Global Advanced Research Journal of Management and Business Studies Vol. 1(1) pp. 006-029, February, 2012
Available online http://garj.org/garjmbs/index.htm

Full Length Research Paper

Fiscal deficit and nominal interest rate determination in Cameroon: An application of the loan able funds model

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Accepted 6 February 2012

It is a widely held view that budget deficits influence nominal lending interest rates. In this study, the model for the determination of interest rates, which is applicable to small semi-open economies, is presented. The model (loanable funds model) is tested by using annual time series data from 1974-2009 in the context of Cameroon. This study is relevant for the Cameroonian economy, given that it has experienced very large fluctuations in its budget deficits and nominal lending rates under the period of study and especially after the liberalisation process. In this study, regression analysis applied to annual time series data has revealed a significant positive association between budget deficits and domestic nominal lending interest rates for the period under study. Also, we find a bi-directional causality between budget deficits and nominal interest rates in Cameroon.We conclude from the analysis that policy makers in Cameroon should reconsider the budget deficit policy and its means of financing.

Keys words: Budget Deficits; - Interest Rate; - Loanable Funds Models; - Causality test; Cameroon. JEL: Classification: E43; E62

INTRODUCTION

Cameroon was one of the most prosperous countries in Africa during the first 25 years following its independence in 1960. During this period Cameroon was classified like a middle income country by the World Bank. However, the macro economic situation in Cameroon greatly deteriorated in the early 1980s. The drop in commodity prices for its principal exports – oil, cocoa, coffee and cotton – in the mid 1980s, combined with an overvalued currency and economic mismanagement led to a decade- long recession. Real per capita Gross Domestic Product (GDP) fell by more than 60% from 1986 to 1994 (Amin, 1998). The current account and budget deficits widened and foreign debt grew.

One of the important aspects of fiscal policy is the management of the public sector's budget deficit. Budget deficits simply refer to the excess of the public sectors' spending over its revenue (World Bank, 1988). At this stage, one may be tempted to ask, why the government at times cuts its coat larger than its size, or why should government expenditure outwear its revenue? Aboyade (1993), gives a ready-made answer to the question by saying that, "For good reasons, the government may need additional cash to be created in order to undertake capital development programmes beyond what its

ABBREVIATIONS

ADB: African Development Bank; ADF: Augmented Dickey-Fuller; BEAC: Bank of Central Africa States; DSCN: Direction of statistics and National Accounting; ECM: Error correction model; ESAF: Enhanced structural adjustment Facility; GDP: Gross Domestic Product; HIPC: Heavily indebted poor country Initiative; IMF: International Monetary Fund; LFM: Loanable funds model; Ms: Money Supply; NIS: National Institute of Statistics; OLS: Ordinary least square; PP: Philips Perron statistics; PSBR: Public Sector Borrowing Requirements; SAP: Structural Adjustment programmes; TTC: Expected inflation; VAR: Vector Autoregressive Model; VECM: Vector Error correction model.

current tax receipts can underwrite." Such budget deficits have been at the forefront of macro economic adjustment – purposeful and coherent set of measures used to respond to (often severe) imbalances in the economy – in the 1980s, both in developing and developed nations. This is because it is widely recognised that budget deficits, considered as a key fiscal indicator, and macroeconomic indicators like growth, inflation, and the current account, influence each other in both directions. Consequently, budget deficits were blamed, in good part, for the assortment of ills that beset Cameroon's economy in the 1980s: high inflation, poor investment and growth performance, and over-indebtedness, leading to the debt crisis beginning in 1985. The size of government deficit averaged over a period of, say, three years is the most reliable indicator of overall macroeconomic stability. High deficits show up in at least one type of macroeconomic imbalance – a foreign debt crisis, inflation, a shortage of foreign exchange or a crowding out of the private sector. The type of imbalance depends on the means of financing: respectively, printing money, running down foreign exchange reserves, domestic borrowing, or foreign borrowing.

Given the liberalisation of goods and assets markets and the rapidly growing integration with world markets evident in many developing countries in the past decade or so, attention has recently turned to interest rate determination in these countries. Real interest rate implies the cost of borrowing, with anticipated inflation taken into consideration. In other words, the charges levied on loanable funds. These charges are mostly in relation to the funds needed. According to Lindauer (1976), interest rate

is the rate of payment that possessors of money can earn by lending their money to those who want to borrow it. It is the price of using or holding borrowed money, since those who want this money must pay something for the privilege of borrowing it. A single interest rate does not exist throughout the world. They may differ from country to country or from region to region. The government pegs these interest rates in some situations, while in other situations they are being determined by the market forces of demand and supply. Quite a good number of factors determine the interest rate of nations and regions. Among them are money supply, money demand, availability of funds (savings) and incomes, just to mention a few.

In Cameroon, trade barriers have been significantly reduced and outward-oriented growth policies pursued. Simultaneously, foreign investment barriers have been reduced, attracting sizeable inflows of foreign investment. Another key development has been the increasing deregulation of domestic financial sectors, with greater reliance on market-based interest rates, and a progressive dismantling of barriers to capital account transactions. Coinciding with these, there has been an enormous increase in the volume of financial flows across countries, especially in the form of long term investment prompted by the privatisation exercise. All these reforms have been accompanied by high and rising interest rates in Cameroon that continuous concern has been expressed about its adverse effects on investment and capacity utilisation and consequently on economic growth and development.

Owing to the fact that the interest rates were increasing at a time when the economy was facing high budget deficits, this may lead one to think that the increase in interest rate was caused by the high deficits. In this light, we address the question of knowing whether the high interest rates experienced in Cameroon for the past three decades or so, could have been accounted for by the high budget deficits faced by the economy during this same period.

BUDGET DEFICITS AND INTEREST RATE TRENDS IN CAMEROON

Budget deficits and nominal interest There exist a large number of interest rates in an economy, ranging from short-term rates on money market assets such as Treasury Bills to long-term rates, such as the interest rates on 30-year home mortgages. Interest rates throughout this spectrum are never the same because on any given day, there are as many interest rates as there are securities that represent them. The simple version of the Loanable Funds Model applied in this study simplifies this complexity by assuming only one "interest rate," which can be thought of as a proxy average for the entire structure of interest rates. rates are two variables of vital importance in the macroeconomic planning of a country. They are vital because they determine to an extent the functioning of the economy particularly the spending habits of the economy. Indeed, interest rate is an important price in any economy. It has been rightly held that it is the pivot of the entire economic system and it seems to reign over the theories of money, growth, employment, general price level and balance of payments (Anyanwu, 1993). Thus, the importance played by interest rate in the proper functioning of the economy cannot be underestimated. Given the importance played by the interest rate, it is but normal that the government does everything within her limits to maintain a desirable rate that will boast economic growth. However, the fiscal policy implemented usually varies over time and space, depending on the targeted goals, and thus, may or may not affect interest rates, depending on the nature of the economy.

An overview of Cameroon's fiscal situation

Fiscal policy is the economic term which describes the behaviour of governments in raising money to fund current spending and investment for collective social purposes and for transfer payments to citizens and residents of the territory for which the government is responsible. The money may be raised by taxation, by borrowing, by user charges on social assets or services, or by fiat (the government declares a particular token to be money and demands that it be accepted in settlement of debts.). Before considering how the fiscal situation has evolved over time, we first make mention of the fiscal instruments, and then the structure of a fiscal policy.

Instruments of fiscal policy

The government uses basically two instruments in the realisation of its economic objectives such as the level of national income or output, employment level, aggregate demand level and general price level. These instruments include government revenue and government expenditure.

Government revenue

In the early 1980s, the government of Cameroon relied heavily on oil royalties as her source of revenue, since it became the main source of foreign exchange earnings. However, since the recession, the government has tried to diversify her sources of income. At present, her main source of revenue includes taxation, oil royalties, as well as non-oil export products.

The objective pursued by the government since 1997 Throughout this study (except from 2001-2003), fiscal year data are used in the analysis; for example, the year denoted 1997 relates to the fiscal year July 1996-June 1997.

, is to consolidate financial balances, the respect of commitments and the effective mobilisation of foreign resources, and especially non-oil revenue, taking into account the downward trend in oil production and changes in the world prices of oil. In this light, the increase in State revenue will continue to be sought through the broadening of the tax base with especially the enhancement of the efficiency of the services in charge of assessment and collection, the intensification of tax controls, the fight against frauds, the simplification of procedures, the implementation of programmes to secure revenue, the promotion of tax education and the moralisation of financial services.

A fiscal measure in the form of reduced taxes for example, may help to stimulate the economy towards the path of growth. A reduction in taxes may have effects on two components of aggregate demand. These are the consumption component and the investment component. A general reduction in personal income taxes, for instance, will lead to an increase in disposable income, which in turn, will lead to an increase in aggregate demand for goods and services. Through the multiplier effect, this is expected to increase the level of income, output and employment. The second way in which a reduction in taxes can stimulate economic activities is through its effects on aggregate investment. A reduction in taxes, all other things being equal, is capable of increasing the level of aggregate investment. This is because the tax reduction will increase investment activities, since profit level will rise. An increase in investment will lead to an increase in aggregate demand, and this increase, through the usual multiplier effect, will increase the level of income, output and employment.

Government expenditure

Government expenditure refers to what the government spends or intends to spend, given its budget allocation in a given year. The government generally carries out expenditure on items such as payment of civil servants, provision of public and merit goods, transfer payments, and so on. The expenditure of the Government can be classified into plan expenditure and non-plan expenditure. Plan expenditure is an expenditure that the government plans to incur on a scheme to be implemented in a given year. On the other hand, non-plan expenditure is generally an outcome of plan expenditure. Expenditure on both plan and non-plan front can be categorised into capital and revenue expenditure. Capital expenditure includes that expenditure which leads to creation of assets, whereas revenue expenditure does not involve asset creation and is recurring in nature.

During the course of a year, the government can undertake expenditures of various kinds that have impact on the level of economic activities. The major avenues of state expenditure include recurrent expenditure (embodies expenditure on staff and expenditure on equipment), public Investment expenditure, transfer payments, and public debt. The social (schools and hospitals) and military sectors constitute a great chunk of State expenditure.

Over the past two decades, government expenditure in Cameroon has experienced an erratic pattern. During the 1980s, expenditure increased from $2.33 billion in 1980 to $4.34 billion in 1990. In the 1990s, government reduced her spending power. By 1998, total expenditure fell to $3.5 billion.

To see how fiscal policy works through government expenditure, consider a business cycle. A business cycle refers to cyclical movement in the level of economic

fortunes of a country. A boom period refers to the highest prosperity level. A recessionary phase of a business cycle refers to a downturn in the economy. A depression phase is when things are down and there is widespread unemployment and general misery. A recovery phase refers to a situation when an economy is picking up again. Aggregate demand for goods and services may be rising gently to be followed by rising levels of income, output and employment. To see the effect of changes in government expenditures, consider an economy that is in equilibrium at a recessionary phase. The government, in order to stem the tide, may increase its spending. This will raise the level of aggregate demand, which in turn, will raise national income (through the multiplier effects) and, therefore, output and employment.

