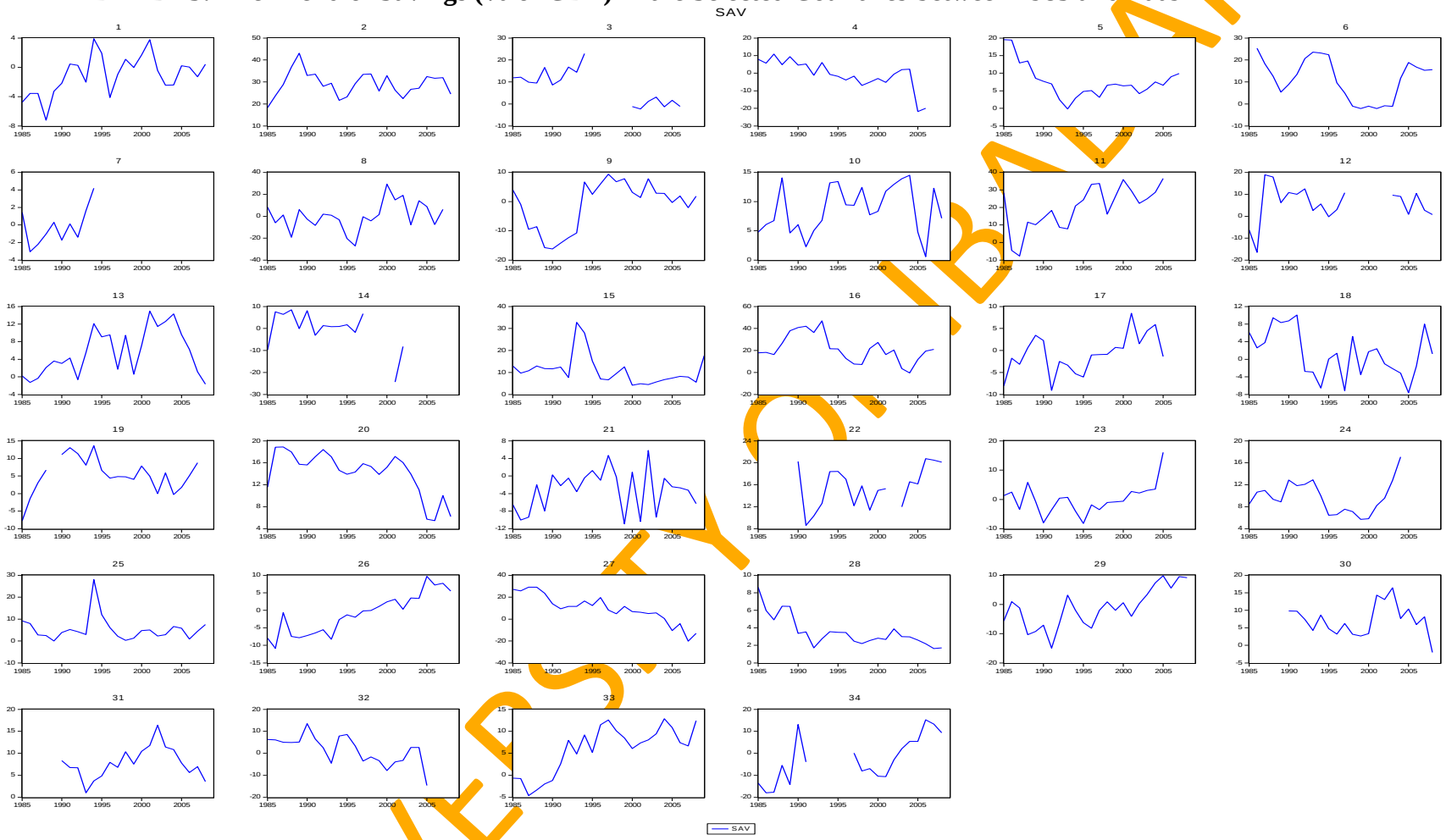
APPENDIX B 11: The Trend of Aid (% of GDP) in the Selected Countries between 1985 and 2009



