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Determinants of Kenya's Fiscal Performance
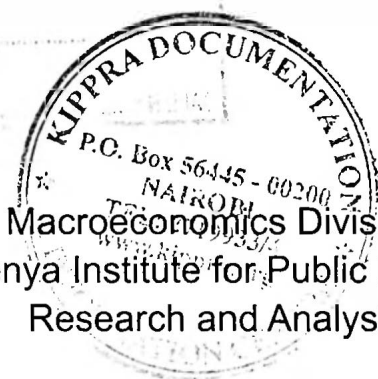
Joseph Sirengo

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THE KENYA INSTITUTE FOR PUBLIC POLICY RESEARCH AND ANALYSIS (KIPPRA)

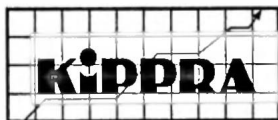**YOUNG PROFESSIONALS (YPs) TRAINING PROGRAMME**

Determinants of Kenya's Fiscal Performance

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Research and Analysis

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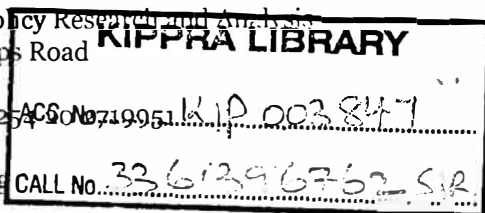
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Abstract

This study sets out to investigate the determinants of fiscal balance in Kenya. A model developed from three-gap analysis is used, together with time series data for the period 1975 to 2006. The long run results indicate that treasury bill rate positively and significantly affects fiscal balance, while total debt service and trade openness negatively and significantly affect fiscal balance. However, real per capita GDP is not a significant determinant of fiscal balance. Using error correction model, the results indicate that real per capita GDP positively and significantly affects fiscal balance, while total debt service and trade openness have a negative and significant impact. Finally, the 1993 liberalization policies negatively impacted on fiscal balance. The study recommends the need to develop policies that will spur economic growth and increase employment to increase revenue and curb fiscal deficit. Further, the government needs to use concessional sources of funds, such as grants instead of commercial borrowing, to reduce the build up of debt and fiscal deficit. The government should also be cautious with policies geared towards trade openness as they expose the economy to adverse external shocks, thereby worsening fiscal balance.

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1. Introduction

The government plays an important role in ensuring sustained economic growth, poverty alleviation, employment creation and macroeconomic stability. It does this by ensuring that the budget is geared towards productive investment, does not crowd out the private sector, and that fiscal deficit financing does not hurt the economy.

In 2000/01 fiscal year, Government of Kenya revenue amounted to Ksh 220.2 billion. This comprised of income tax (24.3% of total receipts), value added tax (22.8%), excise duty (12.9%), other revenue (16.6%), import duty (13.0%) and external grants (10.4%) (Central Bank of Kenya, 2001). In 2006/07, government revenue totalled Ksh 383.6 billion. During the period, government receipts comprised of income tax (34.3% of total receipts), value added tax (25.1%), excise duty (14.7%), other revenue (14.7%), import duty (7.2%) and external grants (4.0%) (Central Bank of Kenya, 2007). This shows that taxes are an important source of government revenue.

In the fiscal year 2000/01, government expenditure and net lending to public institutions amounted to Ksh 236.8 billion, out of which salaries and wages took 28.7 per cent, domestic interest payment (9.8 %), foreign interest payment (3.5%), other recurrent expenditure (42.5%) and development expenditure (15.5%). In 2006/07, government expenditure and net lending to public institutions stood at Ksh 405.2 billion. Salaries and wages consumed 30.6 per cent, domestic interest payment (9.1%), foreign interest payment (1.4%), other recurrent expenditure (38.9%) and development expenditure (20%). This shows that non-discretionary expenditure comprises a large portion of government expenditure, making it difficult for the government to control the deficit. Budget deficit on cash basis as a percentage of GDP stood at 2.1 per cent for 2006/07 compared to 1.6 per cent for 2000/01.

Kenya has experienced a fluctuating fiscal deficit since early 1970s. This has mainly been caused by the government's increased expenditure to provide for public investment and public consumption. However, revenue has not increased fast enough to keep pace with increased government expenditure as shown in Figure 1.1.

Despite the upward trend in both revenue and expenditure over the period 1970 to 2007, expenditure exceeded revenue in most of the years. During the period 1986 to 1997, expenditure remained higher than revenue, implying that the government could not contain its expenditure within the revenue limits, thereby occasioning persistent fiscal deficit.

During the mid 1990s up to 2007, the government was able to contain the huge public consumption. This meant that although there were fluctuations in fiscal balance, the government was able to contain a huge increase in expenditure. This could be attributed to the reform measures implemented during the later half of the 1990s, such as rationalization

Figure 1.1: Government revenue and expenditure, 1970 to 2007
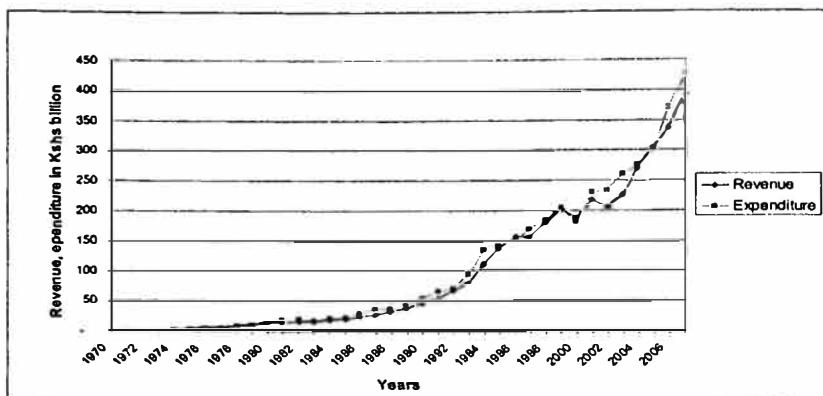
Source: International Monetary Fund's International Financial Statistics

of public service delivery and prudent financial management. During the period 1997 to 2007, the government was able to register some fiscal surpluses in some years as shown in Figure 1.2.