Structure of fiscal policy

Governments use budgets to control and record their fiscal affairs; budget shows, for a given year, the planned expenditures and receipts that government spending and tax programmes would yield. The budget typically will contain a list of specified programmes (education, welfare, defence, etc), as well as tax sources (personal income tax, sales tax, etc).

In a given year, governments generally run either budgetary surpluses or budgetary deficits, or on rare occasions a balanced budget. A surplus occurs when all taxes (and other sources of revenue) exceed government spending. A deficit is run when expenditures exceed taxes. When taxes and expenditures are equal, the government has a balanced budget. This balanced budget, according to Adam Smith is the only good budget.

One of the most important distinctions in modern public finance is that between structural and cyclical deficits. The idea is that part of the budget is structural or active –determined by active, discretionary policies (such as setting tax rates, or social security benefits). But an uncomfortably large fraction of the budget is cyclical or passive – passively determined by the state of the business cycle Cyclical elements reflect the impact of the business cycle on tax receipts as well as on government transfer programmes.. To make the distinction clear, economists measure cyclical and structural budgets. The actual budget records the actual expenditures, revenues, and deficit in a given period. The structural budget calculates what government revenues, expenditures, and deficits would be if the economy were operating at potential output. On the other hand, the cyclical budget calculates the effect of the business cycle on the budget –measuring the changes in revenues, expenditures, and deficits that arise because the economy is not operating at potential output but is in boom or recession. The cyclical budget is the difference between the actual budget and the structural budget. However, our analysis is based on the actual budget deficit.

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

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

Fiscal policy also changes the composition of aggregate demand. When the government runs a deficit, it meets some of its expenses by issuing bonds. In doing so, it competes with private borrowers for money lent by savers, raising interest rates and

"crowding out" some private investment. Thus, expansionary fiscal policy reduces the fraction of output that is used for private investment.

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

This ability of fiscal policy to affect output by affecting aggregate demand makes it a potential tool for economic stabilisation. In a recession the government can run an expansionary fiscal policy, thus helping to restore output to its normal level and to put unemployed workers back to work. During a boom, when inflation is perceived to be a greater problem than unemployment, the government can run a budget surplus, helping to slow down the economy. Such a counter cyclical policy would lead to a budget that is balanced on average.

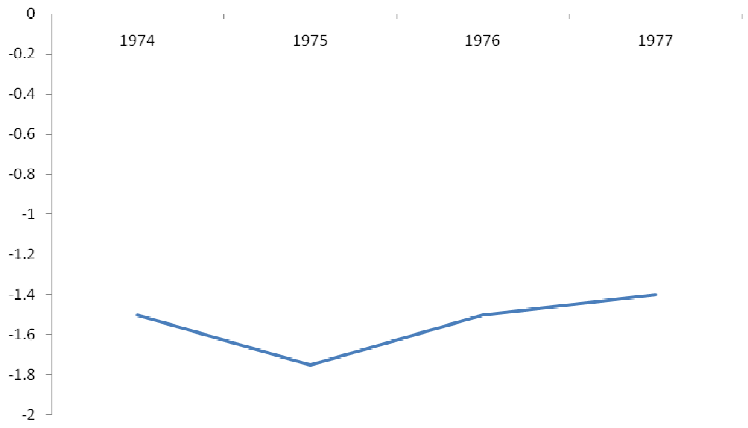

Figure 1. Fiscal developments 1963- 1977
Source: IMF and BEAC Statistics and Studies.

Fiscal policy affects the level of output in the long run because it affects the country's saving rate. The country's total saving is composed of two parts—private saving (by individuals and corporations) and government saving (which is the same as the budget surplus). A fiscal expansion entails a decrease in government saving. Lower saving means, in turn, that the country will either invest less in new plant and equipment or increase the amount that it borrows from abroad, both of which lead to unpleasant consequences in the long term. Lower investment will lead to a lower capital stock and to a reduction in a country's ability to produce output in the future. Increased indebtedness to foreigners means that a higher fraction of a country's output will have to be sent abroad in the future rather than being consumed at home. The objectives pursued by the government of Cameroon have varied over time, depending on the economic situation. This has greatly influenced the deficit situation of the economy. We will try to identify how the budget deficit has evolved from independence to the present day.

The evolution of budget deficits in Cameroon

The macro economic situation in Cameroon greatly deteriorated in the early 1980s. External imbalances mounted as real export revenues dropped and imports remained unchanged. This led to an over valuation of the CFAF Franc de la Cooperation Financiere en Afrique Centrale. with the parallel premiums for foreign exchange exceeding 100 percent Africa Policy E-Journal (2003). Budget deficits soared to more than 30 percent of GDP and because of the debt crisis; Cameroon lost its access to commercial lending. There was a need to re-establish a balance between income and spending to improve the balance of payments. This required a tightening of fiscal and credit policies and a depreciation of the real exchange rate. Tight fiscal and credit policies cut overall spending in the economy, while devaluation expanded production in the tradable sector and eased the recessionary impact of tighter demand policies.

To better understand the trends of Cameroon's budget deficit over the years, we distinguish four sub periods namely: the period 1963-1977, or the pre-oil era; the period 1978-1986, during which the oil sector played an important role; the period 1987-1993, during which the economy experienced a recession; and lastly the period 1994 to 2003, which denotes the post devaluation period.

The pre-oil period; 1963-1977

During this period, agriculture played a dominant role until 1978, when oil production expanded as well as the demand in the world market. The primary sector (including agriculture, forestry and fishing) accounted for 34 percent of total value added on average during this period, employed a large fraction of the labour force, and was a main source of economic growth and foreign exchange earnings. In this light, the government's revenue increased and its expenditure increased as well. However government expenditure was mainly on recurrent spending given that during this period, government investment remained as low as 2 percent of GDP (Table 1). Government revenue averaged 17 percent of GDP during this period, and with total government expenditure averaging at about 18 percent of GDP. Hence the average overall budget deficit remained low, at 1 percent of GDP.

The non-oil sector of the Cameroonian economy has traditionally played a vital role in national economic development, particularly in the form of providing foreign exchange and revenue for the government, as well as employment for the bulk of the population. Figure 1

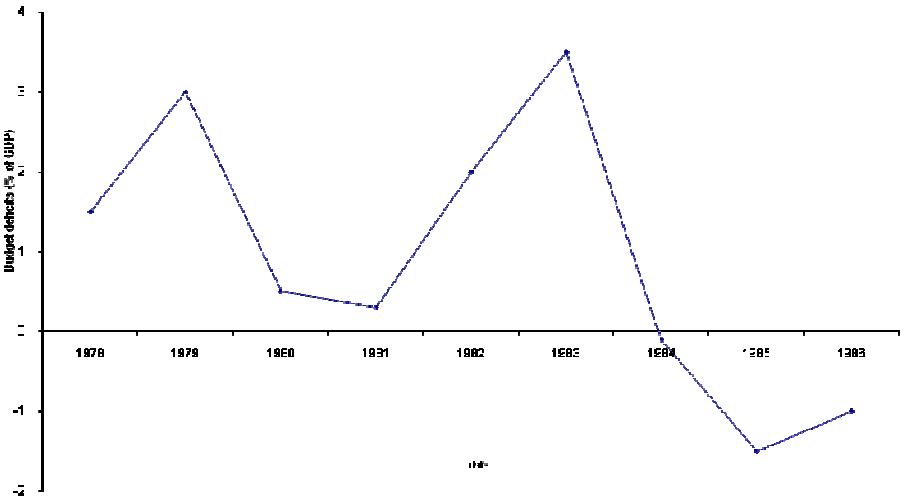

Figure 2. Fiscal developments 1978- 1986
Source: IMF and BEAC Statistics and Studies

below gives a detailed view on how the budget deficit has evolved over this period.

.From Figure 1, we realized that almost throughout this period, there was a deficit. This is partly because the government relied solely on agricultural produce as her source of income whereas the prices at the world market were not very encouraging. Also, this was the period immediately after independence; hence the government had so many projects to embark on. For this reason, her expenditure was very high (18%) and most of it was on recurrent spending, hence the reason for the low rate of capital expenditure, which stood at 2 percent. In any case, this was not a bad period given that globally, the government experienced a deficit of approximately 1 percent. Given that the government highly needed more revenue in order to carry out more developmental projects, the coming of the oil boom period was a sight of relief.

Oil boom; 1978-1986

Beginning in 1978, Cameroon's economy experienced a structural change when oil became the main source of foreign earnings. The share in GDP of the secondary sector (including mining, manufacturing, electricity, housing and public works) rose from 19 percent on average to 28 percent during this period. Oil production increased from less than 5 million barrels in 1978 to more than 66 million barrels in 1986. The oil sector also contributed significantly to the government's budget, with oil revenue growing from less than CFAF 20 billion (14 percent of GDP and 9 percent of total revenue) in 1980 to CFAF 330 billion in 1985 (9 percent of GDP and 41 percent of total revenue). Total government revenue increased from an average of about 17 percent of GDP during 1963-1977 to an average of 21 percent during 1978-1986, but increased government outlays (expenditure) kept the budget broadly in balance. On a global scale, there was a surplus of 1 percent of GDP in the fiscal situation. Figure 2 below gives a clear and detailed situation of the fiscal evolution over this period.

We realized that in most of the years, the government realized a surplus brought about by the increase in oil revenue. This is evident from the 1978-1984, when there was a surplus in the fiscal balance. However, the government started experiencing a deficit in 1985 when world prices for oil dropped drastically.

With the booming economic conditions during this period, the government adopted a development strategy that centred on expanding the public sector in three ways. Firstly, it shifted its expenditure priorities by expanding the capital budget from an average of 2 percent of GDP during 1963-1977, to an average of 9 percent during 1978-1986, while reducing current outlays from an average of 16 percent of GDP to 12 percent over the same period (Table 1). Secondly, a large number of public agencies, marketing boards, and public enterprises were set up or expanded in all sectors of the economy, often supported by government subsidies. Thirdly, the transport sector suffered from heavy government intervention and was dominated by public enterprises in railways, urban transport, domestic air travel, merchant shipping, port management, and road maintenance.

Finally, a complex system of regulation on prices, including interest rates, was put in place. External trade was regulated through import licensing and marketing

Table 1. Cameroon's Fiscal Situation, 1963-2009 (period averages; in percent).

	1963-1977	1978-1986	1987-1993	1994-2009
Total revenue/GDP	16.6	21.3	15.8	15.6
Current expenditure/GDP	15.5	11.8	16.3	13.4
Capital expenditure/GDP	2.0	8.7	6.8	1.6
Overall fiscal balance/GDP	-0.9	0.8	-7.3	0.6

Source: IMF and BEAC statistics, various issues

boards, while quantitative import restrictions were imposed on goods that competed with domestic production.

Hence, we realized that in spite of a dramatic increase in government revenue, brought about by the increase in oil prices, the government was unable to realized a reasonable surplus given that its expenditure increased in almost the same amount as the increase in income. Table 1 shows that while total revenue increased from 16.6 percent of GDP to 21.3 percent of GDP, total government expenditure (current expenditure and capital expenditure) also increased from 17.5 percent of GDP to 20.5 percent of GDP, thus realizing a surplus of just 0.8 percent of GDP.

