The Financing of Economic Growth and Development in Botswana : 1973 - 1994.

By

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A thesis submitted in fulfilment of the requirements for the Degree of Doctor of Philosophy in Economics.

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July 1997.

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Acknowledgements

I would like to acknowledge the advice and guidance from my mentor and thesis supervisor Professor Tony Thirlwall; my respect and enduring thanks to him.

I should also like to thank members of the Department of Economics for providing the intellectual atmosphere to do this thesis. I have also benefitted from the support of my colleagues and friends: Bernard La Corbinier, Chris Onosode, Bill Collier, Jabulani Dhliwayo, Phazamile Kgosi, Rev Peter Monageng, Cirino Hiteng, John Moreti, and Leonard Siwawa.

I am most indebted to the University of Botswana for their financial support.

A big thank you to my lovely wife, Veronica, for taking the enormous responsibility of single parenthood for our two sons, Motheo and Tefo, during my period of study, and for getting them to come to terms with my absence from home. To my mother and father, and my sisters: Tankiso, Kebotsamang, and Bothepha, this is for you too; I love you all.

I dedicate this work to the memory of my late friend and colleaque, Bakani Gunda.

Abstract

This thesis studies the financing of economic growth and development in Botswana. The aim is to assess the extent to which alternative resources, other than mineral income, can be mobilised to fund economic growth and development in Botswana. Economic growth can be financed from domestic and / or external resources. With regard to domestic resources the distinction is made between private and public resources. External resources refer to foreign capital inflows.

The thesis is divided into four main areas. Firstly, resource mobilisation from the private sector is studied in the context of the McKinnon and Shaw model of financial liberalisation. Secondly, the role of fiscal policy in mobilising resources is studied by estimating elasticities and buoyancies of the Botswana tax system. Thirdly, the thesis assesses the impact of foreign capital inflows on saving, investment and economic growth in the economy of Botswana. Finally, our study fits the balance of payments constrained growth model to Botswana data in order to assess the extent to which the growth rate of income is constrained by the necessity to maintain equilibrium in the current account of the balance of payments.

Our study makes a number of findings. Firstly, that high real interest rates will not necessarily promote saving, investment, and economic growth. The major constraint to increased investment is found to lie in the failure of the financial system to transform financial resources into productive investment. Secondly, the policy of reduced taxes, the broadening of tax bases, and fiscal restraint seems to be justified because of the limited options for increasing revenues. The structure of government revenues is still dominated by proceeds from the mining sector. However, it is likely that as the private sector develops, the structure will be reversed in favour of non mining income. Thirdly, the effect of capital inflows, especially foreign direct investment, has been to promote capital formation in the economy of Botswana. Finally, the long run growth rate of income in Botswana is found to be approximated by the ratio of the growth rate of exports and the income elasticity of demand for imports.

Introduction

The aim of this study is to investigate the process by which domestic and external resources have been mobilised to promote capital formation in the economy of Botswana. The study is therefore devoted to the investigation of the financial aspects of economic growth and development in Botswana. By devoting a whole study to the financing of economic development it is hoped, as Newlyn(1977) once stated, that " it may contribute to the knowledge necessary for ensuring that financial planning and the financial system should operate so that finance acts as a constraint only if the real impulse towards development is pressing against the bounds of possibility "(p.1).

There are three main approaches to the financing of economic development from domestic resources(Thirlwall, 1994). Firstly, there is the prior savings approach which recognises saving as a constraint on investment. In this approach increases in savings are transformed into productive physical capital through variations in the rate of interest. Secondly, the Keynesian approach which identifies investment as the main determinant of saving. This is possible when resources are less than fully employed because of the potential for output to increase through the multiplier; or when resources are fully employed through the redistribution of income from wages to profits. In this view, the levels of output and employment depend on net investment which in turn depends on finance and business expectations(Thirlwall, 1974; Asimakopoulos, 1986; Davidson, 1986). Thirdly, the quantity theory approach which stresses the inflation tax as a source of finance for economic development. Yet again, output expansion is attainable if the inflation tax is used to promote investment. The difference in emphasis between the prior saving approach and the identification of investment as the determinant of saving is very important when considering the effects of financial variables on economic growth. Resources for financing economic development may also come from abroad. We therefore examine the role of external resources in the economic development of the Botswana economy. The external sector covers the

various forms of capital inflows and their effects on saving, investment and economic growth. Finally, we evaluate the extent to which balance of payments considerations may affect the growth performance of the economy.

The Structure of the Thesis

The study has seven chapters. The first two chapters are background chapters that review the Botswana economy and the theoretical literature. The core of the thesis is covered in four chapters which present new work on the Botswana economy.

Chapter One

This reviews the structure and development of the Botswana economy. The review highlights the critical turning points in the fortunes of the country in an effort to point out the strengths and weaknesses of the economic system. It becomes clear from the review that whilst Botswana experienced faster growth rates than other developing countries, it is still to a large extent subject to constraints prevalent in these economies. These include maldistribution of income, a highly specialised economy, concentration of export earnings in primary products, poor infrastructure and a limited endowment of skilled labour. We seek to demonstrate that Botswana seems not to have taken advantage of the available resources to overcome these limitations.

The financial system is also reviewed to show how it has been affected by the development of the mineral sector. Notably, the government through its large fiscal balances is a major supplier of credit in the market. Although government credit is mainly made to parastatal organisations, it was almost ten-times more than total commercial bank credit allocation to the private sector in 1994. This means that the bulk of credit flows outside the private financial system. In fact, private financial institutions provide mainly short term credit whereas government provides long term credit. As such, to the extent that the private sector can be presumed to be more efficient in credit allocation than the government, then as the World Bank(1989)

commented, the future of intermediation in Botswana is limited.

On the fiscal side, the major sources of government revenue are, in order of importance, the proceeds from mining, Bank of Botswana profits, Customs Union revenue, and income and sales tax. Given the instability of mining proceeds as demonstrated in 1981, 1985, and recently in 1993, and the imminent renegotiation of the Customs Union Agreement, the government can hardly rely on income tax resources to lead the growth process as income tax constitutes only 10 percent of government revenue in 1994. This makes it imperative that the private sector lead economic growth in the economy. It is these factors, as well as the falling saving ratio, that explain the present efforts towards financial and economic liberalisation.

Chapter Two

This chapter reviews the theoretical literature on financial liberalisation originating from the work of Mckinnon and Shaw in 1973 in which they independently demonstrated, somewhat differently, but with similar conclusions, the positive causal relation between financial liberalisation, savings, investment and growth. The chapter proceeds to consider the critics and supporters of the liberalisation debate. Particularly interesting among the critics is the contribution by Stiglitz and Weiss(1981) who base their criticism on the existence of market failures and imperfect information in the financial markets. The various critics emphasise the need to take explicit account of institutional factors in order to counter the adverse effects of financial liberalisation. The negative effects include reductions in effective demand, and hence economic growth, stagflation, and the weakening of financial institutions.

Chapter Three

This chapter derives from the preceding one in that it develops models to test the financial liberalisation hypothesis in explaining savings and investment behaviour and the extent to which they affect growth in Botswana. This proceeds by testing the

determinants of total savings, investment and growth, and whether credit availability is a more important determinant of investment than interest rates. The determinants of investment are considered using a switching regime model that allows for interest rates above and below equilibrium. We also test Mckinnon's virtuous circle model of economic growth.

Chapter Four

The role of the state in the financing of economic development is considered in this chapter. The role of taxation, among others, is to restrain the growth of private consumption in order to increase the volume of resources available for investment. And by transferring resources from the private to the public sector, governments are able to meet their current and capital expenditures. Governments in developing countries still have a direct role to play in the process of economic development through active and efficient tax policies. This suggests that additional resources can be provided through tax-enforced reductions in consumption and by bringing unemployed resources into productive use. Governments must try to do this without discouraging work effort. This chapter emphasises the importance of taxation in mobilising resource for economic development. Resource mobilisation does not require higher taxes per se, but a buoyant, elastic and diversified tax system to support sustainable rates of economic growth. The emphasis is on both the incentive and resource mobilisation aspects of taxation.

Chapter Five

This considers the effects of capital inflows on savings, investment, and economic growth in Botswana. Foreign capital inflows are important in complementing domestic resources in many developing countries. This importance of foreign capital inflows is especially pronounced for Botswana in that according to the 1995 central government budget, non mineral revenues and sales tax accounted for only 10 percent of total government revenue for fiscal year 1995/96. On the other hand, mineral

revenues made up 48 percent of total revenues for the same financial year. The irony is, despite the dominating role of mineral revenues, the government has no discretionary influence over the size of mineral revenue as it does with other sources e.g. income tax. This is because proceeds from the mining industry are tied by negotiated agreements with the mining companies. This is equally true of the third source, Customs Union revenue(15.9%). Bank of Botswana profits which accrue from investment of foreign exchange reserves account for 19 percent in the same financial year. The remainder is accounted for by fees and charges. In the light of this structure of revenues it is important to assess the effect that foreign capital inflows(and the individual components of foreign capital) have on saving, investment and economic growth. This is because of the historical importance of foreign investment in the economy of Botswana, especially into the mining industry.

Chapter Six

This chapter assesses the effect that balance of payments considerations may have on the growth rate of the Botswana economy. This derives from the premise that developing countries apart from being subject to savings constraints, may be constrained in their growth rate performance by the necessity to maintain balance of payments equilibrium on current account. Policies that are designed to switch resources from consumption to investment are likely to have repercussions on the balance of payments due to their implications for imports. The growth of imports exceeding the growth of exports will lead to the balance of payments deteriorating which may require curtailment of demand, restricting growth below potential. This chapter tests the balance of payments constrained growth model(Thirlwall, 1982) for the Botswana economy, with special emphasis on the role of capital flows in increasing(or reducing) the sustainable growth rate.

Chapter Seven

Chapter seven concludes the study.

Data Sources

The data for the study have been obtained from the following sources: Bank of Botswana Bulletins (these are only available since 1976); Central Statistics Office (CSO) Bulletins-since 1966; additional data has been obtained from International Financial Statistics(IMF), Government Financial Statistics(IMF), and the World Tables(World Bank) for various years.

Chapter One

The Botswana Economy and the Financial System

1.1 Introduction

Botswana is a land locked country in the middle of Southern Africa with a land area of 582 000 square kilometres, and a population of approximately 1.5 million people. The majority of the inhabitants are settled in the eastern part of the country as 70 percent of the land is covered by the Kalahari desert, mainly in the west. Botswana has achieved an economic growth record which is amongst the highest in the world. The real economic growth rate averaged 13 percent in the twenty years after political independence. The high growth rates reflect the low resources at independence, or as the World Bank (1989) terms it "extreme poverty", and the transformation of the economy from an agricultural to a mineral based economy. There are several factors, other than diamonds, that account for this growth performance. These include prudent monetary and fiscal policy, and the maintenance of an open and stable macroeconomic environment.

The combination of these factors and the robust export performance permitted the accumulation of foreign exchange reserves and government budget surpluses. However, the remarkable economic growth rates conceal inequalities in the economy. In particular, a significant percentage of the population remains dependent on the rural economy. Poverty and unemployment are major issues and likely to remain so for many years to come given the rapid growth in population which is estimated to increase by 3.4 percent per annum[1].

These problems are further compounded by the declining rural economy, the narrow base of the non-mining productive sector, and shortages of skilled manpower

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[1] This has been revised to 2.5 percent per annum because of the decline in fertility rates.

and entrepreneurial skills. It seems that despite the accumulated foreign exchange reserves and the excess liquidity in the banking system the challenges confronting the economy are still enormous. Nonetheless, the government ought to continue to maintain reserves as a precaution against external shocks especially against unpredictable diamond prices, and to simultaneously promote investment and the growth of the non-mining sector.

1.2 The Objectives of Development Policy

The Botswana National Development Plan(1991-1997) identifies the four objectives of development policy as the need to achieve: sustainable development; rapid economic growth; economic independence; and social justice. Sustainable development aims to ensure that current production is carried out efficiently in order not to limit the options open to future generations. Central to the objective of sustainable growth and development is the need to achieve economic diversification. For the purposes of national planning this is defined as " utilising more productive technologies, widening the product base, expanding the market for both Botswana's exports and imports, and extending the utilisation of local inputs "(p.25). This is realised by the reinvestment of the proceeds of mineral wealth into other sectors of the economy.

The second objective, rapid economic growth, has been achieved through the development of the mining sector, specifically the diamond mining industry. Other sectors have increasingly contributed to the growth of output though less so than the mining sector. Economic growth is therefore still largely mineral-led.

The need to achieve greater economic independence results from the dependence of the Botswana economy on international trade. The economy imports a large percentage of its food requirements and investment goods. Although there are concerted efforts made by the government to achieve greater economic independence, the government recognises that "the general dependence on international trade is unlikely to change dramatically even over the longer twenty five year period " (NDP 7, p.30).

The objective of economic independence ought to be viewed in the context of political and economic developments in the Southern Africa region. Notably, the improvement in the political situation in South Africa seem to suggest that this objective may no longer be relevant. Moreover, Botswana is a strong and active member of the Southern African Development Community which aims to foster greater cooperation among its twelve member states.

Finally, social justice is one of the very illusive objectives of development policy. It is defined in the Plan as a requirement that every group or region in the country enjoys a fair share of national wealth or income. This can be achieved through increased earned incomes, net transfers of income and free and subsidised services. But whether income distribution has improved over time remains a contested issue(see later).

1.3 The Development Strategy

The basic strategy of government is the promotion of economic growth through the development of the private sector, the provision of an efficient financial system, and a stable macro-economic environment. The aim in the long run is to reverse the structural bias against the non mineral sector and achieve a more balanced and diversified economic system. The Bank of Botswana(1993) summarises the strategy as:

> The basic strategy in our national development plans has been to transform the mineral endowment into an endowment of physical and human endowment. This has the potential to achieve self sustaining growth as physical and human capital are renewable, whereas the mineral endowment is not. But it depends, crucially, on achieving the transformation of the mineral endowment into productive physical and human capital(p.5).

There are various initiatives that have been made to realise this strategy. These

include the liberalisation of the financial system and exchange controls, and the promotion of foreign private investment through export incentives. The Botswana government opted against an import substitution strategy in favour of an export-led growth strategy. This required the adoption of policies that aligned the system of incentives in favour of exports. The choice of the strategy was dictated by the narrowness of the domestic market; the opportunities presented by membership of the Southern African Customs Union Agreement(SACUA), and the shortage of skills.

Although the size of the domestic market has been an important factor against the adoption of import substitution policies, import substitution strategies are also least preferred because of the potential decline in product quality which consequently affects export performance. It is also difficult to undertake successful import substitution in intermediate products due to limitations in capital and technological requirements.