Whereas public investment fell from 6.7 per cent of GDP in 1997 to 4.8 per cent in 2002, public consumption increased from 16.2 per cent to 19.0 per cent (Government of Kenya, 2003). This led to deterioration in fiscal balance from a fiscal surplus of 1.0 per cent of GDP in 1999/2000 to a fiscal deficit of 2.4 per cent of GDP in 2001/2002. The increase in fiscal

Figure 1.2: Government revenue and expenditure, 1970 to 2007
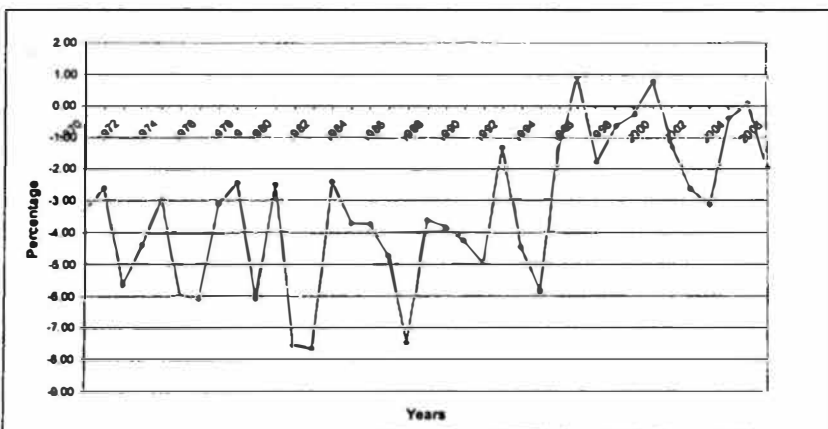
Source: International Monetary Fund's International Financial Statistics

deficit during the period is attributed to the growing domestic debt from 19.4 per cent of GDP at the end of 2000/2001 to an estimated 23.0 per cent of GDP at the end of 2002, and to dwindling external financing.

Kenya's overall budget deficit increased from 4.9 per cent between 1969 and 1973 to reach 9.4 per cent in 1979 to 1983 and about 5.0 per cent in 1989 and 1990 (Mwega *et al.*, 1994). This was a major cause for the widening saving-investment gap as the country relied more on external resources to finance capital formation. There was, therefore, need to reduce fiscal deficit in order to control inflation, restrain public debt, increase government savings, and avoid crowding out private sector investment.

A country's fiscal performance is important in assessing its public debt sustainability and sovereign risks. Fiscal performance assists in the choice of policy interventions that guide a country's growth process, while maintaining sustainable debt levels. Kenya has transited through periods of poor fiscal performance especially in the 1980s up to mid 1990s, and experienced improved fiscal performance in the 2000s.

A healthy fiscal performance is hinged on various factors such as gross domestic product, per capita income, tax revenue, government consumption, public investment, terms of trade, stock of public debt, and current account balance. All these factors, if not well monitored, might impact adversely on the fiscal performance of a country, leading to the problem of fiscal unsustainability. Fiscal policy not only plays an important role in macroeconomic stabilization, but also in ensuring sustainable economic growth.

Several variables have been used to measure fiscal performance. Stein *et al.* (1998), in their analysis of institutional arrangements and fiscal performance, describe fiscal performance in terms of a country's debt to revenue ratio, fiscal deficit, size of the public sector and the degree of procyclicality of fiscal policy in response to business fluctuations. Some countries approach fiscal performance through a set of fiscal rules. This entails setting numerical targets on budgetary aggregates such as government deficit, debt and government spending and working towards achieving those targets that have upper limits (Von Hagen, 2006).

Although Kenya has not had strict fiscal rules, it has always set targets for government deficit, expenditure and debt. This gained ground when the Medium Term Expenditure Framework (MTEF) was adopted in the year 2000 under the wider public expenditure management reforms (Government of Kenya, 2003). Though this reduced the huge deficit experienced in the 1980s and 1990s, the deficit has not been fully contained and keeps on fluctuating.

In this study, fiscal performance is measured through the country's fiscal balance expressed as a ratio of gross domestic product. Fiscal balance is given as the difference between government revenue and

government expenditure. The advantage of using fiscal balance to GDP ratio as an indicator of fiscal performance is that policy makers are interested in flow variables other than stock variables and can be monitored over time. It can also be used as a policy target with a limit which, if not exceeded by the government, then the fiscal situation of the economy would be deemed to be sustainable.

Kenya has been having a fluctuating fiscal balance as shown in Figure 1.2. This shows that fiscal balance has been quite unstable, thereby impacting negatively on the country's growth process and other macroeconomic variables. Coupled with high levels of public debt and debt service ratios, a huge fiscal deficit undermines economic stability and growth. In some years, fiscal deficit as a percentage of GDP has moved outside the target of three per cent.[1] For instance, over the period 1979 to 1994, fiscal deficit on cash basis averaged five per cent of GDP. On the other hand, running a huge fiscal surplus does not augur well for the economy. This is because the surplus would mean that some part of the revenue, which is mainly raised through taxes, is not being put to use, hence resources would be withheld instead of being utilized to increase productive investment and employment creation.

The Government of Kenya depends heavily on taxes as its source of revenue. The tax rate is among the highest in developing countries and, therefore, does not provide room for increased revenue generation through tax adjustment. On the other hand, the proportion of government non-discretionary expenditure is high, meaning that there is little the government can do to firmly contain the escalation of fiscal deficit. At the same time, the government is supposed to spend more on building productive infrastructure that would support private sector investment.

While it is not wrong for the government to continue operating a fiscal deficit, it is important to ensure that the deficit is within a manageable limit. Deficits are normally financed through domestic and external borrowing, which if not well monitored could cause debt overhang, crowd out the private sector, slow down economic growth and cause macroeconomic instability.

In view of the unstable fiscal balance experienced in the past periods, it is important to study the underlying factors that determine Kenya's fiscal balance, hence the overall fiscal performance of the economy.

The study therefore seeks to provide answers to the following questions:

(i)   How has Kenya performed on fiscal deficit over time?

(ii)   What factors determine fiscal performance?

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[1] Maastricht Treaty sets the fiscal deficit limit at 3 per cent of the nominal gross domestic product.

(iii)   To what extent do changes in macroeconomic environment affect fiscal outcomes?