In principle, the oil boom experienced by Cameroon during this period should have given rise to the « Dutch Disease » problem, characterized by a rise in the relative price of non traded goods. However, the Dutch disease was largely averted, as the real exchange rate depreciated by about 20 percent between 1979 and 1985, reflecting largely the depreciation of the French franc.

Recession Period; 1987-1993

This period was marked by severe economic crisis that manifested itself in construction and public works, but also in the production of cash crops, retail trade, and the petroleum sector. The deterioration in Cameroon's economic and financial situation during this period can be explained by three main factors: a significant deterioration in the world market prices of its main export commodities, an appreciation of its real effective exchange rate and a decline in oil output.

From 1986-1988, the international price of crude oil fell by two thirds, while the prices of coffee and cocoa dropped by one half and one-third respectively. Terms of trade declined by 40%; during the period 1985 to 1992. Meanwhile, the real effective exchange rate appreciated by some 40 percent on a cumulative basis between 1985 and 1992, owing to not only the appreciation of the French franc but also to an increase in inflation triggered by expansionary fiscal policies.

The fiscal balance turned into an average deficit of 7 percent of GDP during 1987-1993, compared with an average surplus of 1 percent during 1978-1986, as the government attempted to jump-start the economy by expansionary fiscal policy reflected in an increase in total expenditure by 2.5 percentage points of GDP between the two sub periods, in the face of a decline in total revenue by 5.5 percentage points of GDP. The deficit was financed from two main sources: external borrowing and the accumulation of domestic and external arrears. External debt rose to 49 percent of GDP during 1987-1993, from 31 percent during 1978-1986. Sizeable stocks of arrears were accumulated to external creditors, as well as to domestic suppliers, which prompted several local companies to halt work and default on their obligations to domestic banks, as well as on their tax obligation. Hence, this went a long way to increase the deficit as the government lost the revenue it would have got from these taxes and instead spent more money to subsidize these domestic banks, in order to avoid the bank run syndrome. The deteriorating financial conditions during this period exposed the problems of several local banks, which were undercapitalized, poorly managed, and marginally profitable (Doe, 1995). Reflecting the lack of confidence in the domestic banking sector, money demand fell sharply starting in 1988, and currency rose from 17 percent of broad money in 1985 to 22 percent by 1993.

The evolution of the fiscal situation for this period is presented in the figure below:

From Figure 3, it is seen that this has been the worst period in Cameroon's economic situation since independence, given that the budgetary balances for all the years were at a deficit. The government experienced the highest level of deficit during this period, with the highest being in 1987 following the oil shock that took most nations unaware. The deficit was also very high in 1991, brought about by the impact of tax resistance caused by the ghost towns' operation (general strikes), which was later intensified by the stalled democratisation process, political frustrations and generalised hardship arising from various adjustment policies.

Another reason accounting for the high deficits over this period in addition to the dramatic loss of export earnings and the persistence of inefficiency and fraud in customs and taxation administration, declining oil production has exacerbated the decline in government revenue since the economic crisis began. Oil production peaked at 60 million barrels in 1987 but has decreased steadily to below 40 million barrel in 1993.

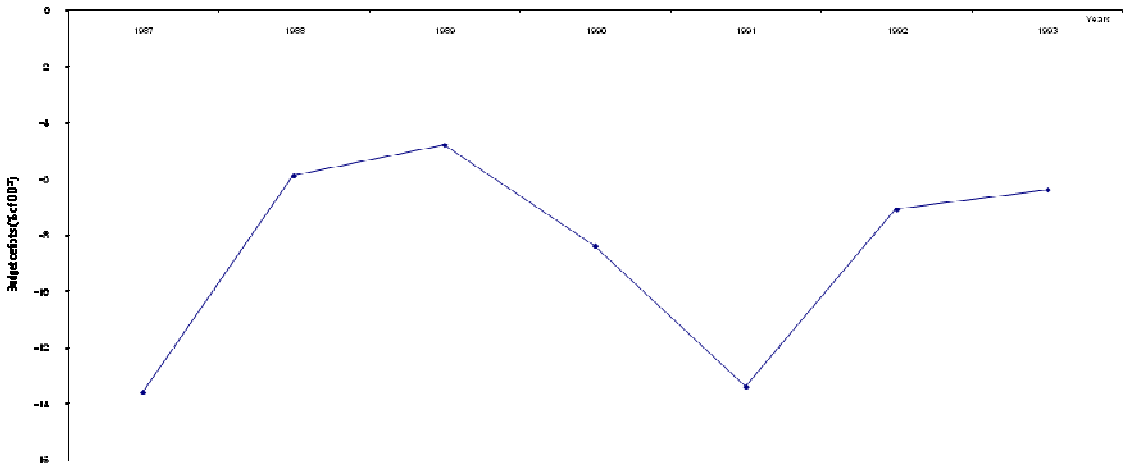

Figure 3. Fiscal developments 1987-1993
Source: BEAC Statistics and Studies.

In order to reverse the declining trends, the government attempted in the late 1980s and early 1990s to jump-start the economy following a strategy that was based solely on internal adjustment measures. The government adopted the Structural Adjustment Programmes (SAP) recommended by the International Monetary Fund (IMF) and the World Bank. These programmes were made up of a number of prescriptions, which had the aim of restructuring the institutions of the nation so as to return to the discipline of the market. These strategies consisted mainly in maintaining the fixed peg, reducing budget deficit through increases in tax rates, rapid development of non oil sector as a means of reducing the high dependence on the oil sector, and cuts in the wage bill and public enterprise subsidies, and attempting to restore external competitiveness by reducing domestic costs and restructuring public enterprises.

In spite of all these measures, the fiscal balance was not ameliorated. This is partly because it was difficult to immediately implement some of the measures especially reducing wages of workers given that they showed considerable downward rigidity in the beginning. Also, the political uprising in the early 1990s accounted for this deficit given that strikes and « ghost towns » were so frequent during this period and so the sources of income to the government were being blocked. Cameroon's budget deficit has fluctuated around 9 percent of GDP for several years. In 1994, total expenditures were equivalent to 16 percent of GDP while its expenditures obligations were equivalent to 24 percent of GDP. These figures exclude substantial (non- personnel) military and security expenditures made off budget by the Presidency of the Republic, which, apparently, has been pre-financing oil since 1992 to fuel its off-budget account.

Nevertheless, given the magnitude of the macroeconomic imbalances, it became clear by the end of 1993 that strategies based exclusively on internal adjustment would not be sufficient to put the economy back to a sustainable economic recovery track. The internal adjustment strategy was unable to restore external competitiveness, as prices were so rigid. In addition, owing to declining government revenue, fiscal adjustment consisted mainly in cuts in the investment budget and in outlays on non-wage maintenance and other essential services, a policy that was harmful to growth.

Post devaluation; 1994 - 2009

Given the inability of internal adjustment strategies alone to revive economic performance, Cameroon, in collaboration with other member countries of the FCFA zone, devalued its currency by 50 percent in January 1994. Beside the exchange rate change, the government's programme consisted in internal adjustment measures, including further budget tightening, as well as the implementation of structural reforms related to the reorganisation and downsizing of the civil service, privatisation of public enterprises, bank restructuring, and the liberalisation of domestic prices and interest rates.

With these corrective measures put in place, the fiscal situation started ameliorating in 1995, also partly due to a resumption of oil exploration activities in response to a

Table 2. Cameroon's Fiscal Situation after devaluation; 1994-2009

Years	1994	1998	1999	2000	2002	2004	2006	2007	2008	2009
Revenue (in billions FCFA)	344	533.5	654.6	744.9	847.7	838.2	1093.1	1251.5	1343.2	1363.3
Expenditure (in billions FCFA)	660	668.2	735	803.9	885.2	946.2	878.3	1179.7	1094.6	1095.8
Budget balance (in % GDP)	-8.3	-3.1	-1.7	-1.1	-0.8	-1.8	3.2	1.1	3.3	3.4

Source: BEAC Statistics and Studies

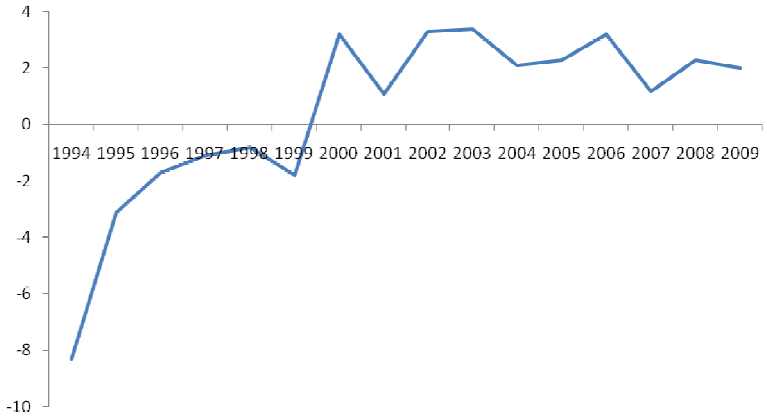

Figure 4. Fiscal Developments 1994-2009
Source. BEAC Statistics and Studies

more liberal code promulgated in 1990. Also, the World Bank conditionality required the abolition of the off-budget account and insisted on the transfer of all parastatal profits (including oil revenue) into the public treasury.

Since 1997, Cameroon has implemented a comprehensive Enhanced Structural Adjustment Facility (ESAF) supported programme, with a view to bringing the economy onto a sustainable path of growth and development, gradually restoring macroeconomic and financial balance, and improving living conditions. The programme was supported by the international community and in particular by the IMF, the World Bank, the African Development Bank (ADB), the European Union and France. The implementation of rigorous fiscal policy was indispensable in ensuring internal and external validity over the medium term. In view of the need to maintain a sustainable fiscal position and reduce the burden of the government debt, the major policy challenges were to:

- Raise total revenue in the face of declining revenues from the oil sector;
- Continue to improve the composition of expenditure by reorienting them towards priority sectors;
- Improve expenditure management procedures so that outlays reach their intended destination, and new expenditure arrears are avoided.

To this end, the government kept the primary surplus at an average of 4.5 percent of GDP and with the planned expansion of government investment; the overall deficit was contained at about 3 percent of GDP. The tax base was also widened by locating taxpayers that were previously out of the tax net. Steps to improve tax and custom administration included the combating of fraud and tax evasion, implementing the strategy for collecting tax arrears and finally, reissuing tax notices and pursuing tax delinquents. The overall budget situation during this period was a surplus of 0.6 percent of GDP. The detailed situation is presented in Table 2 below.

Taken globally, fiscal policy achievements were in line with the objectives of the Enhanced Structural Adjustment Programmes. The government experienced an increase in its revenue and a fall in its expenditure, which went a long way to enhance its fiscal balance. Figure 4 gives us a clear picture of this evolution over this period.