The policy position has shifted from economic independence to economic diversification and the provision of an enabling environment for the development of the private sector(the two objectives are not mutually exclusive). However, the commitment to the promotion of the private sector was long demonstrated at independence where the transitional development plan read in part: "It is government duty to set forth clearly its objectives and priorities, to frame its policies accordingly, and to assist the private sector in every way consistent with the attainment of such goals"(p.48)[2]. The Botswana Development Corporation, a parastatal organisation, was established to serve as the government's agent in encouraging private sector development through equity participation in joint ventures, and especially to take initiative when citizen entrepreneurs were not forthcoming.

There are two related issues that arise from the government's development strategy that have implications for the financial system, and more broadly economic diversification. Firstly, the nature of the development strategy, and the acceptance that

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[2] Quoted from Harvey, C. and S.R. Lewis, (1990) *Policy Choice and Development Performance in Botswana.*(London: Macmillan).

diamonds are not forever, requires the development of the financial system to lessen dependence on minerals in order to ensure continued but sustainable economic growth. The financial system ought then to perform the intermediation function more efficiently. This will involve risk and asset transformation to meet the differing liquidity needs, channelling resources to the most efficient investors. This is important because a significant amount of capital or mineral rents has been spent on non productive and consumption goods rather than on investment activities thereby hampering the efforts to achieve economic diversification(Bank of Botswana, 1993).

Secondly, in order to achieve economic diversification the government initiated a number of financial assistance programs and offered credit to the private sector through the Botswana Development Corporation. This position has changed. It is now realised that the government's dominant role in the financial system ought to be deliberately reduced with a view to removing the non market allocation of capital, especially to parastatals organisations. The large volume of capital allocated by the government to parastatal organisations has constrained the development of domestic capital markets(Bank of Botswana, 1986). There is a need, also recognised by government, to give the financial system a much greater role in the allocation of financial resources. It is argued that only in this way will the financial system be able to support the economic diversification program and help achieve a higher rate of economic growth. These factors reflect a continuation of a policy that recognises the private sector as important for achieving sustainable rates of economic growth.

1.4 Economic Growth

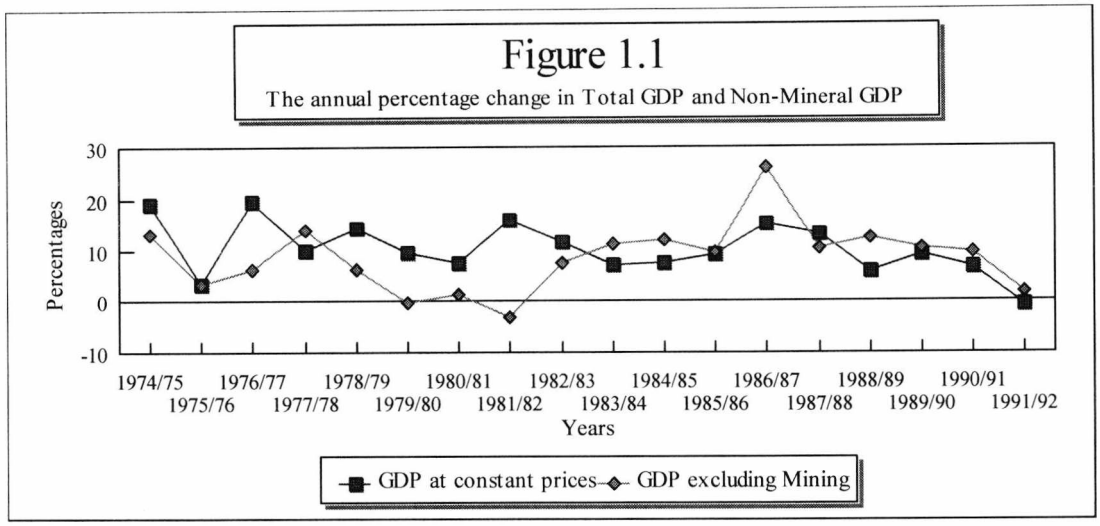
The growth and development of the Botswana economy has been exceptional in sub- Saharan Africa, and has been dubbed an economic miracle (Harvey, 1992). It was described by the World Bank(1989) as the fastest growing economy in the world over the last decade and a half. Elsewhere, Botswana was hailed as one of the few success stories of sub-Saharan Africa (Thumberg-Hartland, 1978). This is despite the

fact that the country was among the poorest in the world at independence in 1966, with a per capita income of US$100. Moreover, the economy had inherited very little in the form of infra structural development under British colonial rule(Harvey & Lewis, 1990). At independence, there were only fifty four miles of tarred road and no real communications or power networks. In the early to mid 1970's, Botswana depended on grants in aid from Britain to finance its recurrent expenditures. This totalled almost fifty percent of the recurrent budget, and almost all of the development programme was foreign funded.

This dire financial position changed with the discovery of diamonds, and on a lesser scale copper and nickel. And because of mineral developments, the economy experienced growth in the provision of health, social infrastructure and employment. These developments were financed by a combination of government funding and donor support.

In terms of the growth rate of income, as measured by the growth of real Gross Domestic Product, the economy has moved from among the poorest in the world to a current classification by the World Bank in the upper middle income countries. The rate of economic growth during the period 1965 to 1980 and 1980 to 1989 was 13.9 percent and 11.3 percent per annum respectively. The next highest growing economy, among the developing countries, for the latter period was Mauritius at 6 percent per annum while the South African economy grew by 1.3 percent per annum in the same period. This is against an average rate of growth for sub-Saharan Africa of 2.1 percent per annum.

The growth rate of the economy in the first decade after independence can be explained by the following factors: The ending of the major drought of the mid 1960's; access to the European Economic Community(EEC) market, at prices above world prices, for beef exports; the renegotiation of the Southern African Customs Union Agreement(SACUA); increasing inflows of aid from a wide range of donors; and the discovery and successful exploitation of diamonds and copper nickel(Harvey and Lewis,



1990). Diamonds were discovered in 1967, and by the late 1980's Botswana had become the second largest producer of diamonds by value after the former Soviet Union. It is largely the last factor that provided the growth momentum up to the present.

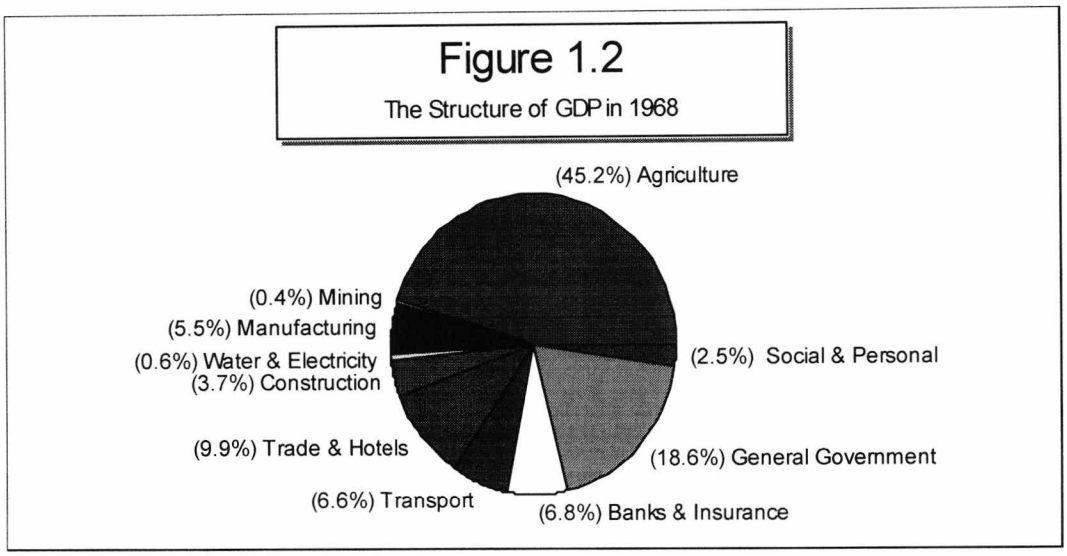
In figure 1.1 above we show the annual percentage change in total Gross Domestic Product and non-mineral Gross Domestic Product. The growth in total GDP is steadier than for non-mineral GDP. We also observe that the growth rates of total and non mineral GDP have been falling since 1986. This results from the combined effects of the slow down in world demand for diamonds and local manufactured and textile goods. It is also apparent that the growth performance of total GDP tends to fluctuate closely with the growth of total non mineral GDP because of the effect of the size of the mining sector in total output. The decline in the price of diamonds of 1980/81 reduced growth in total GDP from 14 percent in 1980 to 9.5 percent in 1981. On the other hand, the growth rate of non-mineral GDP declined from 6.0 percent to -0.35 percent in the same period. The fact that total gross domestic product remained higher than non mineral GDP reflects the simple fact that production continued at capacity even though not sold to the rest of the world. Observe also that although the growth rate of non mining GDP fell in 1977, it declined much faster thereafter due to the restrictive austerity measures implemented in response to balance of payments problem, and also because of the ending of the mining construction boom.

1.5 The Structure of GDP

The high growth rates in gross domestic product conceal the structural transformations and weaknesses that have characterised the economy over the years. The structure of GDP in the year 1968 is shown in the figure 1.2 below. The share of the agricultural sector declined as a proportion of GDP from 45 percent in 1968/69 to 23 percent in 1974. The contribution of the agricultural sector has since declined to 4 percent in 1994. On the other hand, the mining sector's contribution increased from 0.4 percent in 1968/69 to 12 percent in 1974. However, by 1988/89 the mining sector accounted for slightly over half of total GDP(50.9%) whereas agriculture contributed only 4.7 percent. The mining sector's contribution ultimately decreased to 33 percent in 1994.

The agricultural sector has been adversely affected by severe drought conditions that stretched at times for periods of over four years continuously. Furthermore, the mineral boom brought the problem of urban migration, further crippling the agricultural sector. It should be noted, however, that even though the agricultural sector declined as a proportion of GDP, the sector remains an important foreign exchange earner because of the beef industry, which exports mainly to the EEC market.

The growth and expansion of the mining sector was not, however, replicated in other sectors of the economy. The manufacturing sector, just like the agricultural sector, recorded modest growth. The sector accounted for 5.5 percent of total GDP in 1968/69 which increased to 9.0 percent in 1974. Its contribution ultimately declined to 4.7 percent in 1994/95. The minor contribution of the manufacturing sector to total GDP is attributable to, among other things: the size of the domestic market;



the lack of skilled labour and infrastructure; free trade within SACU, and high utility costs, mainly electricity and water rates.

Botswana has one of the highest utility rates in the region. According to the IMF(1995), estimates indicate that "power and telecommunications costs are twice as high as those in Zimbabwe and South Africa, while water rates are roughly 10 times those in Zimbabwe, and more than twice those of South Africa"(p15). It is also considered that increased competitiveness is contingent on the ability to restrain wage costs, improvements in productivity, and the ability of the financial system to serve potential investors. This could partially explain why the manufacturing sector has not provided the expected impetus to the economy despite the various investment packages provided by the government.

Mayo(1983) identifies three main constraints on the rate of industrial development in Botswana. Firstly, he dismisses the argument that the size of the domestic market is an explanatory factor for the slow rate of industrialisation because by being a member of the Southern Africa Customs Union, Botswana has access to a potentially larger market for exports. Mayo identifies the problem to be the dominance of South Africa in the Customs agreement. The strength of South Africa in the Union

is thought to be detrimental to the establishment of industry in the member states because member countries have had access to a wide range of inexpensive and indirectly subsidised South African products, especially food imports that have harmed local industry and agricultural production. Secondly, he attributes the poor performance of the industrial sector on the failure to use the accumulated financial resources to build productive capacity to a point where vulnerability to diamonds still persists. Botswana has a healthy foreign exchange reserve position, and the banking and monetary system has excess liquidity. Thirdly, he points to the absence of a comprehensive industrial policy which has resulted in continued dependence on primary production, the concentration of investment in physical infrastructure to complement mining developments, and the drive to attract private foreign investment even when there are sufficient resources available domestically.

However, the policy of government to attract foreign investment is intended to have private investors develop the manufacturing sector rather than direct government investment in the manufacturing sector. This limits the government's role to the provision of an appropriate legal framework, infrastructure and macroeconomic stability. Moreover, the government has invested some of the surpluses by providing investment packages through the Botswana Development Corporation, which provides equity and long term loans for industrial development and other development institutions. There were also some policy initiatives. For example, the Financial Assistance Policy(FAP) the thrust of which was, among other things, to encourage labour intensive operations through wage subsidy for unskilled labour; the Selibe-Phikwe Incentive Package(SIP), and Infant industry licenses. Assessments of the various packages have generally found them to have achieved their set objectives(World Bank, 1993; IMF, 1995).

The promising sector for the economy, in terms of potential contribution to gross domestic product, is the trade, hotels and restaurants sector which increased its contribution from 10 percent in 1968/69 to 17 percent in 1974. Even though its

contribution declined to 16.7 percent in 1994/95, it is the third largest sector after mining and general government sectors. The services sector benefits directly from the growing tourism industry. The trade, hotels and the restaurants sector has the potential to support diversification efforts through the establishment of wildlife utilisation schemes. These scheme can also alleviate unemployment in the rural areas. The construction sector has shown remarkable progress over the years. It increased its contribution from 3.7 percent in 1968/69 to 12.9 percent in 1974/75. The share of the construction sector has, however, since declined to 6 percent in 1994/95. The sector has been affected by prolonged years of drought. For example, during the severe drought of the 1980's major construction projects were suspended because of water restrictions which reduced the sector's contribution to 3.6 percent in 1982/83. The construction sector has benefitted from the government school and housing building programs, especially in the mid to late 1980's.

The general government sector, which would have been expected to grow much more rapidly, has being stagnant. It declined from 19 percent in 1968/69 to 14 percent in the period 1977- 1986. It ultimately increased its contribution to 17 percent in 1994/95.

Although the growth rate of gross domestic product has been impressive, the structure of output has seen the continued dependence on a single product. The manufacturing sector is beset with problems of productivity and competitiveness, whilst the employment potential of the service sector remains untested(IMF, 1995). Moreover, the highly capital intensive nature of the mining sector has not helped alleviate unemployment.

Income distribution is also reported to have worsened. The gini coefficient increased from 0.52 in 1974/75 to 0.55 in 1986 reflecting deterioration in the rural income distribution of the poorest 40 percent. However, it is worth bearing in mind the difference in methodology and coverage of the two surveys. The year 1986 was a drought year, whereas 1974/75 was a year of good rains. Harvey and Lewis(1990)

consider that years of rapid growth have had little measurable impact on poor household cash incomes[3].