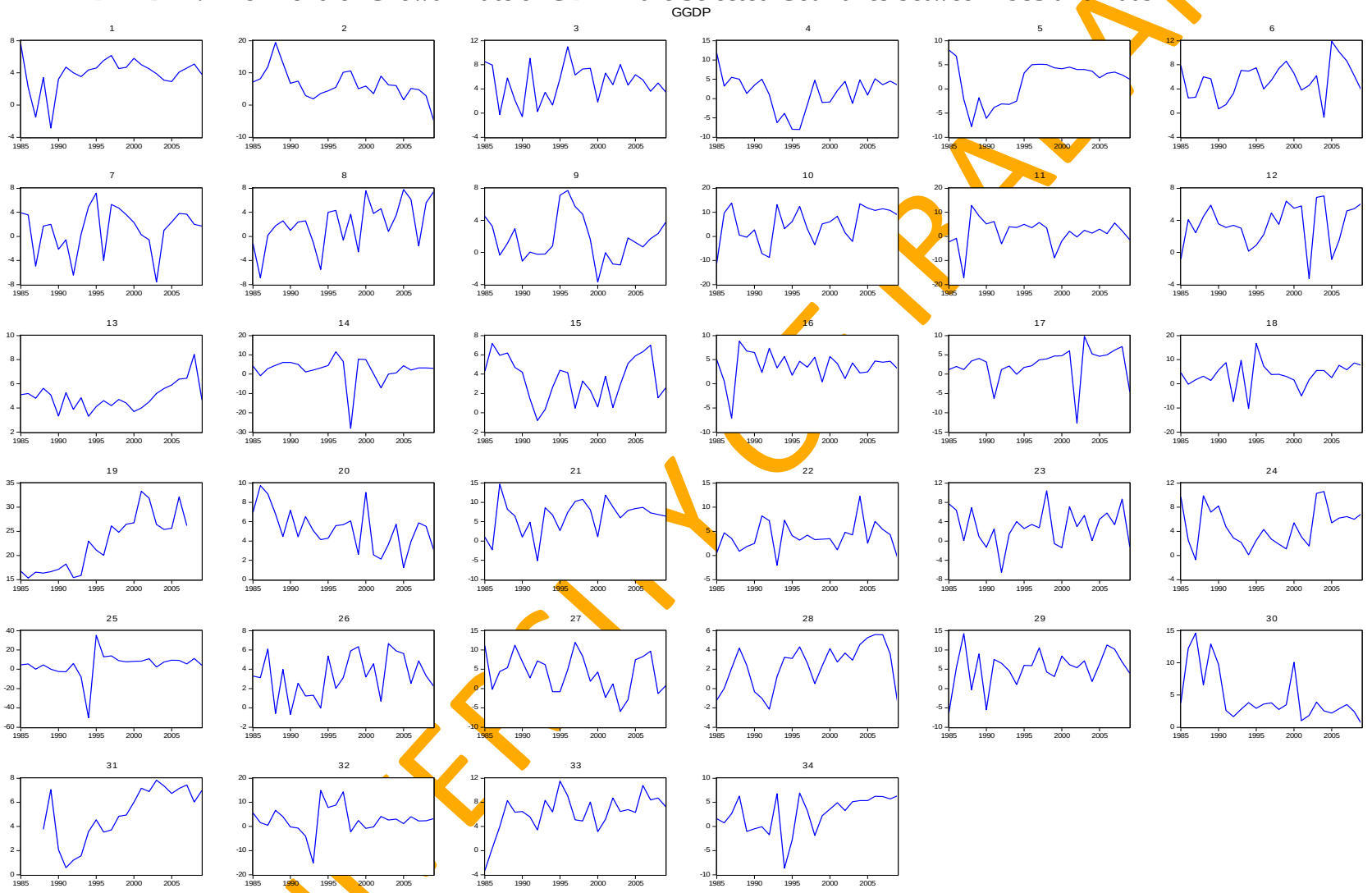
APPENDIX B 12: The Trend of Real Exchange Rate (% of GDP) in the Selected Countries between 1985 and 2009



APPENDIX B 13: The Trend of Savings (% of GDP) in the Selected Countries between 1985 and 2009



APPENDIX B 14: The Trend of Growth Rate of GDP in the Selected Countries between 1985 and 2009



APPENDIX C 1: Some Selected Studies on Fiscal Policy, the Current Account Balance and its other Determinants