(iv)   What should be done to ensure prudent fiscal management?

The main objective of this study is to analyze the fiscal performance of Kenya's economy. The specific objectives are to:

(i)   Analyze Kenya's fiscal performance;

(ii)   Examine factors that determine fiscal performance; and

(iii)   Make policy recommendations for prudent fiscal policy management

A country operating a fiscal deficit needs to run fiscal surpluses in future to maintain sustainability. During the short term, the country finances such deficit by borrowing from both domestic and foreign markets. The cost of borrowing further exacerbates the deficit in future and, if not checked, the deficit and debt could build up, leading to macroeconomic instability and debt overhang.

It is important to examine the main determinants of Kenya's fiscal performance so that they could be monitored and timely adjusted to avert unsustainable deficit. Timely control of the determinants assists policy makers in maintaining fiscal targets, and this would ensure a healthy fiscal performance. If the determinants of fiscal performance are not well managed, fiscal deficit and debt could increase fast and lead the economy into a path that is unsustainable, and further to crippling domestic and foreign debt.

Fiscal performance of an economy can be captured through various variables such as government expenditure, revenue and/or public debt. The trends and magnitudes of these variables can appropriately capture the economy's fiscal performance. In this study, fiscal performance is captured through the trend and magnitude of fiscal balance. Fiscal balance reflects the policy makers' commitment to prudent fiscal management and implicitly encompasses the revenue and expenditure variables of public budget.

Understanding the determinants of fiscal performance serves to guard against the exacerbation of fiscal deficit and debt, hence ensuring a healthy macroeconomic environment for sustainable growth and poverty reduction. It also aids in proper mitigation against adverse shocks to the economy, in forming expectations about future budgetary developments, and in mitigating the build up of fiscal deficit. A sound fiscal position coupled with low debt allows policy makers flexibility to respond counter cyclically to shocks or downturns (Gali and Ota, 2008).

Mwega *et al.* (1994) argue that in the mid 1980s, Kenya desired to restore the high economic growth rates experienced in the 1960s and
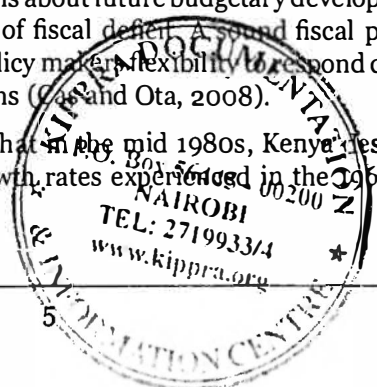
improve people's living standards. In 1986, the government published a Sessional Paper on economic management for renewed growth, which was to return the country to a high and sustained economic growth path. The Paper identified savings, fiscal and foreign exchange constraints as the main impediments to economic growth.

Since fiscal policy directly affects the fiscal performance of an economy, it is therefore important to study the fiscal performance of the Kenyan economy to understand the factors that determine it. This will go a long way in understanding the transmission mechanism and the impact of the fiscal policy and its effects on growth, poverty alleviation and debt sustainability.

2. Literature Review

2.1 Theoretical Literature

Fiscal balance is the difference between government revenue and expenditure. This is sometimes referred to as the fiscal gap. It is derived from the national accounts and presented as an identity in the three-gap analysis. The fiscal gap is equal to the investment-savings gap plus exports-imports gap. This implies that revenue shortfalls in the fiscal budget could be financed through export earnings and domestic savings. However, shortfalls in export earnings and/or domestic savings could be supplemented through government borrowing from external sources or foreign aid.

The government needs foreign financing to close the revenue-expenditure gap. Foreign financing, which comes through foreign currencies, helps to close the exports and imports gap. The insufficient foreign exchange earned through exports is supplemented by government's foreign financing to procure imported capital goods needed to spur economic growth. Finally, foreign financing helps provide for public investment, which supplements private investment, which could be constrained by meagre private savings. M'Amanja and Morrissey (2005), therefore, argue that foreign financing in form of foreign aid assists in relaxing any or all of the three constraints faced by developing economies. These three constraints are the savings constraint, foreign exchange constraint and fiscal constraint.

Bacha (1990) extends the two-gap analysis of the savings gap and the foreign exchange gap by introducing fiscal constraint as an additional important impediment to economic growth independent from the savings and foreign exchange constraints. He presents a three-gap analytical framework containing the savings gap, the foreign exchange gap and the fiscal gap. The savings gap is derived from the basic national income identity, and states that when income is at its potential level and private consumption is determined exogenously, then we get the savings-constrained level of investment, which determines the potential growth rate, assuming constant incremental capital output ratios. The savings gap is, therefore, equal to the sum of internal (or domestic) savings and foreign transfers.

Bacha (1990) argues that variations in interest rate are the main sources of changes in foreign transfers and are exogenously determined, just like foreign transfers. He further states that in the savings gap, assuming all foreign capital inflows finance the government budget, the primary budget surplus in the current account and the net foreign transfers to the government will be exogenously determined. The savings gap is written as:

$IS = S_p^* + (T-G) + (F-J)$

Where IS is the saving gap

S_p^* is private savings at the potential output level

T is government expenditure

F is net capital inflows

J is net factor services to abroad

The savings gap shows that the sources of investment financing are private savings, primary budget surplus in the current account, and the net foreign transfers to the government. The main assumptions are that all foreign capital inflows are to finance the government budget, and that all factor service outflows are paid out of the gross government income.

From the balance of payments equation, the excess of imports over exports is equal to foreign transfers, which are the difference between net capital inflows and net factor services to abroad. Imports are divided into complementary capital goods imports and other imports. Complementary capital goods are a proportion of total investment. Therefore, the foreign exchange constrained level of investment is a function of net exports and foreign transfers.

The government budget constraint is also derived from the basic national accounting identity after decomposing investment into private and government. The government investment is, therefore, a function of the differences of private savings and private investment, government gross income and expenditure, and net capital inflows and net factor services to abroad.

Assuming that government investment crowds in private investment, we get a fiscally constraint level of investment. The fiscal constraint of investment is therefore determined by the rate of inflation, variations in money holdings, government budget surplus in the current account and foreign transfers. The fiscal constraint assumes that the government's bond market is non-existent, and hence money expansion is the only alternative for domestic financing of government budget deficit.