Valentine(1993) argues, however, that although there was a decrease in the national cattle size from 2.97 million in 1981 to 2.25 million in 1987, and the number of households with no cattle increased to 38 percent in 1988, the distribution of income could not have declined due to the following factors. Firstly, the fall in income may have been overstated due to different methods used to calculate non cash income and the valuation of assets, and also by the omission of government transfers. Secondly, despite the fact that livestock farming income declined from 35 percent in 1974/75 to 20.2 percent in 1985/86, and income from crop farming also declined from 10.8 percent in 1974/75 to 3.2 percent in 1985/86, there were increases in income from wage employment from 21.5 percent in 1974/75 to 34.5 percent in 1985/86. These were further supplemented by increases in private transfers from 14.2 percent to 23.8 percent in the same period. Private transfers are especially important because of the strong links between migrant workers in the urban areas and extended families in the rural areas. These private transfers cushion against falling incomes during drought years. Thirdly, the Botswana government provided financial and in-kind support through drought relief programs to compensate for falling incomes in the rural areas. Finally, many households, especially those with no access to water and grazing land, diversified away from cattle into goats and sheep to cushion for the effects of drought.

Valentine concludes that when account is taken of the diversification of income sources by rural households the income distribution could not have worsened as suggested by Harvey and Lewis(1990), among others. Moreover, the percentage of income accruing to the bottom 40 percent of rural households remained 12 percent in 1974/75 and 1985/86 which contradicts with any conclusions of a declining income distribution .

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[3] See also Curry, R.L. jr (1987) Poverty and Mass Unemployment in Mineral-Rich Botswana, *The American Journal of Economics and Sociology,* Volume 46, Number 1.

1.6 Formal Sector Employment

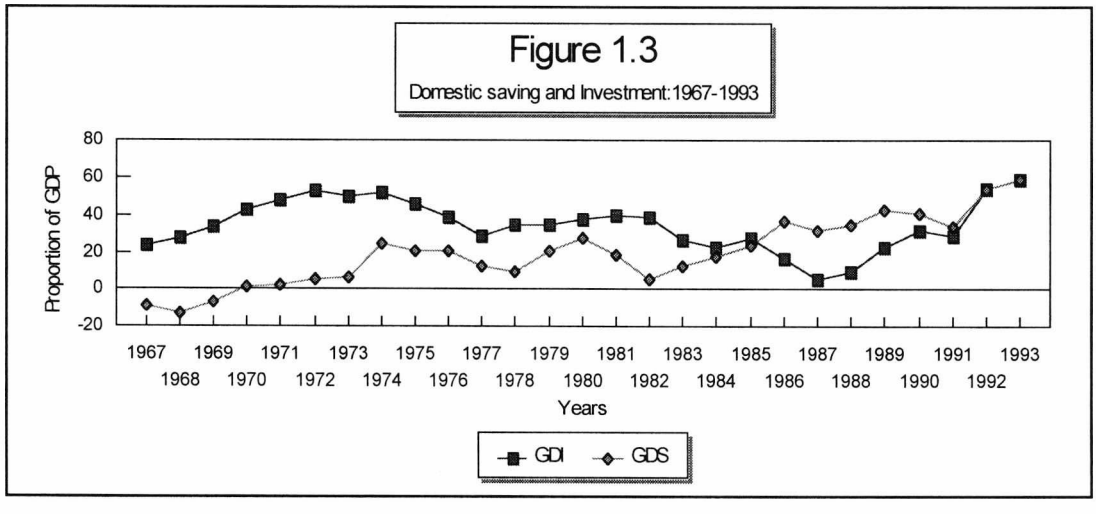
Total formal sector employment increased dramatically in the 1980's and 1990's. Formal sector employment increased from 41300 in 1981 to 97400 in 1991; an average growth rate of 8.9 percent per annum. Rapid employment growth was experienced in the late 1980's when it increased at an average rate of 12.5 percent per year between 1986 and 1991. This does not, however, include the informal sector which is estimated to be small but rising (Sunny and Babikanyisa, 1994).

Due to the capital intensity of the mining sector, direct employment creation by the sector is small when it is considered that the mining sector at some point contributed almost 50 percent of total output. Employment by the mining sector averaged approximately 4.0 percent of total paid employment over the years 1972 to 1980. It increased to 9.4 percent in 1980 during the construction of the third diamond mine. It has since declined to 3.6 percent in 1995. However, the contribution to total employment by the mining sector has been indirect to other sectors through its effect on government expenditures and finances.

Although the proportion of government employment(includes local government, but excludes Botswana Defence Force) increased from 25 percent in 1972 to 36 percent in 1995, because of expansion in the provision of education and health services, total private sector employment was 60 percent in 1992. On the other hand, the manufacturing sector only increased its share of total employment from 6.4 percent in 1972 to 10 percent in 1995. The relative decline of the agricultural sector in total gross domestic product is again reflected in total employment. Total employment in the agricultural sector was 11.7 percent in 1972, and has since declined to 1.9 percent of total employment in 1995. The mining and agricultural sectors combined accounted for 5.6 percent of total employment in 1995. It is likely though that employment in the agricultural sector could be underestimated because employees in the agricultural processing sector are reported as employed in manufacturing.

1.7 Domestic Saving and Investment

In figure 1.3 below we plot the trends in domestic saving and investment over the period 1967-1993. There are two distinct periods in the performance of total savings and investment. It can be seen that from 1967 to 1983 the ratio of investment to GDP has consistently exceeded the savings ratio, whereas between 1984 and 1991 domestic saving exceeded domestic investment. The ratio of domestic investment has experienced a trend decline from 1972 to 1987. Whereas domestic investment was expected to fall because of the balance of payments difficulties of 1981-82, there was a moderate increase instead. This was because the balance of payments difficulties coincided with the development of the second mine in the town of Jwaneng. This allowed for moderate increases in investment despite restrictions on demand. Thereafter, the investment ratio declined to 6 percent in 1987. The construction boom of the late 1980's resulted in the investment ratio increasing to 32 percent in 1990. The investment ratio later increased to 58.6 percent in 1993.



1.7.1 Total Domestic Saving

The ratio of total domestic saving to gross domestic product was negative in the 1960's. It was -8.4 percent in 1967. It became severely negative at -13.0 percent the following year. Following the development of mining projects, domestic savings increased from 1.67 percent in 1970 to 27.4 percent in 1980. This was, however, reversed by the balance of payments problem that occurred in 1981/82. This saw the domestic savings ratio declining to 5.5 percent. The savings ratio has since increased to 58.6 percent in 1993. This is against an investment ratio of 58.6 percent in 1993.

The performance of the different types of savings varied between 1967 and 1993. The ratio of government saving was -7.0 percent in 1971. This later deteriorated to -17.0 percent in 1972. The government saving ratio remained negative for most of the 1970's until 1983 when it became positive. It was 20.9 percent in 1986. Government saving has since declined to 9.8 percent in 1993. The negative government saving ratio reflects increased government investment in the development of infrastructure in schools and roads in the period 1970-1980. When government savings are measured as the fiscal deficit, they are underestimated by the size of foreign reserves, which are also available to the government. Government saving when calculated as the fiscal deficit is also underestimated by the stock of government cash balances. Finally, private saving increased from 8.7 percent in 1970 to 27.5 percent in 1980. It has since increased to 48.7 percent in 1993.

1.7.2 Total Domestic Investment

The ratio of domestic investment to gross domestic product was 23 percent in 1967. It increased to 52 percent in 1974. It declined to 29 percent in 1991. But by 1993 the investment ratio had increased to 58.6 percent of total gross domestic product. The rise in investment from 1967 to 1972 reflects capital investments into the development of the Orapa mining project. The development phase started in June 1967 with

production starting in July 1971. The consistently high investment ratios in the period 1967-1985 also reflect government investment in social infrastructure, for example, schools, hospitals and roads and investment in housing developments in the major towns.

1.8 Government Revenue and Expenditure

At independence the Botswana government depended on aid and grants to finance its recurrent and development expenditures. The low fiscal resources at independence contributed to the adoption of a cautious budgetary strategy regarding government's financial management policy. This enabled the government to attain financial viability by 1973. The improvement in fiscal revenues was also the result of the renegotiation of the SACUA, and most importantly the discovery of diamonds. By 1986, the government had for some time had budgetary surpluses. This shifted emphasis from the search for new revenue sources to the management and investment of financial surpluses.

1.8.1 Government Revenue

The first initiative in reversing the fiscal imbalance at independence was to renegotiate the Customs Union Agreement. In negotiating, the share of customs union revenue was linked to the growth in imports. The 1910 agreement based the share of customs union revenue on Botswana's imports as a percentage of total imports into the four member countries averaged over the three years prior to 1910. Under the 1910 agreement the share of revenue due to Botswana was unaffected by the growth in imports against member states. The benefits of renegotiation were realised when customs revenue increased from P11.6m in 1966 to P73.9m in 1971. This represents an annual growth rate of 26 percent. As a share of total revenues and grants, customs union revenues increased from 7 percent to 28 percent in the same period.

The share of grants to total revenues declined from 61 percent in 1966 to 46

percent in 1971. This coincided with the improvement in the contribution of mineral revenues accounting for 20 percent of total revenues in 1971. Mineral revenues increased rapidly after 1981 as the third diamond mine in Jwaneng started operation. Mineral revenues accounted for 42 percent of total revenues in 1994. The fact that one source of revenue accounts for such a large share of total revenues creates instabilities in government finances and expenditures(see chapter 5). This was demonstrated when, in order to counter the effects of "illicit" diamonds from the former Soviet Union and Angola, the Central Selling Organisation imposed a quota on diamond output from Botswana of 85 percent in 1994. The effect on government programs was cushioned by drawing down on cash balances, however.

The other major source of revenue is profits from the investment in the international markets of foreign reserves by the central bank. This constituted 23 percent of total revenues in 1994. Customs and excise duties and non mineral revenues accounted for 14 percent and 10 percent respectively in 1994. The low ratio of income taxes to total revenues reflects the inadequacy of income tax as an important source of revenue to finance economic development. The remaining 11 percent is generated from sales tax, and interest earnings, etc.

1.8.2 Government Expenditure

Total expenditures and net lending increased in real terms from P188.9M in 1966 to P512M in 1976 - an average increase of 10 percent per annum. The 1970's was a period of rapid expansion of basic services that were lacking, and as a result the overall budget recorded deficits except in 1979/80. The deficits were financed through external borrowing and foreign grants. The 1980's represent years when government revenues grew faster than government expenditures. The increased government revenues were from the coming on stream of the third diamond mine. Government revenues have been declining since 1991, while government expenditures have

continued to increase, albeit, at a declining rate. The 1990's are marked by rising government expenditures against declining and unstable mining revenues. The government adopted a strict fiscal policy position that ensured a sustainable budget over the medium term(Budget Speech, 1994).

1.9 The Financial System and Policy

The Bank of Botswana was established in 1975 and started operation in August 1976 with the introduction of the national currency , Pula (meaning rain). The currency was initially set at par with the South African Rand. The Rand had been the official currency since 1960 because of Botswana's membership of the Rand Monetary Union. The monetary area included all members of SACUA. The establishment of the Botswana central bank was based on the following objectives:

a) The need to manage foreign exchange reserves independently

b) The ability to choose an independent interest rate policy

c) The need to retain domestic savings for investment within the domestic economy

d) The need to introduce a separate currency and hence establish a suitable exchange rate policy.

These functions had previously been performed by the South African Reserve Board. This effectively made Botswana a part of South Africa - as such, supporting the latter's development process. It was important, therefore, that these functions be performed by the Bank of Botswana within the country's overall economic objectives, and to lessen dependence on the South African economic and financial system. It could be argued that the establishment of the central bank marked the birth and practice of monetary policy, and efforts to develop the financial system in Botswana.

The central bank stands at the apex of the financial system, and since inception has grown to provide some essential services, some of which are unique. Some of these functions may be unrequired or inappropriate for central banks of developed countries, but seem to complement the structure of the economies of less developed countries.

These economies are characterised by a large subsistence sector; a greater dependence on external trade; and undeveloped money and capital markets. These limit the ability of central banks to stimulate or restrain effective demand through monetary operations. At times, central banks in developing countries have had to provide financial incentives to firms to deposit their funds with the central bank and invest these into pre-arranged projects to support economic development. Whilst direct investment of funds was not done by the central bank, the Bank of Botswana accepted deposits from the private sector because of the excess liquidity in the financial market. This was discontinued when Bank of Botswana Certificates were introduced in 1991. This was a more market-orientated solution to the excess liquidity problem.

According to Table 1.1 total reserves held by the central bank increased at an annual rate of 42 percent between 1976 and 1986. On the other hand, total assets and liabilities increased by 137 percent per annum in the period 1976 -1986. The largest item on the assets side is foreign exchange reserves which make up 99 percent of total assets. On the liabilities side, government deposits account for 53 percent of total liabilities. These reflect savings from mineral revenues. Government deposits grew at an annual rate of 36 percent between 1984 and 1993. Because of the balance of payments problems of 1981-1982 government savings declined to 29 percent of total liabilities.

1.9.1 Regulation and Structure of the Financial System

The regulatory framework is important in less developed countries because of the need to build confidence in the financial system. This requires the central bank to achieve the right balance between regulation and competition in order to ensure that regulation does not impair both the dynamic and allocative efficiency of the financial system. This means that financial regulation be designed in such a way that it permits competition to increase whilst ensuring investor protection and financial market

stability. The financial system in Botswana is regulated by the Financial Institutions Act of 1975. This was amended by the Financial Institutions Act of 1986. The banking market has for many years been dominated by two commercial banks, Barclays Bank and Standard Bank. To increase competition, the Bank of Botswana initiated a number of measures. Firstly, it deregulated interest rate setting to the commercial banks. This helped increase public awareness of the choices regarding borrowing and placement of deposits. Secondly, the Inter bank agreement which fixed minimum bank charges was replaced with a more flexible and competitive system in which each bank displays publicly its approved bank charges. Thirdly, the policy for granting new licenses was relaxed while remaining reasonably selective in order to ensure that competitiveness and quality of service in the banking system is maintained.

When the Bank of Botswana was established the financial system was virtually non existent. But since then the central bank has encouraged the expansion and development of a variety of financial institutions. It licensed the establishment of additional banks and supervised a number of takeovers in the banking sector. The First National Bank and the Union Bank were licensed to operate in 1991.