From Figure 4, we realise that the budget deficit

dropped to less than one percent of GDP in 1998. This is accounted for by the Enhanced Structural Adjustment Facility programme, given that this was the first year after its implementation. During this year, the primary budgetary surplus was slightly above the program target, as oil revenue was higher than projected, owing to the payment of profit tax arrears by an oil company and the transfer of the windfall revenue from 1997. As programmed, the overall budget deficit widened by 1 percentage point to about 2 percent, reflecting an increase in foreign-financed investment. Non-oil revenue rose by 1.2 percentage points of GDP to 12.2 percent. On the policy front, progress was made in the issuance of tax identification numbers to enterprises subject to profit taxes (régime réel), a reform of forestry taxation was introduced, and a census of tax arrears, as of 1997, was completed along with the elaboration of a collection strategy. In addition, exemptions contained in enterprise-specific agreements were reduced through renegotiations with some of the enterprises involved. Finally, to reinforce external competitiveness, non-forestry export taxes were reduced further in the context of the 1998 budget from 13.5 percent to 10 percent (from CFAF 6,000 to CFAF 4000 per ton for bananas) [1] See Cameroon-ESAF medium-term Economic and Financial Policy Framework Report (1998-2001). On the expenditure side, the share of outlays for priority expenditures increased: spending on education and health rose from 1.8 percent of GDP in 1997 to 2.2 percent on GDP in 1998. Finally, an inventory of domestic arrears accumulated from 1993 to 1997 began, and an audit of commercial claims was carried out.

The year 2002 was characterised by amelioration in the situation of public finance, following the results obtained in the budget balance, thanks to an increase in revenue and a contraction in expenditure. In effect, the government revenue reached 1343.2 billion FCFA, corresponding to 17.7 percent of GDP as against 17.5 percent in 2001. This increase is the result of a progression in non-oil revenue (6.6 percent) and oil revenue (9.3 percent), followed by a good performance realised in the recovery of the Value Added Tax (VAT) and tax on revenues.

As concerns expenditure, it totalled 1094.6 billion FCFA in 2002, equivalent to 14.4 percent of GDP against 1179.7 billion FCFA, 16.6 percent of GDP in 2001, brought about by an important decrease in capital expenditure. Current expenditure on the other hand increased, following an increase in expenditure linked to salaries, interest on debts, transfer payments and subsidies. The primary balance increased to 6.2 percent of GDP against 5.3 percent in 2001, while the budget balance was roughly 3 percent of GDP.

We can conclude by stating that the evolution of the fiscal structure of Cameroon has greatly been influenced by both internal and external factors. The internal factors include the downward salary rigidity, the corrupt nature of tax and custom officials, not forgetting state suppliers and contractors. As concern external factors, we make mention of the economic crisis, brought about by a deterioration of the terms of trade of our raw materials, especially crude oil, of which the economy highly depended on, as well as the devaluation of the FCFA and the institution of the Structural Adjustment Programmes, with its conditional ties. It should be noted that these changes in the fiscal situation occurred when the interest rate was also fluctuating. This will be our point of focus in the next section.

Evolution of interest rates in Cameroon

The economic and financial situation of Cameroon deteriorated steadily from the late 1980s when large external shocks, coupled with poor economic and financial management led to a fall in economic performance. Countries suffered from the basic and prolonged imbalance in the demand for and the availability of resources, that is, a resource gap. The external debt shock of Cameroon has impacted negatively on its saving rates. This is because investment resources for productive pursuits have been consistently used to meet external debt service obligations. Thus the excessive external debt stock is impairing growth and compromising the socio-economic development of the country, and therefore crowding-out saving. This poor economic and financial mismanagement has been accompanied by changes in interest rates. However, before looking at the interest rate trends in Cameroon, it is necessary to state the functions of interest rates in an economy in order to bring into proper perspective the place of a sound interest rate policy in the management of the financial system for the promotion of economic growth and development.

Functions of interest rates

The basic functions of interest rates in an economy in which individual economic agents take decisions as to whether it should borrow, invest, save, and/or consume can be grouped into three broad aspects.

Interest Rates, as Return on financial assets

Interest rates, serve as incentive to savers, making them defer present consumption to a future date. The relevant interest rates in this case are the deposit rates corrected for price inflation (or more precisely expected inflation rate). In this connection, interest rates affect the availability of savings, and to the extent that deposit rates vary depending on the maturity of the financial

assets, they also influence the allocation of current saving among the assets.

Interest rates as component of cost of capital

Interest rate act as a component of cost of capital, affect the demand for, and allocation of loanable funds. The applicable rate of interest in this case is the bank lending rate, the changes in which affect the cost of capital which influences investors' willingness to invest in machine and equipment (real investment). In this way, the level of interest (lending) rate could influence growth in financial instrument, output and employment.

Interest rates as determinants of the allocation of accumulated savings

The domestic interest rates, in conjunction with the rate of return on foreign financial assets, expected exchange rate, and expected inflation rate, determine the allocation of accumulated savings among domestic financial assets, foreign assets, and goods that are hedged against inflation, the speculative movements of funds into/out of domestic/foreign assets depends on the relative level of interest rates and which ever is appropriate among exchange rate, inflation rate and foreign interest rates.

The broad role of interest rates emphasises their significance in the structure of basic prices and indicate the need for sound policy measures in the attempt to evolve an efficient financial market for an economy.

Interest rate trends in Cameroon

The evolution of interest rate in Cameroon is linked to the history and evolution of the monetary policy put in place by BEAC Banques des Etats de l'Afrique Centrale. In this perspective, two periods can be identified. They are separated by the great economic crisis in the late 1988s witnessed by countries of the CEMAC Communaute Economique et Monetaire de l'Afrique Centrale zone in general and Cameroon in particular.

Before Deregulation (1973-1989)

The monetary policy implemented during this period was interventionist. It consisted in encouraging national investors and orientating resources towards sectors considered privileged. Hence the level and structure of interest rates in Cameroon were fixed and administratively determined as in the case of exchange rate. They were arbitrary fixed at a low level without making reference to the evolution of the liquidity and money market of the domestic market and external financing whereby our economy was connected. Therefore monetary policy during this period was reduced to a single instrument of quantitative character, that is, the fixing of the global sides of credit.

The most important considerations which dominated interest rate policy at that time were the impact of interest rate changes on the level of public sector debt and the need to promote growth in output. In order to keep the interest payments on public sector domestic borrowing as low as possible, interest rates on government debt instruments were then fixed at relatively low levels.

Also, in a bid to channel domestic credit to defined priority sectors, discriminatory lending rates were fixed for loans and advances granted by banks to different sectors reflecting the authorities' preferences.

Of course, the attendant problems, which became unmanageable because of the deliberate policy to keep the rates lower than the levels of the market conditions could admit, compelled the deregulation of the rates.

The Deregulation Period

This period marks the liberalisation of interest rates, which are no longer determined administratively. The Central bank's role now is just to fix a minimum (floor) deposit rate and a maximum (ceiling) lending rate. The basic principle now consist in negotiation between the banks and their clients, as concerns both the lending and deposit rate. Hence, the interest rate policy becomes more active and flexible. The interest rate policy was designed as an indirect instrument of monetary policy (intermediate objective) in the achievement of the final objectives.

Interest rates rose to unprecedented levels immediately after deregulation. From an average of 15 percent at the end of 1989, which marked the end of the era of administrative determination of the rates, lending rates moved to 18.5 percent in 1990 –a year after the commencement of the period of deregulation of the rates. Since then, lending rates had been fluctuating seriously. The upsurge in the lending rates also stimulated the cold attitude of banks toward deposit mobilisation. The drive to mobilise deposits was accompanied by increases in the saving and time deposit rates.

The year, 1992 was a year of monetary ease when interest rates were expected to fall. In order to ensure the achievement of that goal during the year, the minimum liquidity ratio was reduced while the minimum rediscount rate also dropped. The fiscal operations of the government were also accomplished by large deficit spending causing substantial increase in money supply. Throughout the year, interest rate levels were substantially lower than their levels in the comparable year of 1991 in response to the deflationary policy

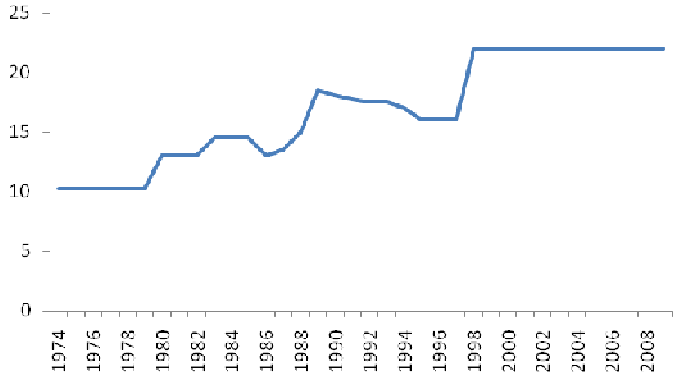

Figure 5. Trend in bank lending interest rate
Source: BEAC Statistics and Studies.

measures. Not only were there very little variations in the rates, the rates also fluctuated around levels which were generally lower than in the comparable period of the preceding year. Lending rates maintained an average of 17.5 percent during this year.

From Figure 5, we realise that the interest rate has remained at a high level since 1998. The upsurge in the interest rate witnessed over this period maybe partly due to the combined effects of deregulation policies introduced in different sectors of the economy on the money market, together with the restrictive monetary policy stance during this period.

Another reason for the rise in interest rate deals with some of the conditions affecting the demand for loanable funds. There is a more fundamental factor associated with the supply side, namely, the institutional factor. The institutional factor has to do with the oligopolistic structure of the Cameroonian money market. Truly, among the banks in Cameroon (numbering 11 in 1992, 8 in 1999 and 10 in 2004), there are a few big ones – big enough to serve as price leaders for the predominantly many small ones. The situation in the money market is that as soon as the small banks know the deposit rates of the large banks, they (small banks) will mark up the deposit rates of the big banks in a bid to attract deposits. The extent of such a market depends on the particular situation a bank faces. If a high proportion of the funds the bank needs is required to cover liquidity deficiency, the desperate need to meet maturity financial commitments by banks will warrant a substantial mark-up.

This situation is complicated by the presence of illiquid and insolvent banks, which have a large proportion of bad and doubtful debts in their loan portfolio. The paid-up capital and reserve base of such banks have been seriously eroded through the holding of disproportionably large amounts of non-performing assets and consequently, they are in perpetual shortage of funds to settle maturity financial obligations. Thus, the small and insolvent banks in desperate efforts to obtain funds bid up the deposit and interbank rates, raising the industry cost of funds. The repercussion on the lending rate is that the rate has to be made high by the affected banks in order to cover the cost and make profit.

Since the introduction of the policy on interest rates deregulation in the late 1980s, the levels of the rates have persistently increased. In particular, the lending rates of commercial banks assumed a sharp upward trend. The continuous increase in the rates, point to some conceptual paradox when viewed against the development with regard to the inflation rate and liquidity in the economy. The expectation of a decline in interest rate has not been realised despite the uninterrupted decline in the inflation rate in the past. Similarly, the emergence of excess liquidity in the economy since early 1990 has not influence interest rates in the expected downward direction.