Mwega *et al.* (1994) postulate that potential growth is proportional to the gross investment ratio. Investment is further decomposed into private and public investment. Private investment is positively determined by capacity. Due to the indivisible nature of many investments, the investors first accumulate savings and then invest. Private investment is also positively determined by public investment in infrastructure, public utilities and basic industries. The public investment provides the crowding-in effect that complements private investment. Finally, private investment is positively determined by availability of domestic credit to the private sector.

The study (Mwega *et al.*, 1994) further states that capacity utilization depends on the availability of raw materials and other intermediate imports. There is limited substitutability between domestic and imported inputs such as fuel, fertilizer and raw materials financed from exports and net capital inflows. Thus, private investment is positively determined by intermediate imports, public investment, and private sector credit as proportions of potential output.

The three sources for financing investment (both public and private) would come from the private sector (private savings), public sector (public savings) and the external sector (foreign savings). Savings by the private sector are positively determined by capacity utilization and negatively determined by net inflows of capital. Mwega *et al.* (1994) argue that real interest rate is usually a non-significant determinant.

Government savings are equal to recurrent revenues from taxes, appropriation-in-aid, and profits from parastatals plus foreign grants minus consumption expenditure on final goods and services, domestic subsidies and transfers, debt service charges on domestic borrowing and foreign borrowing. In other words, this is summarized to show that public sector savings are a positive function of capacity utilization and foreign grants, and a negative function of debt service charges on foreign borrowing.

Foreign savings are equal to the sum of intermediate imports, capital imports and competitive imports of goods and non-factor services, plus the net factor income payments abroad minus exports of goods and non-factor services.

The fiscal gap is linked to public sector borrowing. Therefore, fiscal gap is a function of capacity utilization, foreign grants, domestic credit to the private sector, and intermediate imports.

2.2   Empirical Literature

The theoretical literature provides various determinants of fiscal performance. These determinants are grouped into economic, institutional and political factors (Roubini and Sachs, 1989). Budget deficits increase during periods of economic downturns and reduce during periods of expansions. However, some studies have argued that during boom periods, increase in tax revenue could exert pressure on government spending and thereby increase budget deficits.

Other studies have argued that inflation is a major determinant of budget balances. However, the sign of the effect depends on the institutional characteristics of public spending and revenues (Isabel and Hernández, 2008).

Interest rates also have an effect on the fiscal variables through interest payments on public debt. When public debts mature and occasion interest

payments, this leads to increased government expenditure, hence an increase in fiscal deficit.

Asset prices may also have an impact on fiscal balances through the tax system. The impact could be through tax revenues on capital gains and turnover related taxes (Eschenbach and Schuknecht, 2002). Also, an increase in the stock prices leads to an improvement in fiscal balance.

The degree of economic development as measured by per capita income is another determinant of fiscal balance. It is argued that on one hand, greater economic development may be associated with a more efficient tax system and therefore a smaller deficit. On the other hand, a more developed financial sector could provide improved access by the government to debt, and thereby give rise to a larger budget deficit (Isabel and Hernández, 2008).

Some literature has argued that economic factors alone cannot fully explain fiscal performance. They have therefore advocated for political institutions as another factor. Isabel and Hernández (2008) argue that coalition, fragmented or unstable governments tend to have more difficulties in decision making, and therefore such governments are associated with larger fiscal deficit.

Political instability is another cause for large fiscal deficit. It is argued that a government that is less likely to be re-elected may accumulate a higher level of public debt, leading to a high fiscal deficit. Also, high fiscal deficit is associated with countries with more frequent changes in government, countries with difficulties of political management in coalition governments, and those with many political parties in a ruling coalition (Roubini and Sachs, 1989).

Countries with well developed budgetary institutions tend to have smaller fiscal deficits. This is because there are ceilings on government borrowing and on the deficit, as well as limits on the parliament and the government to make changes to the budget.

Stein *et al.* (1998) argue that in some regions of homogenous countries such as Latin America and Organization of Economic Cooperation and Development (OECD) countries, there is a presence of differences in fiscal performance. They attribute these to political variables, the durability of government, and the polarization of the political system on fiscal performance. However, they argue that specific political variables could differ from country to country.

The other set of factors that explain the differences in fiscal performance is budgetary institutions. Stein *et al.* (1998) argue that budgetary institutions have a significant impact on debt ratios and deficit within the OECD and Latin American countries.

Mwega *et al.* (1994) analyzes macroeconomic constraints to Kenya's economic growth using a three-gap analysis. The study seeks to find out whether it is the savings gap, fiscal gap or the foreign exchange gap that

constrains the country's economic growth and their evolution over time. The results show that it is the foreign exchange gap that constrains a country's economic growth potential.

Kouassy and Bohoun (1994) analyze the determinants of fiscal deficit and fiscal adjustment in Cote d'Ivoire. They use structural models and a full model to find out the determinants of fiscal deficit. They use the spending and revenue side variables of fiscal deficit. They find that fiscal deficit is positively and significantly affected by overall public productive spending. Public consumption spending is positively and significantly affected by GDP and previous period tax revenue.

On the revenue side, tax revenue is affected positively and significantly by GDP and efficiency of public productive spending, and it is negatively and significantly affected by tax rate.

Using the full model of fiscal deficit, the study finds a positive and significant relationship between fiscal deficit and previous period public consumption spending, public productive spending and tax rate. It further finds a negative and significant relationship between fiscal deficit and gross domestic product, previous period tax revenue, efficiency of public productive spending, and receipts from public corporate companies.

Talvi and Végh (2000) use a sample of 56 countries and find that in developing countries, government spending and taxes are highly procyclical, with government spending rising and taxes falling during expansions and the reverse during recessions. This contrasts with the standard Keynesian models that call for counter-cyclical fiscal policy with increased government spending and reduced taxation during recession, and the opposite during expansion. The result also contrasts with the tax-smoothing models inspired in Barro (1979), which advocate for essentially neutral fiscal policy over the business cycle, with interventions only to unforeseen changes that affect the government budget constraint. The study explains the puzzle by stating that, in developing countries, fluctuations in tax base are much larger than in developed countries, and hence tax-smoothing only works to impose inter-temporal distortions coupled with irresistible political pressure to spend during periods of surplus, hence impacting further on fiscal policy.