The number of commercial banks increased from two to four in the market. The First National Bank later took over the operations of Bank of Credit and Commerce. The same bank acquired all financial assets of Financial Services Leasing Company and Zimbabwe commercial bank. In table 1.2 we show the types of financial institutions in the market, their year of establishment, and total assets at the end of 1994. This is intended to provide an indication of the size of the domestic financial system. Total assets and liabilities of all commercial banks increased at an average rate of 23 percent per annum between 1982 and 1993, and as such can be regarded as well capitalised with capital and reserves averaging 11.4 percent of total liabilities in 1994 against a legal requirement of 6 percent.

Table 1. 1

Assets and Liabilities of the Bank of Botswana: 1976-1993(Pm)

Year	Total Reserves	Assets /Liabilities	Government deposits
1976	65.1	67.4	28.8
1977	82.8	85.7	38.1
1978	124.5	127.8	61.4
1979	210.7	213.7	82.2
1980			
1981	223.0	227.9	66.6
1982	310.8	314.4	94.8
1983	457.2	461.1	171.1
1984	736.7	739.3	353.6
1985	1644.5	1649.1	613.3
1986	2200.5	2205.7	1235.3
1987	3151.6	3163.7	1789.2
1988	4368.0	4390.8	2325.8
1989	5247.5	5259.3	3013.1
1990	6234.0	6251.0	3965.8
1991	7707.1	7743.2	4264.1
1992	8561.1	8696.5	5079.6
1993	10508.7	10574.6	5589.0

Source : Bank Of Botswana Annual Reports; Central Statistics Office Bulletins

Table 1.2: Types of Financial Institutions

Financial Institutions	Year of Operation	Total Assets(Pm)
Bank of Botswana	1976	10576.0
Botswana Building Society	1970	324.9
Botswana Cooperative Society	1974	82.9
Botswana Development Corp	1970	475.9
Botswana Savings Bank	1911	61.2
Botswana Barclays Bank	1950	1080.3
First National Bank	1991	489.7
Standard Chartered Bank	1950	973.8
National Development Bank	1965	84.1
Union Bank/StanBic	1992	160.3
Financial Services Company	1964	84.1
United Leasing Company	1990	60.0
Tswelelo	1984	20.4
Sechaba Investment Trust	1984	24.5
Stockbrokers Botswana	1989	
Botswana Insurance Holding	1975	139.6
Eagle Insurance	1976	6.6

Source : Bank of Botswana Annual report 1993.

1.10 Total Domestic Credit

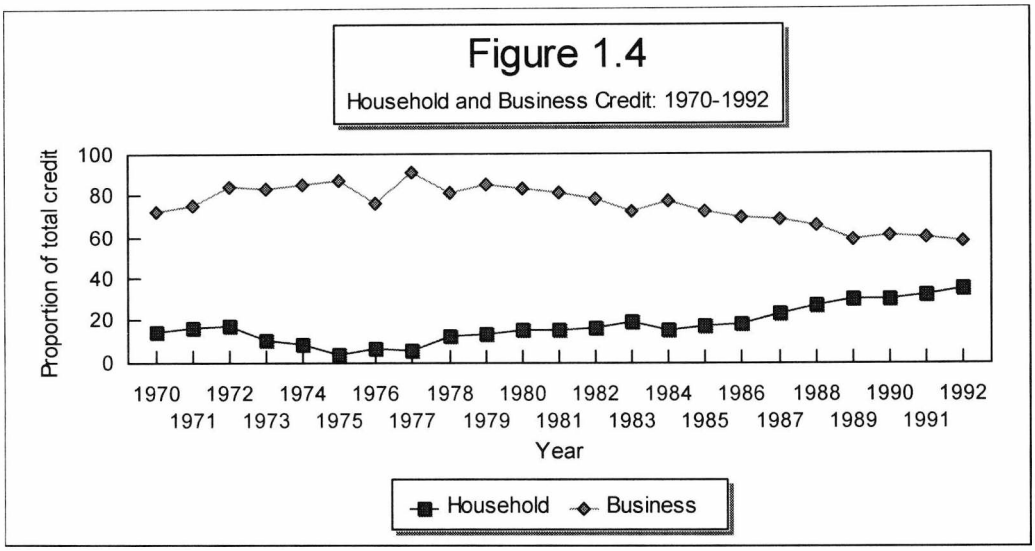
The growth in commercial bank credit was stagnant until 1979 when it expanded to grow at an annual rate of 19.8 percent between 1979 and 1981. Then it declined in the following year due to the imposition of credit ceilings and interest rate increases of 1981. It also declined due to the completion of the construction of the Jwaneng mine which reduced demand for imports associated with the project(Bell, 1987). Credit

expansion continued after the removal of restrictive measures, to grow at 24.8 percent per annum in the 1983-1993 period. The key issue from a development point of view is whether the growth in bank credit complemented the process of economic diversification. To assess that we present in the following section the distribution of credit by sector.

1.10.1 The Distribution of Credit

An evaluation of the sectoral distribution of credit shows a pattern of demand dominated by two sectors, the household and trade sectors. The proportion of credit to the household sector increased from 7 percent in 1976 to 39.0 percent in 1993. This was followed by the trade and business sector at 13 percent each in the same period. The share of credit allocated to the agricultural sector accounted for 19 percent in 1976, but declined to 2 percent in 1993. Whilst the decline in credit to the agricultural sector is explained by occasional drought spells, the sector also obtains credit from other financial institutions, especially those created by the government, like the National Development Bank. On the other hand, parastatal organisations account for about 6 percent of total private sector credit. The share of credit to the manufacturing sector was low over the same period. The sector accounted for 6 percent of credit in 1976, but later increased to 9 percent in 1993. The share of credit allocated to the private sector, excluding the household sector, was 66 percent in 1976 but declined to 57 percent of total credit in 1994.

Three key issues emerge that have concerned the monetary authorities in Botswana; the growing share of credit claimed by the household sector, the relatively small proportion of credit going into the manufacturing sector, and the short term structure of commercial bank lending. From figure 1.4 below we observe that the share of credit allocated to the private sector has been on the decline whereas credit flowing



to the household sector has been rising. However, credit allocated to the private sector is still larger than credit channelled to the household sector. And this refers to credit allocated by the commercial banking sector only. It excludes credit allocated by parastatal organisations. The increase in the growth of credit to the household sector is due to the increase in incomes(paid employment and government transfer payments) which afford the opportunity to pledge security when borrowing. The greater proportion of commercial bank borrowing has tended to meet the short end of the market, a large part of which is the household sector. According to table 1.3 below the structure of commercial bank lending is biased to the provision of short term loans and advances.

The single largest form of lending is through overdrafts. Lending by overdrafts averages 30 percent of total loans and advances over the period 1986-1995. This is more than twice the share of credit allocated for loans with a maturity period of 3-5 years(12.5%) over the same period. This pattern of lending becomes even clearer when we consider the ratio of credit with a maturity of less than 3 years. This accounts for an average ratio of 69 percent of total loans and advances per annum. This is against an average ratio of 18 percent per annum for loans and advances with a maturity of 5

years and above. It is clear, therefore, that the commercial banking system alone cannot provide for the needs of long term investors in the market.

Table 1.3

The Maturity of Commercial Bank Loans and Advances: 1986-1995(%)

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
OD	21.3	20.4	34.1	34.0	34.7	32.5	34.8	33.1	31.4	25.3
1-6M	21.6	22.2	10.7	8.6	15.0	12.9	10.2	9.8	9.7	12.8
6-12M	11.3	11.3	8.8	12.6	10.5	10.8	9.4	12.5	8.8	8.0
1-2 years	12.3	14.2	13.4	10.4	11.4	14.0	11.1	11.2	12.0	11.7
2-3 years	9.2	10.7	14.3	9.2	9.2	11.7	11.2	10.8	10.6	11.2
3-5 years	18.1	14.4	11.5	16.3	11.7	8.6	11.0	9.5	11.1	12.8
5-7 years	1.3	2.2	4.1	4.5	1.9	3.9	2.9	4.4	3.2	3.8
7-10 years	0.8	2.6	1.0	2.1	2.9	2.8	5.8	4.3	4.5	5.9
10+	4.2	2.0	2.1	2.2	2.7	2.9	3.5	4.5	8.8	8.6
Total	100	100	100	100	100	100	100	100	100	100

Source: Bank of Botswana(1995) Annual Report. NB: OD means Overdraft.

1.10.2 Long Term Lending

The provision of credit to the private sector is a major function of commercial banks. But due to the lack of funds provided for long term investment in the financial system the government provides credit through specially created funds, Public Debt Service Fund(PDSF); and the Revenue Stabilisation Fund (RSF). Debt from the two funds is mainly advanced to parastatal organisations. The PDSF was to act as the source of domestic repayments that would match interest and principal payments on foreign loans, whereas the RSF was meant to build up temporary funds in years of rapid growth which were to be used in low growth years. Resources from the revenue stabilisation

funds are loaned out for shorter periods.

There are several factors that may explain the greater participation by the government in the financial intermediation process. Firstly, commercial banks have tended to supply short term loans citing the lack of long term liabilities as a major constraint. The government responded by changing the relevant law to allow the the government to deposit money with a five year maturity with commercial banks in order that they should have long term liabilities out of which to make long term loans. Secondly, the lack of a developed capital market limited options for private firms to raise capital in the market. Prior to the establishment of the Botswana share market in 1989 there was no market for the trading of long term instruments. But since its establishment some companies have raised financial capital through the market. Thirdly, the public debt service fund and the revenue stabilisation fund charged interest rates that were lower than the prime lending rates of commercial banks thus further entrenching government lending in the market. Fourthly, the government provided an exchange risk sharing scheme under which the bulk of the exchange rate losses from loans secured from off-shore banks by parastatal organisations were borne by the government(Bank of Botswana, 1987).

The Bank of Botswana(1987) conducted a survey to assess both medium and long term credit requirements in the domestic market, and the extent to which such demands were met by the financial system. The study made a number of findings. Firstly, it found that long term finance was an important source for funding investment plans with at least 75 percent of planned investment requiring medium to long term loans. Secondly, non commercial sources of finance were found to be more important in funding investment. This was not unexpected as the government alone, through the PDSF and the RSF, is the single largest lender. Finally, external sources of finance were found to be the single most important source of long term finance. Then again a larger part of such funding represents large parastatal corporations(Bank of Botswana, 1987).

Undoubtedly, there may be a conflict between the interests of commercial banks and the manner in which they are expected to support economic development in less developed countries. This is probably justified by the fact that commercial banks are the dominant institutions in financial markets of developing countries. But more often, such demands extend beyond what would normally be expected in a normal commercial environment.

The failure of the commercial banks to meet the demand to fund more long term projects can be taken to have resulted in increased government provision of funds in the market through its own created financial institutions. The allocation of credit by the government in the market increased by an average of 30 percent per annum between 1982 and 1993. Moreover, when commercial banks had total outstanding loans of P1563.0M in 1993, the government alone was owed almost twice (P2225.0M). This prompted the World Bank(1991) to comment that to the extent that a large volume of financial resources is channelled outside the domestic financial system the role of financial intermediation in Botswana is limited. In practice, the government and foreign borrowing provide long term capital and the commercial banks short term capital.

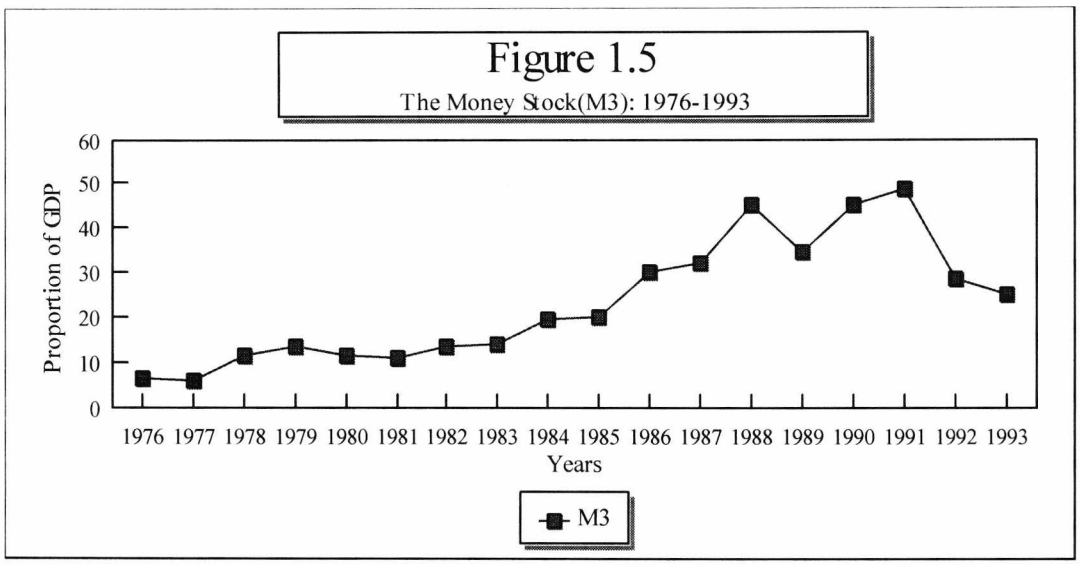
1.11 The Money Supply

The conventional measure of financial deepening, the ratio of M3 to GDP, has increased moderately over the years(see figure 1.5). The ratio measures the development and monetisation of the financial system. The more financial depth in the economy the greater the potential for generating a real investible surplus.

There have been a number of changes in the definitions of the money supply reflecting the level and development of the financial system. The first set of measures are contained in Bank of Botswana(1978, 1979) Annual Reports. The money supply was classified into three main aggregates: M1, M3, and M4. M1 is defined as currency

in circulation plus current and call account deposits; M3 is M1 plus savings deposits plus deposits placed with the commercial banks for less than six months; and M4 is defined as M3 plus deposits placed for more than six months, non-bank holding of treasury bills, net of deposits at the Botswana Building Society, and working balances held abroad by residents to pay for imports.

These measures have been redefined to reflect additional financial instruments in the market(Bank of Botswana, 1991, 1994). M1 is now defined as currency in



circulation plus current account deposits; M2 is M1 plus savings, notice and time deposits. Call account deposits are included in this measure. M3 is defined as M2 plus private deposits held at the central bank plus Bank of Botswana certificates, held by the non-banking private sector.