Although it takes time for the expectations of economic agents to be revised in response to certain economic factors, the problem of high interest rates, which has hampered economic growth and development, assumed a critical dimension in government economic policy. One of the most critical factors affecting interest rates after deregulation was the pent-up demand for loanable funds due to the deregulatory policies implemented in other sectors during the period of interest rate deregulation.

We conclude by saying that the interest rate increases in Cameroon coincided with increases in government budget deficit. Hence, it is necessary for us to verify if these evolutions were inter related or not, that is if the variations in real interest rates were caused by the variations in budget deficits. Before doing so, it is necessary to specify the model to be used given that there are diverging views as concerns the relationship between these variables. The next chapter is therefore devoted to a review of relevant literature and the

presentation of the theoretical framework.

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

Theoretical framework: the Loanable Funds Model (LFM)

The Loanable Funds Model is also a "flow" model. It analyses the sources of funds (supply) and the uses of funds (demand) to determine the equilibrium interest rate. Households, businesses, governments, foreigners, banks, and the central bank supply funds. Households, businesses, governments, and foreigners demand funds.

This model suggests that interest rate is determined by the interaction of the demand for and supply of loanable funds. This is the classical theory of interest rate determination. According to the classical economists, money is demanded only to be used as a medium of exchange. Classical economists equally assume perfect market conditions and that if people are prepared to pay any interest for using money, it must be because this money is used to buy real assets or capital goods. The demand for capital is a derived demand. It depends on the Marginal Revenue Product (MRP) of capital i.e. the total revenue from using the last unit of capital. Because of diminishing returns to capital, the MRP of capital falls as more and more capital is used. Consequently, investors will only purchase more capital if the rate of interest falls.This implies an inverse relationship between the demand for loanable funds and the rate of interest. Classical economists hold that the supply of loanable funds varies directly with the rate of interest. This is because at higher rates of interest more people would be persuaded to postpone current consumption in return for higher future consumption.

Households are the biggest source of loanable funds. They supply loanable funds out of discretionary income. Households tend to be risk averse. To get them to supply additional funds, they must expect higher rates of return. Therefore, the supply of loanable funds by households is upward sloping and very responsive with respect to interest rates.

Businesses are not big sources of loanable funds. They tend to supply funds only for cash management purposes on a short-term basis. Therefore, the supply of loanable funds by businesses tends to be fixed and unresponsive to interest rate changes.

Governments are also not big sources of loanable funds. When they do lend, they tend to supply loanable funds only for cash management purposes on a short-term basis. Therefore, the supply of loanable funds by governments tends to be fixed and unresponsive to interest rate changes

Foreigners are a big source of loanable funds. The amount, however, depends upon rates of returns in other countries. Foreigners lend based upon relative rates of return in the many different countries. Foreigners also take currency and political risks into consideration in moving their money across borders. Therefore, the supply of loanable funds by foreigners is upward sloping and very responsive to interest rate changes.

Banks, by definition, are big sources of loanable funds. They take their excess reserves and make loans depending upon the interest rates they can obtain to cover their risks. As interest rates rise, banks are willing to assume more risk and make more funds available for loans. Therefore, the supply of loanable funds by banks is upward sloping and very responsive with respect to interest rates.

The central bank is the lender of last resort to banks. The central bank can increase or decrease the reserves of the banks and thereby influence the banks' supply of loanable funds to the market. The central bank's intervention shifts the supply of loanable funds.

Uses of funds

Households are big users of funds. They finance everything from house to weekly groceries. The interest rate is somewhat important to households; however, studies have shown that they are more sensitive to the size of the monthly payment. Since loans and credit card arrangements can be structured in many different ways to minimise the monthly payment, the demand for loanable funds by households is downward sloping, but not very sensitive to interest rate changes.

Businesses are the biggest users of loanable funds. Interest is a major expense for businesses, because they finance fixed capital as well as inventory. In both cases, the interest rate plays a major role in whether or not businesses undertake the expenditure. Therefore, the demand for loanable funds by businesses is downward sloping and very sensitive to interest rate changes.

Governments are also big users of loanable funds. Government spending depends primarily upon social needs, and since governments can raise taxes to pay off their loans, government spending is not sensitive to changes in the interest rates. Therefore, the demand for loanable funds by governments tends to be fixed and unresponsive to interest rate changes.

Foreigners can be big users of funds, depending upon interest rates in other countries. Foreigners with the means can "shop around" to get the best deals. Therefore, the demand for loanable funds by foreigners is downward sloping and very sensitive to interest rate changes.

The equilibrium interest rate

The equilibrium rate of interest is the rate of interest at

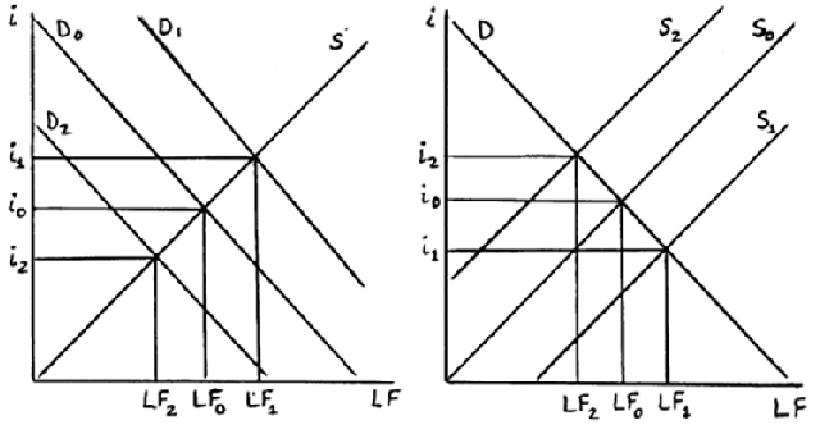

Figure 6. The demand for and supply of Loanable funds

1.1.1. Sources of funds

which the demand for loanable funds equals the supply of loanable funds. At this rate the amount of loanable funds made available by households, businesses, governments, foreigners, banks, and the central bank are exactly the amount of loanable funds that households, businesses, governments, and foreigners need. There is no excess demand and no excess supply of loanable funds. Therefore, it is the rate of interest, which clears the market.

The equilibrium rate of interest (i_o) is shown in Figure 6 by the intersection of the aggregate demand for loanable funds and the aggregate supply of loanable funds. In equilibrium, the supply of loanable funds equals the demand for loanable funds. As long as competitive forces are allowed to operate in the financial sector, the forces of supply and demand will always bring the interest rate to its equilibrium. For example, if interest rates are above equilibrium, there will be an excess supply of funds because of the higher rate. To entice borrowers to purchase the excess funds, lenders will have to lower their rates. The rates will be lowered until the demand for loanable funds equate the supply for loanable funds, which will be maintained at the rate of i_o. On the other hand, if the market rate of interest were below the equilibrium rate, there would be an excess demand for funds. Higher interest rates will decrease borrowers' demand for funds and at the same time increase the supply of funds provided by lenders until the supply of and demand for loanable funds is again equal at i_o.

The equilibrium rate (i_o) is however only a temporary equilibrium point. Any force that provides a shift in positions of the supply of or the demand for loanable funds will produce a change in the equilibrium rate of interest. More specifically, an increase in the level of interest rates may be accomplished by either an increase in demand for or a decrease in the supply of loanable funds. Similarly, a decline in the level of interest can be caused by either an increase in the supply of or a reduction in demand for loanable funds. The diagram on the left of Figure 6 shows how an increase in the demand for loanable funds, brought about by say budget deficit causes the demand curve to shift from D_0 to D_1. This leads to an increase in interest rates from i_0 to i_1. Similarly, a decrease in the demand for loanable funds, brought about by say poor investment opportunities for companies or better still a budget surplus by the government causes the demand curve to shift from D_0 to D_2, thus pulling the interest rate down from i_0 to i_2. On the other hand, the diagram on the right of Figure 6 shows how an increase in the supply of loanable funds, brought about by say, an increase in the stock of money ($+\Delta M$) by the Central bank. The Central bank's policy action increases the supply of loanable funds from S_0 to S_1, which results in a decrease in interest rates from i_0 to i_1. Similarly, a decrease in the supply of loanable funds caused by say a fall in consumer savings brought about by a less favourable tax treatment of savings by the government for instance will shift the supply curve of loanable funds from S_0 to S_2, which results in an increase in interest rates from i_0 to i_2.

Effects of budget deficits on loanable funds

One of the most controversial topics in macroeconomic policy in recent years revolves around the economic impact of budget deficits. It is worthy to note that taxation tends to reduce aggregate demand (because it lowers disposable income, reducing the ability of consumers to spend) and government spending on the contrary increases aggregate demand. Consequently, a balanced budget is likely to have a neutral effect, whereas a budget deficit, which requires spending to exceed tax receipts, is likely to have a stimulating effect in the short run. Whether the stimulating effect is inflationary depends upon where the stimulation occurs along the aggregate supply curve. This is to say the effect of a

budget deficit on available funds in an economy depends on the productive capacity of the economy i.e. whether the economy is at full employment or in recession.

Government spending/borrowing: economy at full employment

According to classical doctrine, anytime government spending exceeds tax collection, there are likely to be harmful effects imposed upon the private sector. The resulting budget deficit must be paid for through borrowing in credit markets. The action of the government borrowing in the credit market leads to an increase in the aggregate demand for loanable funds. This additional demand for credit puts upward pressure on interest rates, causing them to rise.

The reason for this increase in interest rates is because the government is in competition with the private sector for scarce loanable funds. Suppliers of funds will be on the lookout for the highest rate of return possible, subject to their acceptable levels of risk. The government must offer a rate of return (interest rate) on their securities that will cause lenders to be willing to buy them. Given that the credit market was at equilibrium before government action, meaning that both participating borrowers and lenders were content at that rate, the government will have to increase its rate relative to the prevailing rate in the market place. Private borrowers are, of course, still in need of funds, and will now be forced to offer a higher rate of return to buyers of their bonds so as to not lose out to the government. So in the end when the market finally clears, all interest rates will have risen. It is clear that the government has virtually unlimited borrowing power and will offer whatever rate necessary to obtain the funds it needs. In this process, all rates get bid up.

Government spending/borrowing: economy in recession

According to the classical doctrine, during an economic downturn there is a decline in the demand for credit on the part of businesses and households. However, the decline results in an accumulation of savings, which tends to put downward pressure on interest rates. Lower interest rates, though, will have the effect of stimulating investment and consumption, and in turn, help to restore economic growth. In this way, interest rates play the role of “automatic stabiliser” for the economy. In so doing, there is no need for the government.

Keynes and modern Keynesians, advocate a decisive role for the government when times turn bad for the economy. Too much harm comes from sitting on the sidelines and doing nothing. Working skills deteriorate, health indicators plummet, lives are lost, and it makes no sense to simply wait for an automatic stabiliser that may or may not work. Keynes, of course argued that the government should increase spending for so long as was necessary as to restore confidence in the private sector of the economy. Government borrowing/ spending will hopefully have the desired effect of re-employing laid-off workers and providing them, with the purchasing power needed that will allow firms to resume production of goods and services. Interest rates may increase but there is only a minimal chance that financial crowding out will be the problem as with full employment. Here, firms are already badly crowded out, simply due to neither the fact that no one has any confidence in the future nor any purchasing power. If the government’s spending programme is undertaken with the idea that it is there merely to pick up the slack in the economy and not to replace the initiative of the private sector, and then hopefully, confidence can be restored.