Author (s)	Scope/Period	Place	Theoretical Framework	Methodology	Finding(s)
Lenart-Odoran, R. and Reppa, Z. (2011)	1995 Q1-2010 Q3	Hungary	Intertemporal framework	VAR technique	The current account deficit responded negatively to fiscal expansion, while at the same time private consumption increased. This suggested that fiscal policy contributed to the external imbalances, and this contribution most likely occurred through the non-Ricardian behaviour of the households.
Ghosh and Ostry (1995)	1950-1991	Panel Study for 45 developing countries	Intertemporal framework	VAR technique	They concluded that the consumption-smoothing model provides a natural benchmark against which to judge actual current account movements in developing countries. It was also observed that domestic interest rates moved closely with international interest rates adjusted for expected exchange rate despite the extensive capital controls in some of the countries.
Yang (2011)	1980-2009	Eight emerging Asian economies	Intertemporal approach	cointegrated VAR technique	The current account balance was heterogeneous in the sample economies, while trade openness and initial stock of net foreign assets were significant in explaining the long-run behaviour of the current account balance. There was inherent self-adjusting mechanism in the current account balance of the entire sampled countries with the exception of China. The author reported a steady short-run adjustment towards long-run equilibrium and identified the disequilibrium term as the main determinant of the short-run current account balance variations
Calderon *et al.* (2002)	1966-1995	unbalanced panel of 44 developing	Intertemporal approach	GMM estimator technique	Current account deficit was found to be persistent, while a rise in domestic output growth led to substantive current account deficit

		countries			in developing countries. It was also reported that increase in savings rates and higher international interest rates reduced the current account deficit in developing economies.
Khan and Knight (1983)	1973-1980	32 non-oil developing countries	Intertemporal approach	Pooled regression analysis	The author reported a positive effect of terms of trade and growth in industrial countries on the current account balance, while real foreign interest rate, real effective exchange rate and fiscal position had adverse effects on the current account balance. The coefficient of the time trend included in the model, to take account of the factors that were not explicitly included in the specified model, was significant and negative, indicative of possibility of exclusion of some factors that could account for the variations in the current account balance in this class of economies
Doroodian (1985)	1973-1980	32 non-oil developing countries	Intertemporal approach	Pooled regression analysis	Reported that that the deterioration in the current account balance as a result of a reduction in the terms of trade was pronounced in the low-income countries and that the deterioration due to the growth rate differential was worst for the major exporters of manufactures
Chinn and Prasad (2003)	1971-1995	18 industrial and 71 developing countries	Intertemporal approach	Cross-section and panel regression techniques	The authors found that the current account balance was positively correlated with net foreign assets and government budget balances. The researchers found that industrial countries that had relatively large stocks of net foreign assets ran larger current account surpluses, while the coefficient of net foreign assets was also positive for developing countries but smaller and not significant in the analysis.
Nickel and	1981-2005	22 developed	Ricardian	A dynamic	The authors found that the relationship between

Vansteenkiste (2008)		countries	equivalence hypothesis	panel threshold model	the current account balance and fiscal policy changes depending on whether consumers react in a Keynesian or Ricardian manner
Ali Abbas *et al.* (2010)	1985-2007	124 countries	Saving-investment identities	A panel regressions and panel VARs estimations techniques	The authors reported that changes in fiscal policy over the period covered were associated with changes in the current account balance, but the relationship was less than one-for-one.
Ravn *et al.* (2007)	1975q1-2005q4			Structural vector autoregressive technique	Findings from the estimate of the structural parameters defining the deep-habit mechanism using a limited information approach substantiated the presence of deep habits in private and public consumption with the attendant implications on the private and public saving. It was reported that a positive innovation in government spending led to expansion of output and consumption, while it caused a depreciation of the real exchange rate, and a deterioration of the trade balance
Freund (2005)	1970-1997	25 episodes of current account reversals among industrial countries since 1980	Intertemporal approach	Simple regression technique	The results showed that output is demand determined and that a real exchange rate adjustment is necessary to reduce an external deficit and that the relationship between current account dynamics and the business cycle suggested that the current account is largely a symptom of the business cycle.
Bergin and Sheffrin (2000)	1961:Q4-1996:Q2	Canada, Australia and United Kingdom	Intertemporal approach	Simple Regression Analysis	The findings showed that including the interest rate and exchange rate improved the fit of the intertemporal model over what was found in previous studies. The model predictions better replicated the volatility of current account data and better explained historical episodes of