Table 1.4

The Money Supply(% of GDP$_{1987}$)

Year	M1	M2	M3
1982	6.74	13.52	13.65
1983	6.41	12.86	15.47
1984	6.27	15.64	15.82
1985	6.90	14.91	21.73
1986	9.10	15.98	22.72
1987	10.56	18.43	35.16
1988	12.03	22.48	37.03
1989	13.02	25.44	47.80
1990	14.71	30.15	38.80
1991	12.86	38.44	48.64
1992	13.18	41.25	53.40
1993	14.47	45.25	56.40

Source: Bank of Botswana(1993). Annual Report

1.12 Exchange Control Regulation

The government put into place exchange controls on the current and capital accounts in 1976 to counter expected capital flight when the local currency was introduced to replace the South African Rand. But these have now been liberalised as they are seen as operating counter to attempts at attracting foreign investment. They are also considered to hamper the efficiency of the private sector. However, exchange controls have been the least restrictive in the region, if not in Africa. In 1995 the government decided to move from Article XIV of the International Monetary Fund

Articles of association to Article VIII[4]. Under Article VIII members pledge to remove all exchange restrictions over current account transactions and not to have multiple currency practices. The liberalisation of exchange controls is intended to make the country attractive to foreign private capital and also to lower costs of business transactions(Budget Speech, 1995, 1996). Exchange control liberalisation is also intended to complement the financial liberalisation program. The Bank of Botswana(1994) states:

> The most significant distortion[of exchange controls] has been the implicit tax on Botswana savers. During lengthy periods in the past when real returns offered on savings in Botswana were negative residents were prevented by exchange controls from legally placing their savings abroad in locations where they could earn a higher return. The controls were maintained in the hope that savings would be invested productively in the domestic economy rather than abroad. However, with productive outlets for savings limited, as bankable investment opportunities had been exhausted, these savings bottled up in Botswana contributed to excess liquidity in the banking sector, fuelling inflation, unsound speculative behaviour and wasteful consumption(p.74).

A number of measures have been instituted to liberalise the capital account. For example, businesses are now permitted to invest up to a million pula abroad without seeking prior central bank approval. Businesses are further permitted to maintain foreign currency accounts to meet their imports and exports. The limit on institutional investor's outward investment has been raised from 50 percent to 65 percent of their total assets. Finally, commercial banks are permitted to advance loans denominated in

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[4] Botswana was late in applying for Article VIII status. Some of the sub-Saharan countries that changed from Article XIV before Botswana are Djibouti(1980); The Gambia(1993)Seychelles(1978) and South Africa(1973).

foreign currency. The effects of these exchange control liberalisation measures, in terms of large inflows of foreign investment, are yet to be realised. However, there have been large scale investment abroad by pension funds and other institutional investors.

1.13 Exchange Rate Policy

In August 1976, the Pula was pegged to the South African Rand. The peg was changed in 1980 to include a trade weighted basket of currencies containing SDR's, Rand, Sterling pound, Japanese Yen and the German mark. The exchange rate policy has been used as an anti-inflation instrument, and also to maintain international competitiveness of non-mining and non-beef exports which are essential to government diversification and employment creation efforts. There were three revaluations between 1977 and 1980 which were undertaken to counter inflation from South Africa. Revaluation was considered the only equitable instrument because Botswana imports almost all goods consumed domestically. Furthermore expenditure surveys showed low income people as spending a higher proportion of their cash income on imports than high income groups. The lowest income groups spent about 70 percent of their cash income on imports, compared with 40 percent for higher income groups(Harvey, 1985). This is because of the high proportion of food imports in the income of the low income groups.

There are also instances when the Pula was devalued against the Rand to maintain competitiveness of the non traditional sectors. The first of such was in 1982 when the Pula was devalued as part of a comprehensive package to counter a balance of payments deficit.

1.14 Economic Crisis of 1981-1982

The only balance of payments deficit in the economy occurred during fiscal year 1981/82 as a result of the collapse in the international price of diamonds. For almost three months the country exported no diamonds at all and was compelled to stockpile larger gem diamonds for several years . As a result between April and December of 1981 international reserves declined by 22 percent. The collapse of diamond prices took place at the time when the construction of the third mine (Jwaneng) was contributing to economic expansion.

This was reversed, however, when the government instituted a number of fiscal and monetary policy measures to correct the balance of payments deficit. These included: increasing the prime lending rate from 11 percent in the latter half of 1981 to 14.5 percent; imposing credit ceilings on commercial bank lending; cut backs in planned government expenditures; freeze of public sector salaries except the minimum wage; and finally the devaluation of the Pula by 10 percent.

By 1982 diamond sales had picked and the trade gap was narrowing which improved the balance of payments. The rise in export performance was also boosted by the resumption of full production at the Jwaneng mine. It is difficult to assess, however, whether the policy measures employed at the time were effective as the crisis period was very short.

1.15 Conclusion

The Botswana economy experienced considerably high growth rates compared to other sub- Saharan African countries. The high growth rates were due to the profitable development of large deposits of diamonds. The mineral wealth has been invested in the provision of education, health, road and communications networks. And although the mining sector remains the single largest sector other sectors have increased their contribution to total output.

The influence of the mining sector in the economy is reflected in government finances. The mining sector contributes a large percentage of total government revenues followed by revenue from the customs union and general sales taxes. The fact that mineral revenues contribute a large proportion of total revenues has created instability in government expenditures. This has been demonstrated during occasional price cuts by the DeBeers mining company[5].

The financial strength of the government is again reflected in the size of its credit allocation to the market. The government allocates more credit than all of the private financial institutions combined. Even though the large share of government credit is allocated to parastatal organisation some of the credit is allocated to the private sector through development institutions. Average economic growth rates have slowed in the 1990's to rates less than those experienced in the 1980's. And because economic growth is largely diamond led this has heightened the need to intensify efforts to achieve economic diversification because successful economic deversification also leads to a diversified revenue base. The Botswana government sought to achieve economic diversification by adopting policies that promote domestic and external mobilisation of resources. There are three main policy initiatives: firstly, domestic financial market liberalisation; secondly, tax policy reforms and thirdly, exchange control liberalisation.

Financial liberalisation is intended to address three main problems: firstly, the fact that major financial flows take place outside the private financial system; secondly, the lack of competition in the financial markets which results in the provision of a poor quality of service and thirdly, the establishment and development of the capital market in order to improve the range of financial instruments offered in the market. This will address the lack of funding for long term projects which has resulted in the greater participation of the government in the domestic financial system. Exchange control

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[5] On the whole the government has mitigated the efffects of revenue instability by maintaining large fiscal surpluses to allow for smooth expenditure planning.

measures adopted since 1995 aim to attract foreign capital inflows. Finally, tax reforms have shifted the emphasis from direct to indirect taxes. The major reductions are on company tax rates. In the next chapters we will assess the extent to which financial market reforms, taxation reforms, and exchage control reforms have complemented government efforts towards economic diversification.

Chapter Two

Financial Liberalisation: A Review of the Literature

2.1 Introduction

This chapter reviews the theoretical literature on financial liberalisation. The theoretical review uses as a starting point contributions by Mckinnon(1973)and Shaw(1973). Moreover, Mckinnon and Shaw revived the issue of financial market liberalisation to put it at the forefront of economic policy in developing countries. By seeking to address the structural problems in financial markets of developing countries, the financial liberalisation model fits naturally into the structural adjustment programs widely implemented by the World Bank in developing countries. In fact, the World Bank(1989) World Development Report was wholly devoted to the discussion of financial liberalisation in developing countries.

The chapter is divided into six sections. The sections are set out according to the different theoretical positions regarding the issue of financial liberalisation. We consider that presenting the review in this way will bring to focus the basic differences in theoretical formulation regarding financial liberalisation, and the resulting policy prescriptions.

The first section offers a brief discussion of the relationship between finance and development. This is followed by a review of the Mckinnon and Shaw model. The model argues that interest rate reform leads to a higher volume of saving and investment, and to a more rapid rate of economic growth. This comes about by greater financial deepening and improved financial intermediation. The liberalisation of the interest rate on deposits is regarded as important for successful financial reform. The third section discusses the main pro-liberalisation models. These models extend the Mckinnon and Shaw model by considering the implications of interest rate decontrol for macroeconomic stabilisation. The models argue that financial liberalisation be

included as part of a comprehensive package of economic liberalisation. The fourth section discusses the neo-structuralists models that question the restrictive assumptions of the Mckinnon and Shaw model regarding specifically the nature of financial and capital markets in developing countries. The Neo-Structuralists show within Tobin-type portfolio models that where there are other assets, apart from currency and demand deposits, interest rate increases may lead to different conclusions from those derived within the Mckinnon-Shaw model. They argue that because of the presence of curb markets in the financial markets of developing countries, asset substitutability may reduce the amount of total loanable funds in the market.

The fifth section discusses the New-Keynesian models. These models argue against the notion that interest rate de-control allows for the rationing of credit to the most efficient borrower. The argument they advance is that the allocation of financial resources as percieved within the McKinnon-Shaw model ignores the informational problems that characterise loan markets. Loan markets are shown to operate differently because of the information required for credit assessment of indidvidual lenders. The main conclusion by the New Keynesians is that financial liberalisation does not eliminate credit rationing; that profit maximisation is consistent with credit rationing.

In the last section we evaluate Post-Keynesian models. These study the impact of interest rate liberalisation within models that emphasise the effects of high interest rates on effective demand. Financial liberalisation is shown to dampen effective demand more than it increases aggregate supply. It is the negative effect on demand which is the important issue to consider. Furthermore, there is also the possibility that higher interest rates may threaten the stability of the financial system creating a climate for speculation-led development. Moreover, some of the models argue that in theory equilibrium in the financial market may be consistent with non-positive real interest rates.

2.2 Finance and Development

In their work, Gurley and Shaw(1960, 1967) were concerned to demontrate the role that financial intermediation or finance can perform in achieving a higher rate of economic growth and development[1]. The main argument is that there exists a positive relationship between financial asset accumulation and real economic growth. Gurley and Shaw(1967) state:

> Anything that the financial sector does to accelerate savings, improve their allocation to investment and economise costs in transmitting saving to investment implies an increase both in its own flows and stocks of financial assets and in flows and stocks of real output.

The relationship between finance and growth depends on the type of financial system, however. There are two types of financial systems: the bank-based and the capital market-based financial system (KhatKhate and Reichel, 1980; Mayer, 1989). The bank based financial system is characterised by the close association between banks and industrial firms. In this system bank loans constitute the major source of company finance rather than equity. Capital markets are undeveloped in the bank-based system.

The capital-market based financial system, on the other hand, has highly developed capital markets which provide opportunities to raise long term finance. In this system banks provide very limited sources of company finance. The major problem with the capital-market based system is the inherent instability and fragility which arises from the mismatch between debt commitments and income flows. It is generally the case that finance is not used for productive investment but for short term speculation.

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[1] See also Schumpeter, J.A (1961) *The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest, and the Business Cycle.*(NewYork: Oxford University Press).

This promotes what is commonly called speculation-led development, where short term assets that provide higher returns are preferred to investment in long term productive expansion(Grabel, 1995a; 1995b).

The link between finance and growth could be the reverse in the capital-market based system since the financial system responds endogenously to capital asset demand requirements. Specifically, causality may be from growth to finance where family owned firms are dominant. Small family firms tend to rely on internal profits to finance capital expansion, and are as such unlikely to be constrained by the availability of external finance(this assumes small to medium firms). This would suggest that for the capital market based system the growth of income, through increased investment, leads to increased economic growth. The bank-based financial system has causality that occurs from finance to growth.

Although financial development is regarded as important for economic growth and development, disagreement remains regarding the form in which resources are made available to finance economic development.

There are three main approaches to the financing of economic growth from domestic resources[2]. Firstly, there is the prior savings approach. This identifies saving as a prerequisite for investment and growth. In this approach, an increase in the savings ratio is transformed into productive physical capital through variations in the rate of interest.

Secondly, there is the Keynesian approach to the financing of economic development[3]. This considers investment to determine the level of saving, and not the other way round. This is automatically possible when resources are less than fully employed because of the potential for output to increase without a concomitant rise in

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[2]See Thirlwall, A.P. (1994) *Growth and Development*.(London: Macmillian).

[3] See Asimakopulos, A. (1983) "Keynes and Kalecki on Finance, Investment and Saving" *Cambridge Journal of Economics*. Volume 7.

inflation. Moreover, when resources are fully employed saving can increase through inflation redistributing income from groups with a lower propensity to save to those with a higher savings propensity.

In the Keynesian view, the level of output and employment depend on net investment, where investment, in turn, depends on finance and business expectations. Finance is defined as the *credit* required in the interval between actual investment and the sale of output. The banking system provides initial funding whereupon the appropriate level of income will be generated out of which will necessarily remain an amount of saving sufficient to take care of new investment. It is not saving which is important for growth but credit, as Schumpeter(1961) states:

> It is always a question, not of transforming purchasing power which already exists on someone's possession, but the creation of new purchasing power out of nothing....., which is added to the exisiting circulation. And this is the source from which new combinations *are* often financed, and from which they would have to be financed *always*, if the results of previous development did not exist at any moment(p.73).

The market can therefore become congested through a shortage of cash but not through a shortage of finance(Chick, 1987). For the Keynesians, it is the availability of finance for firms which is important for the independence of investment from saving(Asimakopulos, 1986; Davidson, 1986; Chick, 1987), because saving is a residual of past development. Moreover, investment determines saving because "saving is explicable only by the results of previous development. By far the greater part of it does not come from thrift in the strict sense, that is from abstaining from the consumption of one's regular income, but it consists of funds which are themselves the

results of successful innovation and in which..... we recognise entrepreneurial profit" (p.72)[4].

It is the recognition of the importance of investment for economic growth which forms the fundamental difference between the Keynesian approach and the prior saving approach.

Thirdly, the quantity theory approach stresses the inflation tax as a source of finance for development. When resources are less than fully employed, monetary expansion will result in the growth in output; otherwise monetary expansion will be inflationary. In this approach inflation transfers resources to government through the reduction in the purchasing power of money. Friedman(1973) doubts, however, whether revenue raised in this way can be relied upon to finance economic development. He argues, firstly, that the inflation tax base tends to be very small in developing countries due to the low proportion of cash balances to total income which means that the amount of revenue that can be raised by inflationary means will generally be small. Secondly, that there are other pressures on government, which provides no assurance that the resources will be used to promote economic development[5]. Thirdly, Friedman argues that the revenue raised may be used to finance standard "development monuments" rather than productive investment.

Both the quantity theory approach and the Keynesian proposition involve some inflation when there is full employment. In contrast, prior saving involves no inflation. Perhaps because of this strong aversion to inflation, it is the prior savings approach that has been extensively adopted by the World Bank and International Monetary Fund as part of the structural adjustment programmes and conditionality. Higher interest rates are considered as the centrepiece of policy in search of higher rates of economic growth

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[4] Op. cit

[5] See also Thirlwall, A.P. (1974) *Inflation, Saving and Growth in Developing Economies,* (London: Macmillian).

in developing countries; this seeks to ensure that developing countries can rely on domestic resources to finance economic development(World Bank, 1989).