Empirical literature review

The loanable funds model has been used by many authors to study the relationship between interest rates and budget deficits**.**

Many studies have shown that large deficits lead to increase in interest rates. For instance, Wachtel and Young (1987) discovered that a 1 percentage increase in the projected deficit-GDP ratio raises interest rates on the order of 6 to 16 basis points. Similarly, study by Cohen and Garnier (1991) indicated a significant positive effect of deficit-GDP ratio on interest rates. A 1 percentage increase in deficit-GDP ratio is projected to raise interest rates on the order of 40 to 55 basis points. Laubach (2003) discovered that fiscal deficit has a significant effect on interest rate. A one percentage increase in the projected deficit-to-GDP ratio is estimated to raise long term interest rates by approximately 25 basis points. Similarly, interest rate rises by about 4 basis points in response to a percentage point in the projected debt-GDP ratio. Similarly, Stephen Miller and Frank Russek (1990) Elmendorf (1993) and Canzoneri et al (2002) and Shapiro (2004) suggested that rising interest rates are associated with federal deficits. Moreover, Gale and Orszag (2003) indicated that a projected rise in the budget deficits-GDP ratio of 1 percentage result in an increase in the long term interest rates by 0.4 to 0.6 percentage points. In the same manner, Qiang Dai and Thomas Phillipon (2004) findings indicated that a 1 percentage point increase in the deficits increases 10 year (interest) rate by 41 basis points. Patnaik (2000 and 2001) reported that, given money supply, fiscal deficits may raise interest rate by increasing the demand for money. He argued further that the link would be effective only if bank credit had supply-constrained. In India, Deepak Lal et al (2001) observed that the financing of large fiscal deficits (sales

of bonds) has led to higher real interest rates and crowding out of private investment. Surprisingly, Bhalla (1995) argued that, because of the floor on interest rates, causation does not run from high fiscal deficits to high interest rates in India. The author concluded that, causation runs from high interest rates to high fiscal deficits, and that to reduce deficits, interests should be reduced. As reported by Gosselin and Lalonde (2005), real interest rates rise by 3 basis points for every 1 percentage point increase in the government debt-to-GDP ratio. According to Dellas et al (2005) the effect of deficits on interest rates increases with financial openness. Ari Aisen and David Hauner (2007) discovered overall highly significant positive impact of budget deficits on interest rates, but the impact depends on interaction term and is only significant when deficits are high, mostly domestically financed or interact with high domestic debt, when financial openness is low, interest rate liberalized or financial depth is low.

Some studies did not support the view that large deficits and debt raise interest rates (Elmendorf and Mankiw, 1999). They include Evans (1987), Plosser (1987), and Chakraborty (2002) who found no link between budget deficits and interest rates. The study of James Barth et al (1991) is consistent with the ones reported above. The report of the Reserve Bank of New Zealand (1986) and Stephen Kirchner (2007) are also in line with the ones mentioned above. In Namibia, Bebi (2000) discovered a statistically insignificant effect of domestic debt-GDP ratio on lending rate, and significant fiscal deficits effect on interest rate.

Anyanwu (1998) applied regression analysis to pooled cross-section and time series data for Nigeria, Ghana and the Gambia. The results did not reveal a significant positive association between overall fiscal deficits (and its foreign financing) and domestic nominal deposit interest rates. However, the author reported a significant positive relation between domestic financing of the fiscal deficits and domestic nominal deposit rates. He concluded that the concern of economists in the Sub-region should shift from the deficits itself to the manner of financing the deficit.

METHODOLOGY

Specification of the model

Analysing the loanable funds model in a semi- open economy makes great allusion to the Mundell-Fleming model. In economics, the Mundell-Fleming model is an extension of the IS-LM model. Whereas IS-LM deals with economy under autarky, the Mundell-Fleming model tries to describe a small open economy. It is worth noting that some of the result from this model differs from the IS-LM because of the open economy assumption. Result for large open economy on the other hand falls within the result predicted by the IS-LM and the Mundell-Fleming models. The reason for such result is because a large open economy has both the characteristics of an autarky and a small open economy. Robert Mundell and Marcus Fleming first set this model forth. The two worked separately however, with each of them publishing a series of independent papers in the 1960s.

In this model, the nominal interest rate is considered to be composed of a real component, and a component reflecting the influence of monetary policy actions on the real interest rate. This is shown in the identity below: $Rn_t = Re_t + \pi^e_t + (Rm_t - Re_t)$ (1)

Where Rn is the nominal interest rate, Re is the equilibrium real rate. π^e is the expected inflation and Rm is the market real rate. However, in an open economy characterised by absence of impediments to capital flow, no transaction costs and risk-neutral agents, then domestic and foreign interest rates will be closely linked (Gupta and Gupta, 1994).

$Rn_t = \alpha(R^*n_t + e^*_t)$ (2)

Where R^*n is the world (foreign) interest rate for a financial asset of the same characteristics (maturity and so on) as the domestic instrument, and e^* is the exchange rate (defined as the domestic price of foreign currency).

However, in a semi-open Cameroonian economy characterised by some controls on capital movements (as in most developing countries), the nominal interest rate can be specified as a linear combination of equations (1) and (2). If the parameter β represents an index measuring the degree of financial openness of the country (if β =1, then the economy is fully open), then the linear combination of equations (1) and (2) becomes:

$Rn_t = \beta (R^*n_t + e^*_t) + [(1-\beta)(Re_t + \pi^e_t)] + (Rm_t - Re_t)$ (3)

Also, following the loanable funds model, the first term on the right hand side of equation (1) Re, is the real interest rate, which equates ex-ante savings with investment and the government budget deficit. Let us take Savings (S) and Investment (I) as depending on the variables stated in equations (4) and (5).

$S_t = s_o + s_1 y_t + s_2 Re_t$ (4) ; $I_t = i_o + i_1 \Delta y_t - i_2 Re_t$ (5)

Where, Y is real income. Equation (4) is a standard Keynesian Savings function, while equation (5) is an accelerator-investment equation, with interest rate effects. In equilibrium, an excess of savings over investment must cover the government budget deficit; hence the equilibrium real rate is the rate that solves equation (6): $rdef_t = S_t - I_t$ (6)

Where, $rdef_t$ is the real government deficit. Substituting equations (4) and (5) into (6), we have the following equilibrium real interest rate expression:

$Re_t = 1/s_2 + i_2[(i_o - s_o) + i_1 \Delta y_t - s_1 y_t + rdef_t]$ (7)

The theory predicts that the budget deficit and the rise

in the rate of growth of real income increase the demand for funds and thus drive up the equilibrium real interest rate. On the other hand, higher level of output leads to a larger volume of savings and hence reduces the equilibrium real rate. We note that if the budget deficit affects the interest rates, then there is a violation of the Ricardian Equivalence/Hypothesis (Evans, 1985).

The second term on the right hand side of equation (1) is the expected inflation, which is the gap between the nominal interest rate (Rn) and the real market interest rate (Rm). This can be expressed as:

$$Rn_t - Rm_t = a\pi^e \quad (8)$$

The third term on the right hand side of equation (1), ($Rm_t - Re_t$) is the interest rate gap, which arises in part from monetary policy actions – the deviation of the market real interest rate from the equilibrium real rate. The Central bank can affect the real interest rate by changing the supply of the monetary base. In the loans market, such changes in the money supply have effects on the demand and supply curves for funds and hence the market real interest rate as in equation (9):

$$Rm_t - Re_t = -b_i[\Delta ms_t] \quad (9)$$

Where, ms is the real money supply. A variant of the literature predicts that a rise in real money supply results in a fall of the market interest rate with respect to the equilibrium real interest rate. Substituting equations (7), (8) and (9) into equation (3) yields equation (10), which includes the main potential domestic and foreign economic determinants of the nominal interest rate:

$$Rn_t = \delta_O + \delta_1\pi^e + \delta_2\, rdef_t + \delta_3 Y_t + \delta_4\Delta ms_t + \delta_5\Delta Y_t + \delta_6(R^*n_t + e^*_t) + \Psi_t \quad (10)$$

Equation (10) implies that the nominal interest rate depends on anticipated inflation, budget deficit, changes in real money supply and income, the level of income, and the net return on assets (combination of foreign interest rates and expected change in exchange rate).

Equation (10), describes the long-run responses of the nominal interest rates to expected inflation, budget deficit, real income, changes in money supply, changes in real income, foreign interest rates, and expected changes in foreign exchange rate. The coefficients δ_i, i = 1, 2, 3, 6 measure the long-run responses in the sense that they are the sums of coefficients that appear on current and past values of the relevant economic determinants.

The effect of income will be neutral in our analysis; hence it is not included in our equation. This is because most of the variables are expressed in percentage of income except for income (GDP) and money supply (M1). In order to bring these variables in percentage form, we will normalise by dividing both of them by GDP (Y); that is dividing M1 by GDP and GDP by itself. Hence, GDP has been left out since normalising it as a percentage of itself will gives us one, which will have no impact on our analysis. In this way, our equation can now be specified in the form:

$$Rn_t = \delta_0 + \delta_1\pi^e_t + \delta_2 rdef_t + \delta_3\Delta Ms_t + \delta_4\left(R^*n_t + e^*_t\right) + \varepsilon_t \quad (11)$$

Variables and data sources

Presentation of variables

Variables are very important in empirical analysis as they quantify or operationalise concepts which are otherwise not easy to measure. We will therefore outline the variables used in the LFM. The independent variables include:

Expected inflation (π^e)

Anticipated inflation is where people predict correctly the level of inflation and so are able to build it in their behaviour. In this case, the effects are not so great as people are not surprised by price increases (though they will still moan about them) and they can allow for it in their bids for higher wages. This variable has a positive effect on interest rate, that is to say they move in the same direction. Given an increase in the expected inflation for instance, every thing being equal, will lead to an increase in the lending rate owing to the fact that people will prefer to withdraw their money and carry out purchases now rather than wait for the future. Hence this variable has a positive sign, signifying its direct link to interest rate.

One of the major problems in estimating our equation is that long-run expected inflation is an unobservable variable. The empirical work here uses actual inflation as a proxy for long-run expected inflation.

Budget deficit (rdef)

This variable is measured by the difference between government revenue and its expenditure. The real budget deficit variable is included in ratio form as government fiscal deficit scaled by nominal Gross Domestic Product (GDP) so as to reflect the position that in a growing economy higher budget deficits result in higher interest rates only if the deficits rise relative to GDP. Hence, this variable is assumed to have a positive influence on the nominal interest rate that is they move in the same direction. The budget deficit here takes into consideration the modes of financing, the is the real domestic financing (rdf) and the real foreign financing (rff).

Real income (y)

This refers to the income after taking into consideration

the effects of inflation on purchasing power. In other words, it refers to the amount of goods and services you can buy today compared to the price of the same goods and services you could have purchased in another time period. In our analysis, real GDP is used as a proxy of real income.