Akitoby *et al.* (2004), in analysing the cyclical and long-term behaviour of government spending in 51 developing countries, find that government spending increases with output, and there is a long term relationship between government spending and output. However, the volatility in output and financial risk contribute to the procyclicality of government spending.

Abiad and Baig (2005) use panel data of 34 emerging market countries over the period 1990 to 2002 in analyzing the role of various economic, political and institutional factors in determining fiscal effort. They find a positive and significant impact of lagged debt to the fiscal effort until

a debt threshold of 50 per cent of GDP is breached. They also find a u-shaped relationship between the primary balance and revenue. Further, they find that high democratic accountability and strong impartial bureaucracies help lower market risk, therefore lowering the relative need for fiscal adjustment. They find a positive relationship between primary surplus and output gap, suggesting that the sampled countries pursue counter-cyclical policies. Also, countries with strong institutions are able to sustain higher levels of debt and thereby pursue a relatively gradual fiscal adjustment path.

A country that faces high debt and associated interest costs runs a risk of not only crowding out private sector investment but also diverting resources from development and poverty alleviation programmes (Abiad and Baig, 2005). An economy faced with huge debts has limited policy flexibility, which makes it difficult to implement a counter-cyclical fiscal policy. There is, therefore, need to ensure that debt and fiscal deficit are maintained within manageable levels.

Adedeji and Williams (2007) analyze fiscal performance in the CFA zone of West African Economic and Monetary Union and the Central African Economic and Monetary Community using panel data for 1990 to 2006. They find that fiscal stance is strongly and positively influenced by the fiscal effort in the previous period, hence underscoring the risks of a procyclical fiscal policy stance. They also find a positive and significant impact of lagged debt stock on fiscal performance. They further find that economic performance as captured by economic growth and per capita GDP, openness, and terms of trade are significant in explaining fiscal performance.

Cas and Ota (2008) analyze the link between country size, government size, debt and economic performance of small states. They find that small states have large governments and higher public debt, and hence conclude that states with smaller governments and low debt spur economic growth. Healthy fiscal positions provide policy makers with the flexibility required to deal with shocks. They further argue that improving government effectiveness can support fiscal adjustment in small states.

3. Methodology

3.1 Overview

In this section, we develop a model based on the theoretical and empirical literature discussed in the preceding section. Most studies on fiscal performance have used pooled regressions, which are at least useful in identifying factors that appear to consistently determine fiscal performance. This necessitates country-specific studies to understand the fiscal performance process and, most important, the factors that determine fiscal performance. The weakness of cross-country studies is that they are not usually informative for a specific country and the assumption of parametric invariance across countries makes it difficult to interpret the results for a specific country, which is a challenge in making country-specific policy inferences.

The government budget is analyzed in the context of the three-gap model as postulated by Bacha (1990) and Mwega *et al.* (1994). The national income identity of a small open economy is presented as:

$$Y = C + I + G + X - M \quad \text{...} (1)$$

Where

Y is national income,

C is private consumption,

G is government expenditure,

X is exports, and

M is imports.

Assuming that national income includes taxes (T), we can derive the disposable income (Yd) and rewrite equation (1) as:

$$Yd + T\text{-}C = I + G + X\text{-}M \text{..} (2)$$

We introduce private savings (S) as the difference between disposable income and private consumption. We rearrange the terms to get a new identity in terms of fiscal gap, exports-imports gap (foreign exchange gap) and the savings gap as follows:

$$T\text{-}G = I\text{-}S + X\text{-}M \text{...} (3)$$

Equation (3) above indicates that fiscal gap is equal to the sum of the investment-savings gap and exports-imports gap. The fiscal gap is also referred to as fiscal balance, and is determined by factors that affect both the investment-savings gap and the exports-imports gap. We therefore transform equation (3) from an identity into a behavioural equation for estimation purposes. This gives us equation (4) below:

$$FB_t = \alpha_0 + \alpha_1 GDPPC_{gt} + \alpha_2 TBR_t + \alpha_3 TDEBT_t + \alpha_4 OPEN_t + \varepsilon_t \quad \text{.......} (4)$$

Where:

FB is fiscal balance to GDP ratio,

GDPPCg is real GDP per capita growth rate,

TBR is the treasury bill rate,

TDEBT is the total debt service as a proportion of total exports,

OPEN is the degree of openness, and

ε is an error term, while subscript t is a time period.

Several studies on fiscal performance have used panel data analysis incorporating most of the above variables. They include Kouassy and Bohoun (1994), Adedeji and Williams (2007) and Isabel and Hernández (2008).

We carry out the ordinary least squares estimation of equation (4) using annual time series data for 1975 to 2006.

3.1   Definition of Variables and Hypothesis

We specify our null hypotheses as $\alpha_i = 0$ where $i = 1,2,3, ...4$.

We expect a priori that $\alpha_1 > 0$, $\alpha_2 < 0$, $\alpha_3 < 0$, and $\alpha_4 < 0$

The fiscal balance is the total revenue and grants minus total expenditures, excluding interest payments. The variable measures the fiscal effort of the government in preserving fiscal sustainability (Adedeji and Williams, 2007). The variable is a better measure of fiscal performance, since it excludes interest payments that are predetermined by the level of borrowing from previous years (Cas and Ota, 2008).

We use fiscal balance as our dependent variable, instead of any other variable such as debt to GDP ratio because first, policy makers are interested in flow variables instead of stock variables and, secondly, the government can set a target on fiscal balance, which is easier to monitor than debt to GDP ratio.

GDPPCg is real GDP per capita growth rate and measures the impact of the state of the economy to fiscal performance. Tujula and Wolswijk (2004) argue that this variable is a measure of welfare level and in less developed countries, they expect the variable to lead to higher fiscal deficit, since the countries finance catching-up expenditure. They argue that such countries also face high investment needs and, therefore, the variable enters the equation with a negative sign.

However, an increase in real GDP per capita growth rate is likely to lead to increased revenue and thereby improve fiscal balance. In this case, the variable would have a positive sign.

The treasury bill rate captures the cost of government borrowing from the domestic market. The government usually borrows to finance fiscal deficit. We expect the coefficient to have a negative sign, since this will limit government borrowing and thereby make the government to operate within the set budget constraint. An increase in the treasury bill rate leads to higher interest payments on the borrowed funds, thereby increasing government expenditure and worsening the fiscal balance.