					current account imbalance.
Hassan (2006)	1989-2004	Bangladesh	Saving-Investment Identity	OLS and ECM	The result showed a long-run equilibrium relationship is found between the current account deficit and its determinants. Among all the variables introduced in the formulated model, only terms of trade, export and foreign interest rate were found to have significant impact on the current account deficit.
Liesenfeld *et al.* (2009)	1975-2004	60 low and middle income countries from Asia, and Latin America and the Caribbean	A dynamic panel probit model of the current account balance	Pooled probit, random country-specific effects and AR (1) estimation techniques.	Countries with high current account imbalances, low foreign reserves, a small fraction of concessional debt, and unfavourable terms of trades are more likely to experience a current account reversal
Herrmann and Jochem (2005)	1994:Q1-2004:Q4	8 central and east European countries that joined the European Union in May 2004	Macroeconomic balance approach	FGLS	The findings showed that the relative per capita income has a significant effect on private saving and can therefore explain a large part of the past deficits. Thus, a continuing catching-up process would lead to falling current account deficits.

Source: Author's Compilation.

APPENDIX D 1: Selected Countries in sub Saharan Africa (Classification Based on Regional Blocks)

CENTRAL	EAST	SOUTH	WEST
Cameroon	Burundi	Botswana	Benin
Central African Republic	Ethiopia	Lesotho	Burkina Faso
Congo Republic	Kenya	Madagascar	Cape Verde
Gabon	Rwanda	Malawi	Cote d'Ivoire
	Seychelles	Mauritius	Gambia, The
	Sudan	Mozambique	Ghana
	Tanzania	Namibia	Guinea-Bissau
	Uganda	South Africa	Mali
		Swaziland	Niger
		Zambia	Nigeria
			Senegal
			Togo

Source: IMF, African Department database, (2013) and IMF, World Economic Outlook (WEO) database (2013)

APPENDIX D 2: Selected Countries in sub Saharan Africa (Classification Based on Economic Performances)

Oil-exporting countries	**Middle-income countries**	**Low-income excluding Fragile countries**	**Fragile countries**
Cameroon	Botswana	Benin	Burundi
Congo Republic	Cape Verde	Burkina Faso	Central African Republic
Gabon	Ghana	Ethiopia	Cote d'Ivoire
Nigeria	Lesotho	Gambia, The	Guinea-Bissau
Sudan	Mauritius	Kenya	Togo
	Namibia	Madagascar	
	Senegal	Malawi	
	Seychelles	Mali	
	South Africa	Mozambique	
	Swaziland	Niger	
	Zambia	Rwanda	
		Tanzania	
		Uganda	

Source: IMF, African Department database, (2013) and IMF, World Economic Outlook (WEO) database (2013)

APPENDIX E 1: VAR Residual Normality Test

VAR Residual Normality Tests
Orthogonalization: Cholesky (Lutkepohl)
Null Hypothesis: residuals are multivariate normal
Date: 02/07/12 Time: 12:40
Sample: 1985 2009
Included observations: 563

Component	Skewness	Chi-sq	df	Prob.
1	1.569763	231.2200	1	0.0000
2	0.172797	2.801753	1	0.0942
3	0.461297	19.96728	1	0.0000
4	0.139124	1.816189	1	0.1778
5	1.798708	303.5837	1	0.0000
6	0.264644	6.571729	1	0.0104
7	0.566551	30.11864	1	0.0000
8	1.966669	362.9273	1	0.0000
9	-0.853990	68.43255	1	0.0000
Joint		1027.439	9	0.0000

Component	Kurtosis	Chi-sq	df	Prob.
1	14.67433	3197.137	1	0.0000
2	6.457511	280.4298	1	0.0000
3	5.360749	130.7364	1	0.0000
4	10.50103	1319.892	1	0.0000
5	12.33553	2044.443	1	0.0000
6	6.797357	338.2673	1	0.0000
7	10.18463	1210.894	1	0.0000
8	16.73162	4423.242	1	0.0000
9	13.07531	2381.299	1	0.0000
Joint		15326.34	9	0.0000

Component	Jarque-Bera	df	Prob.
1	3428.357	2	0.0000
2	283.2316	2	0.0000
3	150.7037	2	0.0000
4	1321.708	2	0.0000
5	2348.027	2	0.0000
6	344.8390	2	0.0000
7	1241.012	2	0.0000
8	4786.169	2	0.0000
9	2449.731	2	0.0000
Joint	16353.78	18	0.0000