Money supply (Ms)

Money supply refers to the amount of money in an economy. Most economies have their specific definitions of money supply, which depend on the amount of liquid assets included as money. A narrow definition of money say M1 would only include money as a medium of exchange and perhaps some near monies like sight deposits. A wider definition of money say M2 would be M1 plus money being used as a store of value etc. In our study, money supply refers to the narrow definition (M1) and we will scale it as a percentage of GDP.

The supply of money is generally supposed to be fixed by the monetary authority of the economy (BEAC). Apart from the monetary authority who can directly influence the supply of money, this supply could also vary because of credit creation by the banking sector or a change in the public's desired cash holdings.

Foreign interest rate (R^*n)

Given that France is one of the main partners that trade with Cameroon and due to the difficulties involved in getting the US dollar LIBOR rate which is mostly used internationally, we made use of the interest rate in the monetary market in France.

Exchange rate (e*)

This is the price of our currency, the FCFA with respect to another currency. In our analysis, we are going to use the real effective exchange rate. The year 1995 is used as the base year.

Nominal interest rate is our dependent variable. In our analysis, we chose nominal interest rate because, as McNelis and Schmidt-Hebbel (1993) noted, nominal interest rate is the variable, which clears the money market. Also, the nominal interest rate is consistent with the real interest rate driving intertemporal consumption and investment decisions. The relevant nominal interest rate considered in our analysis is the maximum bank lending interest rate.

Data sources

The empirical work uses annual data from 1974 to 2009. Most of the data is collected from the statistics of African development indicators of the World Bank (CD-ROM 2010) and the Direction of Statistics and National Accounting (DSCN). In the case where the CD-ROM did not provide us with the necessary data, especially from 2008 –2009, it was completed from the statistics of BEAC, International Monetary Fund (IMF) and the African Development Bank (ADB). The interest rate of the money market in France is taken from BEAC statistics.

Method of estimation

Long run relationship

Recent economic literature concerning the theory of equilibrium shows that a stationary macroeconomic series may be brought about by a combination of non stationary variables; hence the importance of the co-integration estimation analysis of our variables. Two or more non-stationary series are said to be integrated if the linear combination of these variables is stationary. As a result, if there exist a long-term stationary relationship between nominal interest rate and the determining variables such as budget deficit, it can be interpreted as signifying that a stochastic trend of nominal interest rate is linked to stochastic trends of budget deficits. It is thus necessary for us to present the co integration method used in determining long-term relationships between dependent and independent variables.

There exist two main methods of co integration namely: Engel and Granger (1987) method of co-integration and Johansen (1988) method of co-integration.

According to Engel and Granger, two series are co integrated when their linear combination is stationary. Co integration translates the fact that the linear combination does not deviate for a long period from its mean value even if the series present diverging evolutions. In other words, that there exist a stable long term evolution between the series

Two series X_t and Y_t are co integrated of the order d, b for $0 < b \leq d$, if

X_t is integrated to the order d and Y_t integrated to the order b

There exist (α, β) such that $Z_t = \alpha X_t + \beta Y_t$ is integrated to the order (d-b) or I(d-b).

In practice, we generally limit ourselves to $d = b = 1$ and in this case, Z_t will be stationary or I(0) and will convey an equilibrium relationship between X_t and Y_t.

The Engel and Granger methodology of long-term estimation is carried out by using the standard ordinary least squares (OLS) which is applied to the variables in level form to establish the order of integration for particular combinations of co integrating variables.

Estimates of the residual errors e_t are obtained as follows: $e_t = X_t - \alpha - \beta Y_t$

The Ho hypothesis that e_t has a unit root and therefore is a random walk, is tested against H1 using the DF and ADF test. If the errors are white noise, it can then be given an error correction model.

On the other hand, the co integration by Johansen permits the development of tests based on the number of co integration vectors. The estimation of the maximum likelihood of complete information of Johansen is based on a vectorial autoregressive (VAR) system. This approach, by the method of maximum likelihood permits us to obtain all the co integration vectors Contrary to the the Engel-Granger approach which takes into account only a single co-integration relationship. in a multivariable framework, in such a way that it looks more appropriate when we want to test the level of co integration in a system of many variables.

Consider the model: $Z_t = \theta_1 Z_{t-1} + \theta_2 Z_{t-2} + \text{---} + \theta_k Z_{t-k} + \xi_t$

Where, Z is a multi-dimensional process. This model can be rewritten thus:

$Z_t = \Gamma_1 D(Z_{t-1}) + \Gamma_2 D(Z_{t-2}) + \text{---} + \Gamma_{k-1} D(Z_{t-k}) + \theta Z_{t-k} + \mu + \xi_t$

The test developed by Johansen is based more precisely on the order of the matrice θ. It envisages 3 cases:

- The matrix θ, has an order of zero (0), the vector Z is stationary. In this case, the system can be estimated without any particular attention as concerns its stationarity.
- The matrix θ has a complete order (p); there is no linear combination of the components of Z, which are stationary. It is therefore necessary to differentiate the components of Z.
- The matrix θ has an order of n, where 0<n<p. There exist therefore the matrices $(p^*n)\alpha$ and β, such that $\theta = \alpha\beta$, where α is the adjustment matrix and β the co integration vector.

The estimation of the maximum likelihood of the co integration vector (β) is obtained by solving the system, which permits us to obtain the proper values and their associated vectors. After that, it will then be possible to construct a test for the proper value and the test of trace.

The test of the proper value, test the presence of n vectors of co integration against the alternative that there exist n+ 1 vector. The test statistics is given as: $VP_{max} = -T\log(1-\lambda_{n+1})$

On the other hand, the test of trace test the null hypothesis $r \leq q$, against the alternative that $r > q$. The test statistics is given as: $TR = -T \sum \log(1-\lambda_i)$

If r = 0, implies there exist no co integration relationship, hence the series Z_t is stationary but the variables are not co-integrated;

If r = n, the series Z_t is not stationary and there exist no co integration relationship between the variables;

If $0 < r < n$, then the series Z_t is co integrated to the order r and there exist therefore r relations of co-integration. An error correction model (ECM) can then be estimated.

We are going to apply both methods in our analysis. Since the method of Engel-Granger does not give the order of co integration, we will use Johansen method to determine this order.

Error Correction Model (ECM)

The study of the short-term behaviour of nominal interest rate equilibrium requires the specification of an error correction model (ECM).

The error correction model takes care of short-term divergences. As such, models with long run relationship having short-term divergences can be given an error correction model. For such models, the error correction mechanism captures the short run dynamics while making them consistent with long run dynamics. This is accomplished by estimating an error correction model in which residuals from the equilibrium co-integrating regression are used as an error corrector regressor (EC_t lagged one period) in the dynamic model.

After carrying out the various tests on co-integration, it is necessary to estimate a relationship between the series with the help of an error correction model. Engel and Granger (1987) demonstrated that all series that are co-integrated could be represented by an ECM (Granger representation theorem). The matrix model (VECM: Vector Error Correction Model) is presented thus: $A(L)\Delta X_t = \alpha\eta_{t-1} + d(L)v_t$

Where $\eta_{t-1} = e_{t-1} - \beta' F_{t-1}$, v_t is a white noise vector.

A(0) is a unit matrix ; A(1) contains only finite terms.

In the following VECM, only the first relationship, that is the one with short-term equilibrium behaviour of nominal interest rate will be of interest to us. This is given by:

$$\Delta e_t = \alpha_1\left(e_{t-1} - \beta' F_{t-1}\right) + \sum_{j=2}^{p} \mu_j \Delta e_{t-1} + \sum_{j=2}^{p} \gamma_j \Delta\beta' F_{t-1} + v_t$$

The coefficient α_1 represents the adjustment speed towards equilibrium, otherwise known as the repeal force towards equilibrium. For there to be stability in the system, this coefficient has to be negatively significant. If α_1 is not negatively significant, we cannot accept the hypothesis of co-integration and the ECM representation.

The ECM is a long term model but it gives at the same time the short term and long term relationships if the coefficient of the error correction term is significant and negative, implying convergence is assured.

The estimation of ECM is carried out in two steps; the first consist of estimation by OLS of the long-term relationship (as explained above) and the second step

consist of estimation be OLS of the short-term relationships.

Causality

The standard procedure of testing for causality is the Granger causality test specified as:

$$y_t = \mu_1 + \omega_1(L)x_{t-i} + \psi_1(L)y_{t-i} + \varepsilon_{1t}$$

$$x_t = \mu_2 + \omega_2(L)x_{t-i} + \psi_2(L)y_{t-i} + \varepsilon_{2t}$$

In this system, x_t granger causes y_t if $\omega_1(L)$ is statistically not equal to zero. Similarly, y_t granger causes x_t when $\psi_2(L)$ is statistically not equal to zero. If none of the two scenarios is true then there is no causality between the two variables. However, if both are true then there exists bidirectional or feedback causality.

RESULTS AND DISCUSSIONS

The empirical analysis begins with the analysis of the statistical properties of the time series used in the nominal interest function.

If variables in a regression are not stationary and do not co-integrate, then the regression results will be spurious. Such regressions produce high R^2 s and t-ratios that are biased towards rejecting the Ho hypothesis of no relationships even when there is actually no relationship between the variables. Estimates obtained from linear combination of individual series that are not properly co-integrated are reliable and consistent and are fit for describing the steady state relationships. A variable is integrated of order one I (1) when it is stationary in level form. A stationary series X_t for example, has a mean, variance and autocorrelation that are constant over time. However, most economic series tend to exhibit non-stationary stochastic processes of the form, $X_t = \alpha + \beta_{t-1} + e_t$

Where α is a constant drift, β =1 and e_t is an error term. If e_t has a mean of zero, constant variance and zero covariance, then X_t is a random walk and is said to be integrated of order I(1). The series X_t is integrated because it is the sum of its base value X_o and the differences in X up to time t. Since β =1, X is said to have a "unit root". If X_t is non-stationary, the variances may become infinite and any stochastic shock may not return to a proper mean level. Such a non-stationary series has no error correction representation.

A non-stationary series requires differencing to become stationary. X_t is integrated of order Dx or $X_t \rightarrow$I (Dx) if it is differenced Dx times to achieve stationarity. There exist many tests for stationarity of individual series. These include: Dickey-Fuller (DF), the Augmented Dickey-Fuller (ADF), and the Phillips-Perron (PP) statistics. We use the ADF method in this study.

The Dickey-Fuller test permits us to provide evidence for the stationary character of series by determining a deterministic or stochastic drift. The models that serve as bases for the construction of these tests are three in number.

$X_t = \rho X_{t-1} + \xi_t$ (1) autoregressive model with neither constant nor trend.

$X_t = \rho X_{t-1} + b + \xi_t$ (2) autoregressive model with constant term.

$X_t = \rho X_{t-1} + b_t + c + \xi_t$ (3) autoregressive model with constant term and trend.

With $\xi_t \rightarrow$ IID and a white noise

The principle of this test is simple; if the Ho hypothesis that ρ =1 is accepted in any of the three equations, then the process is stationary.