Tdebt is the total debt service to exports ratio and captures the response of fiscal policy to debt, and concerns about the sustainability of the fiscal policy. Tujula and Wolswijk (2004) argue that an increase in total debt service to exports ratio worsens fiscal balance. We, therefore, expect the coefficient of the variable to have a negative sign.

OPEN is the country's trade openness and captures the country's exposure and vulnerability to external shocks, and their impact on fiscal performance. This is measured as the ratio of exports plus imports of goods and services to GDP. We expect the variable to have a negative sign.

3.2   Data Sources

The data used in the study is sourced from the Kenya Economic Surveys, Statistical Abstracts, International Monetary Fund's *International Financial Statistics* and World Bank's *World Development Indicators* covering the period 1975 to 2006. The data is computed as ratios. The variables, which have negative values, are added a factor of one before logarithms are taken. All variables enter the model in logarithmic form. Table 3.1 below provides the description of the variables.

Table 3.1: Description of variables

Variable	Description
LFB	Logarithm of fiscal balance to GDP ratio. Calculated as government expenditure minus revenue, divided by GDP at market price. Since fiscal balance has some negative values, a factor of one is added and natural logarithms taken
LGDPPCG	Logarithm of real GDP per capita growth rate. Since real GDP per capita has some negative values, a factor of one is added and natural logarithms taken
LTBR	Logarithm of treasury bill rate
LTDEBT	Logarithm of total debt service as a proportion of exports of goods, services and income
LOPEN	Logarithm of trade openness to GDP ratio. Trade openness to GDP ratio is calculated as the sum of exports and imports of goods and services, divided by the GDP at market price.

4.   Results and Findings

In this section, we present the descriptive analysis of the variables and empirical results of the model.

4.1   Descriptive Statistics

The summary of descriptive statistics (Table 4.1) shows that fiscal balance, GDP per capita growth, treasury bill rate and total debt service are negatively skewed, meaning they have a long left tail. Openness is positively skewed, meaning that its distribution has a long right tail. Regarding the Kurtosis, fiscal balance, GDP per capita and openness have flat distributions relative to normal distribution, while treasury bill rate and total debt service have peaked distributions. The probability of the Jarque-Bera statistic shows the rejection of the null hypothesis of normal distribution for the total debt to GDP ratio. The co'relation matrix shows that there are no variables that are highly correlated. This is shown in Table 4.2.

4.2   Unit Root Tests

Estimation of equation (4) without due regard to time series properties of the variables can lead to spurious results if the variables are not stationary (Wooldridge, 2003). If a vector y_t is integrated of order d (i.e., $y_t \sim I(d)$), then the variables in y_t have to be differenced d times to make them stationary. We therefore proceeded to test the data for unit roots using the Dickey-Fuller (DF) and its augmented Dickey-Fuller (ADF)

Table 4.1: Descriptive statistics

	LFB	LGDPPCG	LTBR	LTDEBT	LOPEN
Mean	-0.033	0.004	-2.233	-1.485	-0.551
Median	-0.031	0.008	-2.036	-1.340	-0.574
Maximum	0.009	0.054	-0.697	-0.921	-0.316
Minimum	-0.080	-0.040	-3.863	-2.733	-0.766
Std. Dev.	0.025	0.023	0.676	0.481	0.125
Skewness	-0.214	-0.004	-0.383	-0.966	0.201
Kurtosis	2.185	2.063	3.068	3.256	2.163
Jarque-Bera	1.130	1.172	0.789	5.066	1.150
Probability	0.568	0.557	0.674	0.079	0.563
Observations	32	32	32	32	32

Table 4.2: Correlation matrix

	LFB	LGDPPCG	LTBR	LTDEBT	LOPEN
LFB	1.000				
LGDPPCG	0.142	1.000			
LTBR	0.047	-0.467	1.000		
LTDEBT	-0.340	-0.287	0.589	1.000	
LOPEN	-0.240	0.091	-0.200	-0.244	1.000

diagnostic procedures. The ADF takes the form:

$$\Delta y_t = \alpha + \beta T + \gamma y_{t-1} + \sum_{i=1}^{p} \delta_i \Delta y_{t-i} + \varepsilon_t \qquad \dots\dots\dots\dots\dots\dots\dots(5)$$

Where:

α is an intercept term, β and γ are coefficients of time trend and level of lagged dependent variable, respectively, ε_t are white noise residuals, and p is the number of lags required to produce residuals that are statistically white noise by correcting for any autocorrelation.

Test statistics for non-stationary series do not follow conventional t-distribution, thus the relevant critical values are obtained from the Dickey-Fuller tables (1981) and MacKinnon tables (1991). Under the ADF, the null hypothesis is that the true values of the coefficients are zero (unit roots), which would be rejected if the computed t-ratios are larger than their critical values. In addition to testing for unit roots, it is appropriate to test whether the data generating process is characterized by non-stationarity, with or without a drift and/or linear deterministic and/or stochastic trend. We therefore specify our equation as shown in equation (5) above, estimate it and test the significance of the coefficients. The critical values of these tests are also non-standard. They include F-statistics denoted by Φ_i. To test the joint hypothesis of unit roots and time trend, the null hypothesis is Ho: $\beta=\gamma=0$ (i.e., Φ_3 test) against the alternative of time trend and non-stationarity. If $\gamma=1$, $\alpha \neq 0$ and $\beta=0$, then y_t is integrated of order one and is a random walk with a drift. However, if $\alpha=\beta \neq 0$ and $\gamma=1$, then y_t is integrated of order one and is a random walk with a drift and deterministic time trend.

If Φ_3 (calculated) is less than Φ_3 (critical), we reject the null and conclude that y_t has a time trend. The other joint test is that of the significance or otherwise of the constant term, time trend, and non-stationary. That is Ho: $\alpha=\beta=\gamma=0$ (i.e., Φ_1 test). If Φ_1 (calculated) is less than Φ_1 (critical), then the null hypothesis is rejected, meaning that y_t has a non-zero drift term.