2.3 The McKinnon and Shaw Model

The Mckinnon and Shaw model provides an alternative framework to the paradigm that had found universal application in the developing world[6]. The model seeks to take account of the specific characteristics of developing countries by questioning the basic assumptions of the neo-classical model regarding financial markets in developing countries, and the policy prescriptions arising from Keynesian theory[7]. The standard neoclassical theory assumes that the economy is fully monetised; capital markets are competitive; physical capital is homogeneous and of uniform productivity, and lastly that input indivisilibities are unimportant(Mckinnon, 1973; Jao, 1985).

The theoretical approaches by Shaw and Mckinnon to financial liberalisation are different in one important respect. Shaw adopts the debt intermediation view, whereas Mckinnon develops a model in which real money balances are complements rather than substitutes to tangible wealth(Fry, 1982). Mckinnon(1973), for analytical convenience, rules out intermediation between savers and borrowers in order to demonstrate the essential complementarity between cash balances and real capital accumulation.

The financial system is considered repressed when monetary authorities institute measures that limit the ability of the financial market to mobilise financial resources

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[6] Milton Friedman(1973) argues against interest rate suppression in developing countries because of the scarcity of capital in these economies. Moreover, people who mostly have access to these funds are those with political influence, and therefore capital may not be used in the most productive way.

[7] The McKinnon and Shaw model remains neo-classical in that it still regards prior saving as important for investment.

and allocate them efficiently[8]. Financially repressive measures often include: the restricted entry of new banks into the financial market which in most cases is coupled with the public ownership of financial institutions; the setting of high reserve requirements on bank deposits; legal ceilings on bank lending and deposit rates; quantitatitive restrictions on the allocation of credit; and restrictions on external capital transactions. This results in the misallocation of resources reducing saving, investment and economic growth.

The existence of repressive financial policy results in "shallow" finance, or the contraction of the financial sector through portfolio shifts in favour of tangible assets. Financial repression may also lead to a transfer of funds from the financial system to the public sector by encouraging the establishment of institutions from which the government can derive seigniorage(Fry, 1995). It is important to realise, however, that originally, restrictive financial policy may not have been aimed at financial restriction per se, but low interest rates were considered to promote capital formation by reducing the cost of capital to producers. The policy of low interest rates was also intended to avoid possible inflationary pressures(cost push inflation).

In formulating the Mckinnon-Shaw model, it is assumed that economic units are confined to self finance. The assumption of self finance means that the economy is fragmented such that firms and households face different prices for factors of production and have access to different types of technology. The model recognises the unavailability of financial capital as the major constraint on investment in developing countries. Secondly, the model assumes that there are considerable indivisibilities in investment, that is, aggregate demand for money will be greater the larger the proportion of investment in total expenditures (McKinnon, 1973). This means that productive units accumulate real money balances before undertaking investment. This assumption provides the basis for the complementarity hypothesis as demonstrated in

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[8] Fry(1982) defines financial repression as the indiscriminate distortion of financial prices and foreign exchange rates.

the following demand for money and investment functions.

2.3.1 The Demand for Money Function

McKinnon(1973) specifies the following money demand function:

$$\frac{M^d}{P} = f\ (Y,\ \frac{I}{Y},\ d-p) \tag{2.1}$$

where M^d/P is the real money stock broadly defined; Y is real gross national product or domestic product; I/Y is the ratio of investment to income, and d-p is the real deposit rate of interest.

The conventional money demand function does not include the ratio of investment to total output. It includes the real rate of return to physical capital. In this specification, the demand for money results from the process of capital accumulation. The complementarity between money and physical capital is represented by the partial derivative of money demand with respect to investment ratio:

$$\frac{\delta(\frac{M^d}{P})}{\delta(\frac{I}{Y})} > 0 \tag{2.2}$$

The fact that financial asset accumulation determines investment means that wealth holding and capital accumulation are no longer substitutes. Instead, an increase in the demand for money results in a higher ratio of investment to total output.

2.3.2 The Investment Function

To demostrate the relationship between the investment ratio and real asset accumulation Mckinnon specifies an investment function of the following type:

$$\frac{I}{Y} = f\ (r^t,\ d-p) \tag{2.3}$$

where r^t is the average return to physical capital. The other variables are as defined above. The notion of complementarity can also be expressed as the partial derivative of the ratio of investment with respect to the real deposit rate of interest, that is,

$$\frac{\delta(\frac{I}{Y})}{\delta(d-p)}>0 \qquad (2.4)$$

Note that in the standard investment function complementarity does not feature because the investment function assumes that there is a negative relationship between investment and the rate of interest. This, however, ignores the capital enhancing role of money or the conduit effect. Because when money is viewed as a complement, rather than as a competing asset, the demand for money will increase with the productivity of capital. According to Mckinnon(1973) " a rise in the average rate of return to physical capital increases real cash balance holdings because the rise is associated with an increase in the investment-income ratio ". Put differently, it means that self financed

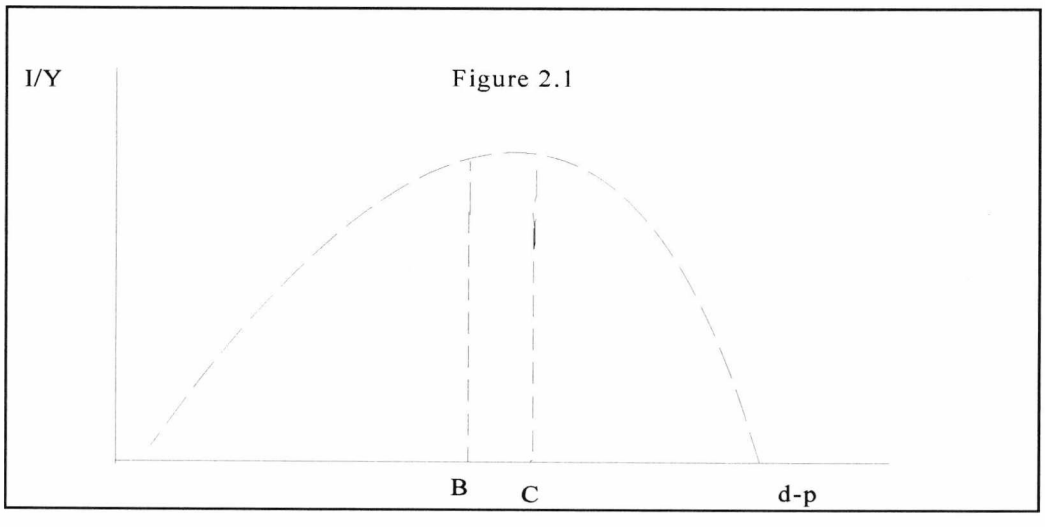


Figure 2.1

investment will increase for any given rise in the real return on money holding. This effect is not everlasting, however. Beyond a certain point, the conventional substitution relationship dominates in the investment function. Because as capital markets develop the competing asset effect dominates the complementarity effect of the demand for

money.

We demonstrate this in figure 2.1 above. The curve in the diagran traces the effect of increases in the real deposit interest rate on the investment ratio. As deposit interest rates are increased the investment ratio rises up to point B as the society holds increased amounts of demand deposits. Given that increasing the deposit interest is also supposed to improve the quality of investment this would be captured by the distance from B-C. Therefore, up to point C the effect of higher deposit interest rates is to raise the investment ratio. After point C, the competing asset effect starts to dominate. This is because when the return to holding money has been increased sufficiently, further increases may induce net portfolio shifts from investment in physical capital towards cash holding. In that case, money holding competes with capital accumulation(Mckinnon, 1973). The effect of removing restrictions on external sources of finance is to shift the curve upwards. The dependence of investment on the demand for money makes it possible to derive Mckinnon's complementarity hypothesis.

Shaw(1973) on the other hand uses debt intermediation to link finance and economic development. In his framework, financial intermediation promotes economic growth by raising the real return to savers, whilst low or negative interest rates discourage saving, investment and growth. Higher institutional interest rates are an incentive to save. Increased savings, in turn, lead to high levels of investment but this depends on the efficiency with which financial intermediaries perform their functions.

Financial intermediaries perform several important functions in the market. They channel resources from surplus saving units to deficit saving units by acting as half-way houses between the primary lender and the ultimate borrowers(Ghatak, 1981). The principal objective of financial intermediation is to mobilise a higher volume of financial saving and promote the efficient allocation of investment in the economy. In a direct lending environment, saving and investment are sub-optimal because of market

imperfections that result from the high costs of gathering information on prospective borrowers. Financial intermediaries perform this information gathering function efficiently because of the size of their operations. Financial intermediaries are also able to reconcile the needs of lenders and borrowers through risk and maturity transformation. And since lenders have a preference for short term liquid assets whilst borrowers prefer to borrow long term, financial intermediaries can match the maturity of their liabilities to the gestation period of investment projects. They also transform risky long term liabilities into safer short term assets to meet the liquidity needs of lenders(Goodhart, 1989). Furthermore financial intermediaries are able to reap the benefits of diversification and economies of scale in asset holding than would an individual agent. It is clear that in the absence of financial intermediaries the liquidity premium would be prohibitive to borrowers. By performing these functions efficiently, financial intermediaries promote investment and economic growth.

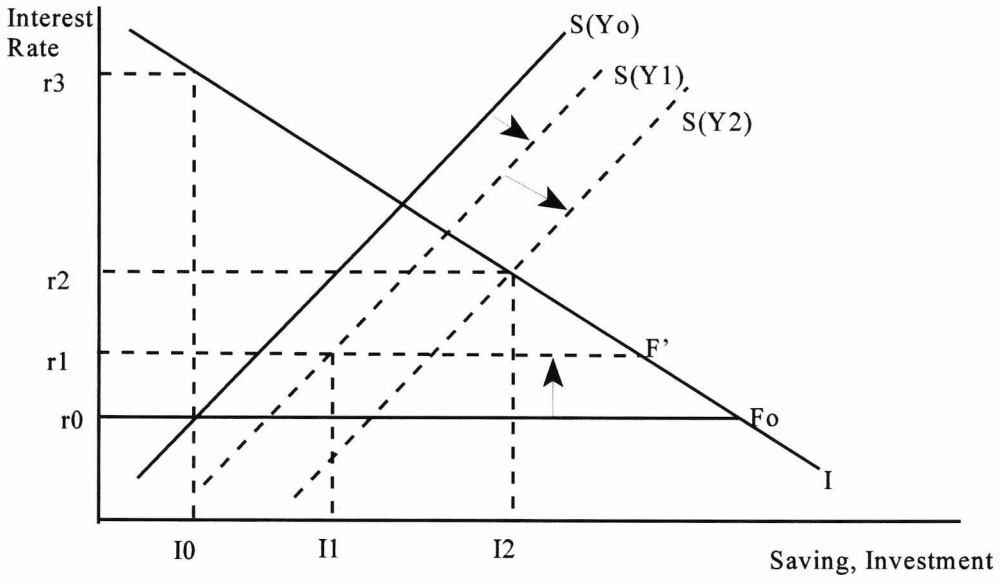
In order to develop the debt intermediation view, Shaw specifies the following money demand function;

$$(\frac{M^d}{P}) = f\ (\frac{Y}{P},\ v,\ d-p) \qquad (2.5)$$

where v is the vector of the opportunity cost of holding money, Y/P is real income and d-p is the real deposit interest rate. There is a positive relationship between the demand for money and the real interest rate. Complementarity does not feature in Shaw's analysis because the debt intermediation view does not depend on the assumption of self finance. The increase in real deposit interest rates enhances financial deepening and economic growth. In figure 2.2 we provide a synthesis of the Mckinnon and Shaw

hypothesis[9]. The level of saving and investment is plotted against the real interest rate in a financially repressed economy. Saving at a given income level is a function of the real interest rate. F represents financial repression. This is an institutional interest rate that holds the real deposit interest rate below its equilibrium value. If F_0 represents the initial level of repression investment is constrained to I0 which is equal to the amount of saving forthcoming at interest rate r0. Financial liberalisation requires the gradual phasing out of financial repression in the market. This accordingly means raising the ceiling rate to F' which results in a higher level of saving, investment I_1 and income .

Figure 2.2



If financial liberalisation is continued this will lead to higher levels of saving, investment and a more rapid rate of economic growth. The growth in income is from two sources; the volume and the efficiency of investment. Efficiency gains derive from improved levels of intermediation as financial institutions are able to evaluate risk and as such weed out low yielding investment projects. They are also able to allocate capital

[9] Fry, M. (1995) *Money, Interest and Banking in Economic Development*. (Baltimore: John Hopkins University).

to the most efficient investors. The presence of financial intermediaries ensures that investment is not confined to the source of saving. Therefore the real rate of interest as the return to savers generates a higher level of investment through the increase in the volume of investment, and by acting as a rationing device to a higher level of investment efficiency.

The investment efficiency aspects of financial intermediation are demonstrated in a model with two sectors characterised by different levels of technology(Galbis, 1977). The model assumes two sectors. Sector B is technologically advanced and sector A is the least technologically advanced and offering the lowest rate of return to investment. Sector A consists of self financing units that have no access to external finance. Bank deposits are available to both sectors as a means of saving, and the rate of return on financial assets represents the opportunity cost of self finance. When the rate of return is negative, self financed investment will increase. On the other hand, positive rates of return on financial assets lead to the reduction in the amount of self financed investment as resources are transferred to the most efficient sector, that is, from sector A to B. The rate of economic growth is therefore promoted when resources are transferred from the backward to the technologically advanced sector. The Galbis model recommends high rates of interest to promote economic growth and development in developing countries.

2.3.3 The Savings Function

In the neo classical formulation decisions to save and invest are inseparable. Similarly, in Mckinnon's model the act of self finance does not permit such a distinction either. Individual investors have to accumulate(save)financial resources to undertake investment. Saving is by definition equal to investment. However, the role of investment is explicitly specified because of its importance in explaining the complementarity thesis. Neither Mckinnon nor Shaw specify a savings function in their

models. Fry(1978) substitutes savings for the investment function in McKinnon's money demand function specified earlier.

$$(\frac{M^d}{P}) = f\ (\frac{Y}{P},\ \frac{S_d}{Y},\ d-p) \qquad (2.6)$$

Where S_d/Y is the savings ratio. The specification of the savings function includes variables to reflect different consumption theories. But by and large, variable selection is dictated by data limitations. A typical saving function takes the following form (Fry,1978):

$$(\frac{S_d}{Y})_t = f\ (g\ ,\ y,\ r,\ \frac{S_f}{Y},\ (\frac{S_d}{Y})_{t-1}) \qquad (2.7)$$

where g is the growth rate of income , y is the level of real per capita income and the other variables are foreign savings ratio and lagged domestic savings ratio respectively.