In order to carry out the test, three steps are necessary. The test is carried on in a sequential manner beginning with the third equation, by estimating the parametersρ, b and c. The significance of b in equation (3) is tested using the t-statistics (Ho: b=0; H1: b$\neq$0). If b is significantly different from zero, then we test for this same model the coefficient of ρ, that is,

Ho: ρ =1 ; H1: $|\rho|$ <1 ; If Ho is accepted, the series is non-stationary with trend; otherwise (H1 accepted), the series is stationary. H1 is accepted if and only if $t\rho \geq t_{tabulated}$ Dickey-Fuller, with the aid of the Monte Carlo simulation, tabulated critical values for different levels of samples. These tables are similar to those of Student (even though the distribution is not that of Student).

On the contrary, if b is significantly equal to zero, we go directly to equation (2) and carry out the same test following the same procedure up to the test of the first equation. If X_t is not stationary, we apply the DF test on difference variables following the same procedure as previously outlined; In a bid to guarantee a robust test, the properties of the series on nominal interest rate and its fundamental components has been determined, by carrying out the unit root test. More precisely, the Dickey-Fuller test (DF and ADF) and the Phillips-Perron (PP) test at a confidence interval of 5% were used. The results are presented in Table 3.

Long run relationship results

The result of the long run estimation is shown in table 4 above. As can be seen from the estimation output in the appendix, the model is globally significant at the 1% level and the value of the Durbin- Watson statistic of 2.1 indicates that there is no autocorrelation. The model also passes the test for heteroscedasticity. We therefore conclude that the model can be used for analysis; In the long run, we find that budget deficits significantly affect

Table 3. Results of ADF Stationarity test

	ADF on level variables			ADF at first difference		
Variables	**t_ρ**	**$t_{tabulated}$ (5%)**	**decision**	**t_ρ**	**$t_{tabulated}$ (5%)**	**decision**
Rn	1.123	-1.958	NS	3.819	-1.958	S
π^e	1.066	-1.958	NS	-3.674	-1.958	S
rdef	-1.432	-1.958	NS	-5.441	-1.958	S
Ms	-1.226	-1.958	NS	-7.469	-1.958	S
Rn* + e*	-1.411	-1.958	NS	-3.158	-1.958	S

NB: S = stationary, NS = Non-stationary; The results of the ADF test indicate that all the variables are none stationary at the level form. They become stationary when differenced once.

Table 4. Results of long run relationship

Variables	Coefficients	Standard Error	t-statistic	Prob
C	7.782122	2.550541	3.051165	0.0048
π^e	-0.075810	0.035307	-2.147194	0.0403
Rdef	0.169876	0.049396	3.430643	0.0029
MS	-0.002239	0.024983	-0.089616	0.9292
R*n + e*	-0.018047	0.007758	-2.326346	0.0272
Rn(-1)	0.735761	0.089686	8.203751	0.0000

Source: Author

nominal interest rates positively. Also, inflation and real exchange rate have positive and significant effects at the five percent level. The lag value of the nominal interest rates has a positive and significant effect at the one percent level. As for the money supply variable, it has a negative sign but is not significant.

Error correction model

The result of the error correction model is shown in table 5 below. Though the error correction term has the required magnitude and significance, all the variables in the model are not significant. This implies that the relationship between nominal interest rates and the other variables is mainly a long term one.

Causality test

The results of the granger causality test presented in table 6 above show that there exist bidirectional or feedback causality between budget deficits and nominal interest rates in Cameroon.

CONCLUSION

The main findings from this study are the following:

- All the variables were found to be integrated of order one. There exist a long run relationship between real interest rate and the independent variables.
- In the long run, we found a positive and significant relationship between budget deficits and nominal interest rates. This implies that large deficits lead to a rise in interest rate.
- A bi-directional causality was found between budget deficits and real interest rates.

Policy recommendations

The results presented above have serious policy implications. This is because a policy of budget deficit by the government for any reason would lead to a rise in interest rates, which reduces investment and by that economic growth and the welfare of Cameroonians. Since the budget deficit influences the interest rate through the method of financing, this implies that the method of financing so far used by the government is not

Table 5. Results of Error correction model

Variables	Coefficients	Standard Error	t-statistic	Prob
C	0.3605	0.3361	1.0727	0.2956
D(π^e)	-0.0128	0.0446	-0.2874	0.7766
D(Rdef)	-0.0518	0.1039	-0.4988	0.6231
D(D(MS))	0.00019	0.0012	0.1604	0.8741
D(R*n + e*)	-0.0171	0.0184	-0.9278	0.3641
D(Rn(-1))	-0.0097	0.2243	-0.0433	0.9658
Resid1(-1)	-0.0037	0.0166	-0.2220	0.0264

Source: Author

Table 6. Granger causality test results

Pairwise Granger Causality Tests			
Sample: 1974 2009			
Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Probability
RDEF does not Granger Cause RN	34	5.33446	0.01845
RN does not Granger Cause RDEF		5.15643	0.03591

Source: Author

appropriate and should therefore be changed. In the past, the government of Cameroon had financed its budget deficit mainly through borrowing from abroad and through the repression of the financial sector. The repression of the financial sector is a source of cheap revenue for the government through the inflation tax (Fry, 1995). With the advent of the crisis, Cameroon could not meet its financial obligations and so could not borrow again from abroad. They had to reduce their expenditure through austerity programmes. They accumulated internal debt that was securitised by the issuance of government bonds. Considering all these, we propose that the government should:

- Reduce their expenditures on non productive investments such as expenditure on military.
- Change the means of financing deficits by borrowing from the domestic financial market as was done recently by the ministry of finance.

Directions of further research

In this study we concentrated only on the relationship between budget deficits and interest rates, but an important link through which budget deficits influence interest rates is through the mode of financing it. Studies therefore need to be carried out in order to ascertain how the method of financing influence interest rates so as to better understand the relationship between budget deficits and interest rates.

REFERENCES

Aboyade, O., (1993) "Integrated Economics", Addison-Wesley, Britain.

Aisen, A. and Hauner, D.(2007) "Budget Deficits and Interest Rates: A Fresh Perspective", IMF Discussion Series, November 2007.

Allen, S.D., (1991), « Government Borrowing and Tax-adjusted real and Nominal Interest Rates », Applied Economics, vol.23, 31-90.

Amin A (2002). " An Examination of the Sources of Economic Growth in Cameroon" AERC research paper 116.

Anyanwu JC (1993). "Monetary Economics: Theory, Policy and Institutions" Onitsha Hybrid Publishers Ltd.

Anyanwu JC (1998). "Do large Fiscal Deficits Produce High Interest Rates?: The Case of Nigeria, Ghana and the Gambia", Central Bank of Nigeria Economic and Financial Review. 36(1).

Barth J, Iden G, Russek F, Wohar M (1991). The Effects of Federal Budget Deficits on Interest Rates and the Composition of Domestic Output, in Penner, R.G. (ed.) "Great Fiscal Experiment" Urban Institute Press, Washington D.C., 1991, pp. 69-129.

Bebi H (2000) The Impact of Fiscal Deficits and Public Debt on Real Interest Rate and Investment in Namibia, NEPRU Research Report No. 74.

Chakraborty LS (2002). "Fiscal Deficits and Real Interest Rates: An Econometric Analysis of the Deregulated Financial Regime", Economic and Political Weekly, 37(19).

Cohen D, Garnier O (1991). "The Impact of Forecasts of Budget Deficits on Interest Rates in the United States and other G-7 Countries", Federal Reserve Board.

Dai Q, Philippon T (2004). Government Deficits and Interest Rates: A No-Arbitrage Structural VAR Approach, New York University First Draft.

Engle RF, Granger CWJ (1987). "Cointegration and Error Correction: Representation, Estimation, and". Testing Econometrica 55, pp.251--276.

Evans P (1987) "Interest Rates and Expected Future Budget Deficits in the U. S.", Journal of Political Economy, 95(1): 34-58.

Gale WG, Peter O (2003). "Economic Effects of Sustained Budget Deficits" National Tax Journal Vol. 56 (3): 463-485.

Ghura D (1997). “Private Investment and Endogenous Growth: Evidence from Cameroon.” IMF working Paper, Vol. 165.
Gupta DD, Gupta BD (April 1994). “Interest Rates in Open Economies: Real Interest Rate Parity Exchange Rates and Country Risk in Industrial and Developing Countries “, World Bank Policy Research Working Paper 1283.
Johansen S (1988). “Statistical Analysis of Cointegration Vectors”, Journal of Economic Dynamics and Control, 12(2-3): 231-254.
Kirchner S (2007). “Fiscal Policy and Interest Rates in Australia”, Fiscal Policy Vol. 23(3).
Laubauch T (2003). “New Evidence on the Interest Rate Effects of Budget Deficits and Debt”, Board of Governors of the Federal Reserve System.
Lindauer J (1976). Macroeconomics, Hamilton Publication, Canada.
McNelis PD, Schmidt-Hebbel K (1993) “Financial Liberalisation and Adjustment: The Cases of Chile and New Zealand,” J. Int. Money and Finance, Vol. 12: 249-277.

APPENDICES

Long run relationship

Dependent Variable: RN
Method: Least Squares
Date: 11/15/11 Time: 17:18
Sample(adjusted): 1975 2009
Included observations: 35 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7.782122	2.550541	3.051165	0.0048
PE	-0.075810	0.035307	-2.147194	0.0403
MS	-0.002239	0.024983	-0.089616	0.9292
RDEF	0.009876	0.049396	0.199943	0.8429
RER	-0.018047	0.007758	-2.326346	0.0272
RN(-1)	0.735761	0.089686	8.203751	0.0000
R-squared	0.927983	Mean dependent var		16.96857
Adjusted R-squared	0.915566	S.D. dependent var		4.308048
S.E. of regression	1.251814	Akaike info criterion		3.441869
Sum squared resid	45.44408	Schwarz criterion		3.708500
Log likelihood	-54.23270	F-statistic		74.73612
Durbin-Watson stat	2.110023	Prob(F-statistic)		0.000000

Unit root test on residuals

Null Hypothesis: RESID1 has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic based on SIC, MAXLAG=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.977148	0.0000
Test critical values:	1% level	-3.639407	
	5% level	-2.951125	
	10% level	-2.614300	

*MacKinnon (1996) one-sided p-values.
Augmented Dickey-Fuller Test Equation
Dependent Variable: D(RESID1)
Method: Least Squares
Date: 11/15/11 Time: 17:21
Sample(adjusted): 1976 2009
Included observations: 34 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RESID1(-1)	-1.055123	0.176526	-5.977148	0.0000
C	-3.35E-05	0.204063	-0.000164	0.9999
R-squared	0.527510	Mean dependent var		0.002931
Adjusted R-squared	0.512745	S.D. dependent var		1.704608
S.E. of regression	1.189879	Akaike info criterion		3.242603
Sum squared resid	45.30600	Schwarz criterion		3.332389
Log likelihood	-53.12425	F-statistic		35.72629
Durbin-Watson stat	2.013735	Prob(F-statistic)		0.000001