The choice of the maximum lag length is important so that it should be long enough to yield white noise residuals and short enough to preserve the degrees of freedom. In this study, we choose the maximum lag length by taking the cube-root of the number of observations (i.e., lag length = integer of $[N^{1/3}]$). However, we choose the optimal lag length based on the minimum Schwarz information criterion.

The results of the unit root tests are provided in Table 4.3. The results show that all the variables, except fiscal balance, are integrated of order one and therefore the need for first differencing before being used in the model (Equation 4).

4.3   Results of the Long Run Model

We carried out the regression of the long run model and results are reported in Table 4.4 below.

From the unit root tests reported earlier, we found that all the variables except fiscal balance are integrated of order one and therefore need to be differenced once before being used in the regression. The results of the long run equation showed a presence of the cointegrating process, since the test shows that the residual is stationary.

The stability test using Ramsey RESET (regression specification error test) does not reject the null hypothesis of correct model specification. We therefore conclude that the long run model is well specified and there is no problem of mis-specification or omitted variables.

Table 4.3: ADF results of unit root tests with time trend and drift

ADF model: $\Delta y_t = \alpha + \beta T + \gamma y_{t-1} + \sum_{i=1}^{p} \delta_i \Delta y_{t-i} + \varepsilon_t$							
Variables at levels						First Differences	
	$H0:\gamma=0$	$H0:\beta=\gamma=0$ (Φ3 test)	$H0:\alpha=\beta=\gamma=0$ (Φ1 test)	Lag length	Inference	$H0:\gamma=0$	Inference
LFB	-4.780 (-4.283)			0	I(0)		
LGDPPCG	-3.381 (-4.302)	8.376 (7.24)		2	I(1)	-3.309***	I(0)
LTBR	-1.575 (-4.295)	3.161 (7.24)	2.128 (5.18)	1	I(1) PRW	-5.668***	I(0)
LTDEBT	-0.192 (-4.323)	9.358 (7.24)		3	I(1)	-3.340**	I(0)
LOPEN	-2.463 (-4.283)	3.215 (7.24)	3.265 (5.18)	0	I(1) PRW	-5.818***	I(0)

The table shows the test statistics with critical values in brackets. PRW is the pure random walk process. *** means significant at the 1 per cent level and ** means significant at the 5 per cent level.

Table 4.4: Regression results of long run model

Dependent variable: LFB, Method: Least Squares

Variable	Coefficient
C	-0.081(-3.033***)
LGDPPCG	0.215(1.129)
LTBR	0.016(2.101**)
LTDEBT	-0.032(-3.164***)
LOPEN	-0.065(-1.981*)
Observations	32
R-squared	0.337
Adjusted R-squared	0.239
F-statistic	3.437
Prob(F-statistic)	0.021
Durbin-Watson stat	1.905
RESET F(p)	0.284
Serial correlation LM F(p)	0.278
ARCh LM F (p)	0.890
Heteroskedasticity F(p)	0.625
Jacque-Bera F(p)	0.686

t-statistics are in parentheses, *** means significant at the 1 per cent level, ** means significant at the 5 per cent level, and * means significant at the 10 per cent level.

The ARCH LM test and White heteroskedacity test of residuals do not reject the null hypothesis of homoskedasticity.

The long run model has an R-squared of 0.34, meaning that the model can only explain 34 per cent of the variations in fiscal balance. The coefficient of the treasury bill rate is positive and significant at 5 per cent level, meaning that a one percent increase in treasury bill rate leads to a 0.02 per cent increase in fiscal balance.

The coefficient of the total debt service is negative and significant at 1 per cent level. This means that a one per cent increase in total debt service would lead to a 0.03 per cent deterioration in fiscal balance.

The openness variable is negative and significant at the 10 per cent level. This means that a one per cent increase in openness leads to a 0.07 per cent decline in fiscal balance.

4.4 Dummy Variable

Further analysis of the variables, especially the treasury bill rate, revealed a spike in 1993. This could be due to the liberalization in the financial sector that took place during the year. We modeled the effect of liberalization by introducing a dummy variable for 1993 as follows:

D93 = 1 if year is 1993 and 0 otherwise.

The variable was not significant in the long run model. However, it was introduced in the short run model.

4.5 Results of the Error Correction Model

The unit root tests show that all the variables, except fiscal balance, are integrated of order one and the long run model has a cointegrating vector. We therefore re-specified the model at first difference and added the error correction term derived from the long run model. The Ramsey RESET test could not reject the null hypothesis of the model being correctly specified. Also, the ARCH LM test and White heteroskedacity test could not reject the null hypothesis of no heteroskedasticity in the residuals.

The results show an adjusted R-squared of 0.47 (Table 4.5). The error correction term lagged once (ect(-1)) is negative and significant at 1 per cent level. This means that the speed of adjustment is 72 per cent and in case of a shock, the model tends to return to the long run equilibrium.

The results show that GDP per capita is positive and significant at the 10 per cent level. This means that a one per cent increase in GDP per capita leads to a 0.38 per cent improvement in fiscal balance. Openness lagged once is negative and significant at 5 per cent level. This means that a one per cent increase in trade openness during the previous period would lead to a 0.09 per cent deterioration in fiscal balance of the current period. However, openness lagged thrice is positive and significant at the 10 per cent level, meaning that an increase of one per cent in openness lagged thrice would lead to an improvement in fiscal balance by 0.07 per cent. Since the magnitude of the negative impact of openness lagged once is higher than the positive impact of openness lagged thrice, the overall effect on fiscal balance would be negative.

The dummy variable D93, which was introduced to capture the effects of financial liberalization in 1993 was found to be negative and significant at the 10 per cent level. This means that liberalization had a negative impact on fiscal balance.

The other variables such as the treasury bill rate and total debt service were not found to be significant. In fact, treasury bill rate was dropped from the model.