2.4 Pro-Liberalisation Models

The Mckinnon and Shaw model has been extended and formalised in models that intend to capture the short run and long run effects of incorporating financial liberalisation in stabilisation programmes. Developments in this regard were led by Kapur(1976) and Mathieson(1979, 1980). Models that lean towards the liberalisation view tend to regard financial reform, especially interest rate reform, as essential for the much broader issue of economic liberalisation. However, economic liberalisation does not require acceptance of the interest rate argument(Snowden, 1987). Furthermore successful financial liberalisation is dependent on whether credit rather than savings is the binding constraint on capital formation(Harris, 1979). Moreover, there are various techniques available to countries to mobilise the economic surplus and the financial technique is only one of them.

Mathieson and Kapur develop models that introduce bank financing of

investment as the binding constraint on capital formation which provides the link between bank financing and aggregate supply. Kapur(1976) incorporates financial repression into an analysis of stabilisation policy. The nature of the economy analyzed is characterised by excess capacity, surplus labour, and is financially repressed. Financial repression reduces the capacity of the entrepreneur to finance working capital requirements which results in persistent excess capacity. In Kapur's model there are two policy instruments available to the authorities namely ; the monetary base(μ) and the real rate of return on money (d-p). The aggregate supply function is given by,

$$Y=\sigma K \tag{2.8}$$

Where K is the flow of capital services both (fixed and working capital) and σ is the capital-output ratio. And due to persistent excess capacity, working capital is assumed to be the binding constraint on the level of output, and that entrepreneurs use bank credit to finance their holdings of working capital. A fixed proportion, θ , of working capital is financed through bank credit and the remainder 1-θ is financed through retained earnings. However, the fraction θ of depleted working capital has to be repaid before additional credit can be obtained and the repayments become available for re-lending . But for working capital to remain at a constant level additional bank credit(or cost of replacement) is required equal to,

$$P\theta(1-\alpha)K_t \tag{2.9}$$

where $K_{(t)}$ is the flow of capital services at time t; P is the rate of change of the price level; 1-α is the proportion of working capital to total utilised capital and α represents the ratio of utilised fixed capital to total utilised capital. The rate of capital accumulation becomes;

$$\frac{dK}{K}=\frac{1}{1-\alpha}\left[\frac{L-P\theta(1-\alpha)K}{P}\right] \tag{2.10}$$

and L is the nominal increase in bank loans. Given that L-Pθ(1-α)K represents the net increase in nominal bank lending over the increase in the nominal cost of replacing the bank financed component of working capital, this excess is available to finance net investment in working capital. Note that the rate of capital accumulation depends on the proportion of working capital to total utilised capital such that the lower the proportion of working capital requirement the greater the potential for sustaining a larger increase in total capital utilisation.

To assess the implications of financial liberalisation on growth, the net increase in total capital utilised is related to the money stock and to economic growth. Economic growth is affected positively by the rate of monetary expansion; the capital-output ratio; the ratio of loans to money and the ratio of utilized fixed capital to total utilized capital, and are affected negatively by the fall in real money demand; a higher proportion of bank-financed working capital and a higher reserve ratio. The higher reserve ratio affects economic growth through reductions in the ratio of loans to money.

The effect of monetary expansion and increases in the real deposit interest rate are explained by movements in the velocity of circulation. When the money supply is reduced velocity rises which restricts the flow of credit. At the same time actual and expected inflation is also falling. But once inflation expectations catch up and actual inflation has declined sufficiently, velocity starts to fall. The fall in money growth leads to an initial reduction in the rate of economic growth as the net flow of real bank credit is reduced, but these negative effects are offset by falling actual and expected inflation. As Kapur(1976) puts it: " the falling inflation has the effect of generating an upturn in the economy's growth rate, this is reinforced by the falling velocity which enhances the net flow of real bank credit". In Kapur's model, monetary expansion is unstable in the short run through an initial fall in output even though it stabilises in the steady state. It is conceivable, however, that short run costs could be so great as to derail the whole stabilisation program. World Bank sponsored structural adjustment programs have

suffered the same fate when the short run cost of economic liberalisation brought undesirable initial contraction in output.

As would be expected in Kapur's model, interest rate policy is preferable to monetary contraction because it leads to an increase in the real size of the banking system and in the real net flow of credit to finance investment in working capital. An interest rate rise generates an instantaneous increase in the desired level of money holding. The policy of raising deposit rates also exerts a more deflationary effect than monetary contraction because of the additional negative effect of interest rates on investment. Kapur concludes that raising interest rates has favourable effects on growth in both the short and the longrun. In fact, he proposes two stages for successful stabilisation. Firstly, the monetary authority could raise the deposit interest rate in order to stimulate the demand for money and reduce excess money supply in the market. This leads to increased bank credit and ultimately output growth. Secondly, as inflation expectations recede, monetary expansion could be curtailed. In this way the flow of real bank credit need not decline during the stabilisation period and consequently the crunch on bank credit(working capital)and real output could be avoided.

Kapur's model has been subjected to a number of criticisms. Fry(1995) argues that the model allows financial variables to affect only the quantity of investment which imposes a fixed output-capital ratio. Financial variables have been shown to affect investment through the quality of investment(Fry, 1982). Furthermore, the absence of a savings function or supply constraint implies that investment can be increased indefinitely. Moreover, increasing interest rates has implications for the maturity structure of banks. Where the mismatch between assets and liabilities is greater, the squeeze on profits will be harder ultimately threatening the viability of many financial institutions(Jao, 1985). Gibson and Tsakalatos(1994) argue, however, that this ought not to be a problem to the extent that banks lend on a variable interest rate basis but

could be potentially destabilising if banks extend loans on fixed interest rate terms.

Finally, the performance of policy instruments under the model is contingent upon the speed of adjustment inherent in the adaptive expectations framework. This was, however, taken up by Mathieson(1980)who reaches the same conclusion using the rational expectations hypothesis.

2.5 Financial Development and Endogenous Growth

This section reviews models of endogenous economic growth and financial liberalisation. The standard neo classical growth model(Solow, 1956; Swan, 1956) is formulated using a production function that combines labour and capital characterised by diminishing marginal returns. Savings are a fixed proportion of total output with technology assumed to improve at an exogenous rate. In this formulation output per capita is given by:

$$y = A_t k_t^{1-\sigma} \qquad 0<\sigma<1 \qquad (2.11)$$

where k_t is the capital labour ratio, and A_t measures the level of technology. The rate of capital accumulation is then:

$$\dot{k}_t = sy_t - \delta k_t \qquad 0<s;\ \delta<1 \qquad (2.12)$$

s is the marginal propensity to save, and δ is the rate of depreciation of physical capital. In equilibrium investment(I_t) equals saving(sy_t). And in the steady state the saving rate has a positive effect on the *level* of per capita income(Agenor and Montiel, 1996).

The endogenous growth models (Romer, 1986; Lucas, 1988; Rebelo, 1991) relax the assumption of diminishing returns imposed above, and also allows for technological progress to affect the growth rate of income endogenously through the effects of knowledge spill overs; capital is viewed as a reproducible input. Following Rebelo(1991), the growth rate of per capita income takes the form :

$$y_t = Ak_t \qquad (2.13)$$

This sets $\sigma = 0$ in equation 2.11 above. k_t is now a broader measure of capital; it includes both physical and human capital. Capital inputs are as such reproducible. Using equation 2.12(the rate of capital accumulation function) the steady state growth rate equals:

$$g = sA - \delta \qquad (2.14)$$

which implies a positive growth rateof income in the long run, that is, $g = sA > \delta$ and also that the level of per capita income rises without bounds(Agenor and Montiel, 1996). Note that in this model an increase in the savings rate permanently increases the growth rate per capita.

Recently, financial variables have been incorporated into these models (Pagano, 1993). It is assumed that financial disintermediation or repression leads to a fall or loss in saving of the magnitude(1 - μ). The equilibrium condition then becomes $\mu s y_t = I_t$ *where* $0 < \mu < 1$. The steady state growth rate then becomes:

$$g = s\mu A - \delta \qquad (2.15)$$

Financial development affects the growth rate of per capita in three ways. Firstly, it may lead to an increase in the savings rate(s). Secondly, it may raise the marginal productivity of the capital stock(A). Thirdly, financial development may result in the increase in the proportion of saving available for investment(μ).

Whilst the pro liberalisation model stressed the unambiguous effect of financial development on economic growth the new endogenous growth approach draws attention to the possibility that the effect on saving may be negative, it depends on banks and asset holders behaviour towards risk. Financial development allows asset holders to diversify their portfolios by increasing the ability to borrow in the market. The savings rate is affected adversely if there is a fall in the number of economic agents

subject to a liquidity constraint. It is also the case that when financial development leads to an increase in the number of financial assets held for transactions purposes savings may decline(Jappelli and Pagano, 1994; Bencivenga and Smith, 1991). However, the net effect of financial development on economic growth will depend on productivity of capital and the efficiency with which capital is invested. Note that this approach discusses financial development in general, and not only interest rate policy. As Bencivenga and Smith(1991 state:

> Relative to the situation in the absence of banks(financial autarky), banks reduce liquid reserve holdings by the economy as a whole, and also reduce the liquidation of productive capital. Then, with an externality in production..... higher equilibrium growth rates will be observed in economies with an active intermediary sector.

Financial development also affects the productivity of capital. This derives from the ability of financial intermediaries to engage in risk and maturity transformation, and also in the processing of information. Because of the risk sharing permitted by financial intermediaries, riskier but more productive investment is undertaken in a liberalised financial system.

We conclude by noting that the net effect of financial development on economic growth is expected to be positive. According to Fry(1997) "endogenous growth in all these models magnifies and prolongs the effects of financial conditions".

2.6 Neo- Structuralist Models

The Neo-structuralists(Bruno, 1979; Buffie, 1984;Taylor, 1983; Koshaka, 1984; Van Wijnbergen, 1982, 1983) take issue with the conclusions derived from the liberalisation models and the extensions by Kapur(1976) and Mathieson(1980) that a high interest rate policy is a necessary condition for growth in developing countries, and

that the policy accelerates economic growth through non inflationary means. They also disagree with the claim that negative interest rates by providing a dis-incentive to asset holders encourage the holding of unproductive inflation hedges. It is the holding of these "unproductive" assets that forms the core of the neo-structuralists argument.

The basic implications of the assumption underlying the Mckinnon-type model is that portfolio shifts into financial assets are from an unproductive asset like gold, land e.t.c. But where unorganised money markets exist, and provide more intermediation than the organised money market, conclusions from the liberalisation model may vary. Neo-Structuralists consider curb market loans as providing more intermediation than time deposits[10] because organised financial markets are subject to reserve requirement ratios whereas curb markets are not. And to the extent that increases in time deposit rates draw resources from the curb market instead of cash and other unproductive assets, total credit supply will fall resulting in lower output and higher inflation(stagflation). In these models the banking system provides only partial intermediation because a proportion of the mobilised resources are kept by the banking system as idle reserves rather than passed on to firms for investment.

A policy of higher interest rates will increase credit availability if the inflow of deposits to the banking system originates from previously unproductive assets like gold. The neo-structuralists argue that it is only under such conditions that raising interest rates will lead to higher economic growth. Moreover, if we consider that reserve requirement ratios affect the credit creating ability of formal financial markets then credit availability is necessarily sub-optimal in formal financial markets. The full effects of a high interest rate policy occur when the banking system pursues a policy of zero reserve requirement ratio.

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[10] Buffie(1984)defines a curb market as "an informal (sometimes illegal)credit market in which loan suppliers and demanders can transact freely at uncontrolled interest rates"

Kohsaka(1984) identifies the following conditions as necessary for the high interest rate policy to produce the Mckinnon-Shaw type conclusion; low reserve requirement ratios against time deposits; reduced substitution between curb market loans/securities and deposits, and lastly a high responsiveness of saving to interest rates. These conditions imply that a reasonable prediction of the effects of changes in time deposit rates requires some insight into the structure of the economy. Kohsaka(1984) develops a five sector-asset model with the following assets: physical capital; cash;bank deposits; bank loans and curb market loans. The model abstracts from the issue of short run stabilisation by assuming economic activity to be at full employment[11]. The essential features of the model are that the deposit and loan rates are regulated which results in persistent excess demand in the loan market. This makes credit rationing inevitable. Firms meet some of their working capital requirements by borrowing from the curb market. The banking system is subject to a reserve requirement against deposits. Finally, the central bank is assumed to provide loans to private banks and these are also rationed as there is also excess demand for central bank lending.

The total supply of bank loans is given by bank deposits and securities in the curb markets, and central bank loans.The household sector holds three assets, cash, bank deposits and securities in the curb market. There are also central bank loans and discounts to the private banks(a policy variable). Each asset is a function of its own rate of return and the rate of return on alternative assets in the household portfolio.

The firm sector finances its physical capital through bank loans and curb market loans. But since bank loans are rationed the remainder of credit needs are financed through curb market loans.

The effects of an increase in the bank deposit interest rate are ambiguous. On the one hand, they produce an increase in the level of deposits hence loanable funds .

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[11] Short run issues are discussed in Van Wijnbergen's work.

On the other hand, increased deposits rates lead to a reduction in loanable funds as a result of portfolio shifts from curb market assets to bank deposits. Proponents of the Mckinnon and Shaw school expect the former to dominate despite the syphoning of funds through the required reserve ratio.

The Neo-structuralist conclusion, however, is that when incorporating the effects of reserve requirements and the presence of curb markets the high interest rate policy is expected to lead to lower financial intermediation hence a lower rate of economic growth.

Van Wijnbergen(1983) adopts a similar Tobin-type portfolio model and attempts to capture the link between the financial sector and the supply side of the economy through the credit financing of working and fixed capital. Van Wijnbergen's(1983) model is different from Kohsaka's(1984) in two respects. In the latter model, credit is used to finance the stock of physical capital whereas in Van Wijnbergen's model credit also finances the stock of working capital. In addition, Van Wijnbergen discusses short run stabilisation issues which are not dealt with in Kohsaka's model.

There are three types of assets held namely: cash ; time deposits, and curb market loans. A simulation is carried out to assess the implications of portfolio shifts on inflation, the capital account and economic growth for any given change in real time deposit interest rates. Firm's working capital requirements are assumed to depend positively on real wages and output, and any unsatisfied loan requirements are met in the curb market.