In summary, the results of the error correction model show that fiscal

Table 4.5: Regression results of error correction model

Dependent variable: D(LFB); Method: Least Squares

Variable	Coefficient
C	0.003(0.845)
D(LGDPPCG)	0.375(1.824*)
D(LGDPPCG(-2))	-0.290(-1.664)
D(LTDEBT(-3))	-0.023(-0.842)
D(LOPEN(-1))	-0.094(-2.378**)
D(LOPEN(-3))	0.071(1.876*)
D93	-0.039(-1.726*)
ECT(-1)	-0.723(-3.423***)
Observations	28
R-squared	0.605
Adjusted R-squared	0.467
F-statistic	4.385
Prob(F-statistic)	0.004
Durbin-Watson stat	1.907
RESET F(p)	0.796
Serial correlation LM F(p)	0.637
ARCh LM F (p)	0.197
Heteroskedasticity F(p)	0.267
Jacque-Bera F(p)	0.394
ECT ADF	-5.111***

t-statistics are in parentheses. *** means significant at the 1 per cent level, ** means significant at the 5 per cent level and * means significant at the 10 per cent level.

balance is positively and significantly determined by the real GDP per capita, and negatively and significantly determined by the previous period trade openness as well as the 1993 liberalization policies.

5. Conclusion and Recommendations

5.1 Conclusion

This paper set to investigate the determinants of Kenya's fiscal performance. It reviewed both theoretical and empirical literature on the subject matter, and developed a fiscal balance model based on the theoretical and empirical literature on the three-gap model. Time series annual data for 1975 to 2006 were utilized in the least squares regression using Eviews software.

The results from the long run model indicate that the treasury bill rate positively and significantly affects fiscal balance, while total debt service and trade openness negatively and significantly affect fiscal balance. The results of the error correction model indicate that GDP per capita positively and significantly affects fiscal balance, while trade openness negatively and significantly affect fiscal balance. The liberalization policies of 1993 were also found to have negatively impacted on Kenya's fiscal balance.

5.2 Recommendations

The study finds that in the long run, treasury bill rate positively and significantly affects fiscal balance, while total debt and trade openness impact negatively on fiscal balance. With regard to treasury bill rate, it means that an increase in treasury bill rate makes it expensive for the government to borrow from the domestic market, and thereby tends to operate within the budget constraint. In so doing, it curbs the exacerbation of fiscal deficit. Borrowing from the domestic market could also lead to crowding out of private sector investment, hence the need for the government to observe prudence in its budget management to minimize domestic borrowing.

An increase in total debt impacts negatively on fiscal balance. This means that the government needs to reduce borrowing from both the domestic and external sources so as not to adversely affect fiscal balance. It is therefore recommended that the government should pursue alternative means of raising revenue, such as broadening the tax base, in order to increase revenue, and/or source funding from concessional[2] bilateral and multilateral organizations. The use of grants instead of commercial loans is therefore recommended to curb increase in external debt.

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[2] Concessional borrowing refers to loans with a grant element of 35 per cent and above.

Trade openness exposes the country to adverse external shocks, thereby impacting negatively on fiscal balance. There is need for the government to ensure that the economy is not fully opened up, so as to minimize exposure to adverse external shocks. The government should pursue policies aimed at improving export earnings to enable it raise enough foreign exchange, fill the foreign exchange gap, and improve the fiscal position.

The results of the error correction model show that GDP per capita growth impacts positively and significantly on fiscal balance. This means that efforts geared towards improving people's income would lead to an improvement in fiscal balance as a result of improvement in income tax revenue. The government, therefore, needs to pursue policies that enhance economic growth and employment creation to increase revenue generation and therefore improve the fiscal position. The results of the error correction model show that although the coefficient of total debt is negative, it does not have a significant impact on fiscal balance.

Trade openness has a negative and significant impact on fiscal balance. The government should pursue policies that would increase export earnings and also cushion the economy against adverse external shocks.

5.3   Areas of Further Research

This study used annual time series data for 1975 to 2006. This was a limited period due to data inconsistency or unavailability for earlier years. Studies with longer series would greatly enhance the empirical literature on Kenya's fiscal performance. Further studies to determine revenue drivers would be useful in isolating factors that determine Kenya's revenue base. This would help policy makers to accurately target revenue in order to manage fiscal balance. Also, more variables covering the political and institutional factors could be explored to test whether they play a role in determining Kenya's fiscal balance.

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Annex

Dataset

Source	IFS	WDI	IFS	WDI	WDI
Units	Index	Index	Index	Index	Index
Variable	Fiscal Balance/ GDP	GDP per capita growth	Treasury Bill Rate	Total Debt Service/ Exports	Trade Openness
Acronym	FB	GDPPCG	TBR	TDEBT	OPEN
1975	-0.060	-0.028	0.061	0.149	0.643
1976	-0.061	-0.015	0.055	0.148	0.642
1977	-0.031	0.055	0.021	0.205	0.666
1978	-0.024	0.030	0.043	0.140	0.676
1979	-0.061	0.037	0.060	0.184	0.574
1980	-0.025	0.017	0.053	0.210	0.654
1981	-0.075	-0.001	0.076	0.270	0.643
1982	-0.077	-0.023	0.126	0.305	0.582
1983	-0.024	-0.025	0.142	0.338	0.542
1984	-0.037	-0.020	0.132	0.348	0.588
1985	-0.037	0.005	0.139	0.387	0.554
1986	-0.048	0.033	0.132	0.356	0.557
1987	-0.075	0.022	0.129	0.398	0.477
1988	-0.037	0.025	0.135	0.390	0.500
1989	-0.038	0.012	0.139	0.366	0.532
1990	-0.043	0.008	0.148	0.354	0.570
1991	-0.050	-0.018	0.166	0.326	0.554
1992	-0.013	-0.039	0.165	0.311	0.529
1993	-0.045	-0.026	0.498	0.271	0.729
1994	-0.058	-0.003	0.233	0.329	0.713
1995	-0.013	0.016	0.183	0.304	0.717
1996	0.009	0.015	0.223	0.275	0.539
1997	-0.018	-0.020	0.229	0.219	0.514
1998	-0.006	0.009	0.228	0.229	0.467
1999	-0.003	0.000	0.139	0.254	0.465
2000	0.008	-0.016	0.121	0.209	0.512
2001	-0.013	0.016	0.126	0.156	0.537
2002	-0.026	-0.016	0.089	0.160	0.534
2003	-0.031	0.008	0.035	0.155	0.524
2004	-0.004	0.026	0.032	0.076	0.594
2005	0.001	0.034	0.084	0.092	0.631
2006	-0.020	0.032	0.067	0.065	0.622

IFS is the International Monetary Fund's International Financial Statistics and WDI is the World Bank's World Development Indicators.