The macroeconomic effects of higher interest rate policy depend on the reserve requirement ratio and the degree of substitutability between curb loans and time deposits. When there is greater substitutability, higher deposit rates lead to an increase in the cost of working capital as curb market rates are bid up by reduced loanable funds. This leads to a reduction in investment and economic growth. The combination of higher real interest rates and restrictive monetary policy may increase inflation in the

short run but the outcome depends on whether interest rate effects on aggregate supply outweigh the deflationary impact on aggregate demand. The neo-structuralists expect the supply effects to dominate because monetary restraint may have a direct cost increasing and output reducing effect long before its more traditional demand contracting role occurs(Bruno, 1979). The increase in the time deposit rate is not only contractionary but inflationary through cost push effects that operate via the curb market rate. However, should substitution be from cash, then the net supply of loanable funds will increase. Banks will channel some of the funds to firms forcing the curb market rate to decline and thus generates a higher level of output. This outcome is made possible by the ability of firms to finance working capital from other sources than the curb market.

Van Wijnbergen(1983) obtains evidence for the structuralist argument by simulating the impact of bank interest rate changes using a macroeconometric model for South Korea (the only country with published data for the curb market). He finds increases in time deposit rates to be contractionary as portfolio shifts occur out of curb market loans rather than out of cash. The increased cost of working capital also results in higher inflation. Evidence of this nature, however, cannot be conclusive since, as noted earlier, South Korea is the only country where published data on curb markets are available. The results should be interpreted not as suggesting that time deposit rate should never be increased; rather it draws attention to the importance for policy makers to be aware of complications brought about by formal incorporation of informal markets into the analysis of financial liberalisation policies. A proper financial reform package should aim to offset short run stagflationary effects arising from interest rate liberalisation[12].

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[12]Leite P.S(1982) considers that whilst there are short run costs involved in financial liberalisation, possible inflationary effects seem to have been overplayed. This he bases on possible dis-hoarding of goods especially in inflationary environments which increases aggregate supply.

The structuralist argument is strengthened when the cost of high interest rates and the shortage of equity finance is included in the discussion. The relationship between interest rates and business profitability assumes some importance in developing countries due to limited, and at times non-existent, capital markets. Retained profits constitute a major source of funding for capital expansion in developing countries, and given the inherently high debt ratios, low interest rates have been used to subsidise equity accumulation by firms. Therefore the gain by customers from high deposit interest rates implies, to the extent that loan rates increase accordingly, that the incidence of higher loan rates falls heavily on highly geared businesses and financial savings may not increase as claimed by the financial liberalisation school. Tightening the equity constraint leads to a reduction in profitability and this substantially offsets any increases in bank credit (Snowden, 1987).

The argument that total loanable funds are reduced by higher reserve requirement ratios, and also that curb markets provide more intermediation than formal institutions, is challenged by Kapur(1992) who draws attention to the economic functions performed by bank reserves especially the 'seigniorage creation' function. Required reserves allow banks to provide short term liquidity to meet unexpected cash withdrawals. Informal market institutions are not able to offer the same amount of liquidity unless they were required to maintain a comparable level of reserves. Furthermore, informal markets do not benefit from the advantages of a larger market, for example, the Inter Bank Market which allows deposits to be minimised as banks are able to borrow from the market when experiencing losses in reserves. Informal markets are not characterised by synchronisation of deposits and withdrawals whereas reserve holdings allow for the gap to be bridged. The comparative advantage of informal financial markets derives from provision of high yielding and illiquid deposit instruments. Kapur finds that even when allowing for curb markets, financial liberalisation leads to an increase in the economy's demand for high powered money with the government receiving a windfall seigniorage gain which it may channel to

development banks or to commercial banks themselves. Kapur concludes that the welfare effects from liberalisation are unambiguously positive. The final issue that can be raised against the neo-structuralists is the assumption that informal financial markets allocate available credit efficiently. This is highly unlikely given that the structure of curb markets is not as unified as it is claimed to be. Curb markets are unlikely to reap benefits from economies of scale in risk pooling, information collection and appraisal of lending opportunities as do formal financial institutions. They operate instead on personal relationships between borrowers and lenders(Kohsaka, 1984).

Lastly, the neo structuralist conclusion depends on the time frame chosen. When a longer time frame is chosen the unfavourable contractionary effect arising from substitution may be offset if a strong savings response leads to increases in the stock of wealth(Buffie, 1984). The key policy conclusion is that interest rate liberalisation must be combined with the decrease in the reserve requirement ratio.

2.7 New Keynesian Models

In the Mckinnon and Shaw model market determined interest rates signal information about the scarcity of capital which permits an improved allocation of resources. The model argues that the real interest rate is the main screening device between profitable investment opportunities. Raising interest rates rations out low yielding investments that are no longer profitable at the new higher interest rate. As these are rationed out, the average efficiency and quality of investment is supposed to improve leading to faster economic growth. Thus the real rate of interest, as the return to savers, is the key to a higher level of investment and a rationing device for greater investment efficiency(Fry, 1982). Therefore the maintanance of loan rate ceiling curtails investment by discouraging risk taking by banks because banks cannot charge higher interest rates or a risk premia.

The New Keynesians point out that market inefficiencies can still occur in the absence of government intervention (Stiglitz and Weiss, 1981; Zephirin, 1993). This

approach points to the existence of information problems in financial markets. The main point made is that deregulation of interest rates does not remove credit rationing in the market; credit rationing occurs in equilibrium in the loan market.

The basic problem with the Mckinnon-Shaw proposition is the failure to distinguish financial markets from other types of markets. This is considered incorrect because transactions in financial markets are subject to asymmetric information. Financial institutions are in the awkward position of not having more or even equal information on the activities of borrowers. Instead, borrowers are more knowledgeable about the expected returns and risks associated with their projects than the financial institution. Information asymmetries are associated with the twin problems of adverse selection and moral hazard (see Stiglitz and Weiss,1981; Mishkin,1994).

Adverse selection or the lemon's problem(Akerlof, 1970) refers to the difficulty posed by the failure to distinguish ex ante between equivalent borrowers. The lack of information on the credit standing of borrowers makes it more likely to select borrowers with the highest probability of producing an adverse outcome. As a result lenders may choose to make fewer loans even where there are good credit risks in the market. Adverse selection occurs before the loan is extended. Moral hazard or the incentive problem, on the other hand, refers to the tendency of firms to engage in undesirable(from the bank's point of view) activities increasing the chances of default. In particular, the presence of imperfect information and high monitoring and enforcement costs creates an incentive for borrowers to undertake projects that have lower probability of success but potentially high yielding if the project succeeds. However, if the project fails the lender bears all the costs. The allocation of resources is therefore different in capital markets. As such the restoration of equilibrium in a previously suppressed market is not sufficient to attain equilibrium credit rationing. Loan markets do not operate through different borrowers competing for funds by bidding up interest rates. Because high interest rates may be a potential source of financial crises where a financial crises is defined as "A disruption to the financial

markets in which adverse selection and moral hazard have been worse, so that financial markets are unable to efficiently channel funds to those who have the most productive investment opportunities"(Mishkin, 1994. p.7). Increasing interest rates may therefore lead to a fall in the quality of borrowers which increases credit rationing. This would result in lending and investment at sub-optimal levels which results in a substantial decline in economic activity. Banks may also engage in another form of credit rationing. They may provide loans but restrict the amount to less than what the borrower requires(Jaffee and Russell,1976). The total amount of loanable funds would then increase only partially.

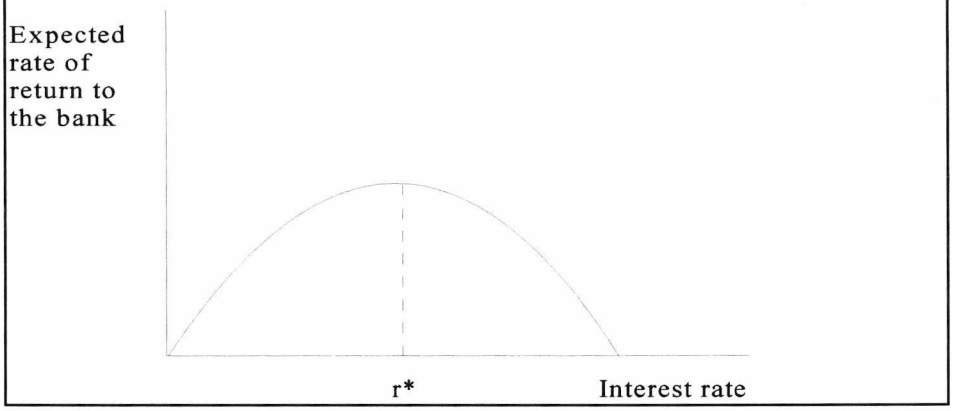
As a result of imperfections in the transmission of information in the market for loanable funds, banks when advancing credit, are concerned with the interest they receive and more importantly the riskiness of the total asset portfolio. Even though interest income represents a valuable source of revenue for the banks, the fact that average riskiness of borrowers increases with negative effects on profitability makes the interest rate less important in credit allocation. Though the effect of higher interest rates on deposits may be to attract deposits as stated by the neo-classical school this approach emphasises that the allocation of capital is not such that supply and demand will be brought to equilibrium by changes in the interest rate.

In the market for loanable funds, supply and demand determine the equilibrium interest rate but the interest rate is, in turn, dependent upon the bank's expected return. In other words, although there may be a "general" equilibrium interest rate for loanable funds which will be higher for a previously suppressed system it is not the market interest rate that matters for the allocation of credit, but the rate that minimises informational problems in the loan market.

The figure 2.3 below demonstrates the relationship between interest rates and the bank's expected return. The bank has an optimal rate at which it maximises expected return. At that optimal rate, moral hazard and adverse selection problems are minimised. From figure 2.3, expected return is initially an increasing function of the

interest rate but beyond the bank's optimal rate(r^*), it declines with interest rate increases. At the optimal interest rate there is excess demand for loans. But the bank would not accept any interest rate offers above this rate as it is likely to bear worse risk

Figure 2.3



than the average loan at an interest rate consistent with the bank's expected return. Asymmetric information does not allow for equality between demand and supply in the market. It may as such not be profitable for the bank to raise interest rates or collateral requirements when there is excess demand for credit in the market. The bank may, instead, decrease the supply of loanable funds leading to a further excess demand in the market (Stiglitz and Weiss, 1981; Mishkin, 1994).

How then are the informational problems found in the loan market resolved given that investment in information is beset with free rider problems? There are two options proposed in the literature. The one view suggests development of the capital market as part of a liberalisation program.

The other option argues for the increased role of government in financial markets.

Cho(1984) proposes a closer examination of the structure of financial markets in developing countries. Financial markets in developing countries are dominated by banks and undeveloped capital markets. And because of undeveloped capital markets, interest rate liberalisation alone is not sufficient for the efficient allocation of capital in the presence of asymmetric information. It requires the establishment of capital markets in developing countries because capital markets are not affected by the presence of adverse selection and moral hazard problems. These are considered to be present only with debt finance as shown by Stiglitz and Weiss(1981). Therefore, a financial system dominated by debt financing institutions will not achieve the optimal allocation of capital unless equity markets are developed.

However, there are problems regarding the recommendation that the development of capital markets could be a necessary requirement for successful liberalisation(Kumar, 1994). Equity markets are mostly a feature of later stages of economic development when the "banking habit" has caught on. Even where capital markets exist they account for only a small proportion of investment finance, making it inconceivable that they could do any better in developing countries. Bank financing remains a major of source of company finance(see Gibson& Tsakalatos, 1994; Arestis & Demetriades, 1995; Mishkin, 1994; Mayer, 1990; and Stiglitz, 1994). Capital markets trade in risks and are, according to Stiglitz(1994), more a gambling casino than a market where funds are being raised to finance new ventures and expand existing ones. It is also known that newly established, and particularly small firms, do not find it easy to raise equity in developed countries capital markets due to information problems. As such, capital markets are not entirely free from the "lemons" problems as claimed by Cho. Transaction costs of raising equity finance can also be prohibitive for small firms. In most developing countries the level of management skills, accounting standards, communication technology and legal systems have still to develop adequately. Imposing a superstructure like a capital market without addressing

the prerequisites for smooth running of that market is self defeating.

The other position argues for an increased role for the government in the financial market. It is important to qualify at this stage that literature on asymmetric information in loan markets does not justify out-right government intervention. Instead it seeks to draw attention to the complementary role that the government can perform. Stiglitz(1994) reckons that there are forms of government intervention that may alleviate market failure. The main issue is how such intervention should be formulated. This contrasts with extreme aversion to government involvement in the market as evident in neo-classical prescriptions of the Mckinnon and Shaw type. There is the tendency by the liberalisation school to recognise the likelihood of market failure but to be fearful of government failure even more(Courakis, 1984), or that government failure is more harmful than market failure(Zephirin, 1993).

Financial markets in developing countries are dominated by commercial banks or deposit taking institutions. Despite their size in the market, commercial banks have tended to provide mostly credit for short term investment on the grounds that the structure of their liabilities does not permit for long term lending. The other argument put forward by commercial banks is that sectors that are a priority to government are not commercially viable to the private sector. Governments in developing countries have responded to this shortage of long term funding in the market by setting up development finance institutions. This represents the most common type of intervention in financial markets of developing countries. The other form of intervention requires the government to provide an institutional (legal)framework to permit the establishment of different types of markets e.g capital markets and the requisite fraud and disclosure laws that protect the interests of minority shareholders. Regulation may also require establishment of securities and exchange commissions to monitor insider trading and build confidence in the stock market. The key thing to note is that finance requires appropriate accords between government and financial markets; that financial markets cannot operate in a vacuum.

2.8 Post Keynesian Models

The Mckinnon and Shaw model assumes that investment and economic growth are constrained by the supply of saving, whereas the Post Keynesians argue that if investment and growth are assumed to depend on the level of effective demand then the policy of high interest rates may lead to a fall in output and economic growth, and result in financial instability. Financial instability refers to the social costs associated with bank failure. Post Keynesian models are distinguishable by certain important features. Firstly, the rate of capital accumulation and economic growth is determined by effective demand, which in turn depends on income distribution(Pailey, 1986). Secondly, firms are not restricted by the availability of savings in their investment decisions but by the rate of expected profits, the interest rate, and the extent of capacity utilisation. This approach builds on Keynes and Kalecki's emphasis on investment as the determinant of the level and rate of economic growth; that investment financed independently of saving creates additional demand sufficient eventually to generate an equal volume of saving (Robinson, 1962; Kalecki, 1972; Thirlwall, 1974; Chick, 1987)[13]. Thirdly, the money supply is assumed endogeoneous and determined by the level of money demand. In other words, commercial bank lending and central bank money creation meets the demand for money in the economy.

We divide, for analytical convenience, the literature on the Post Keynesian approach to financial liberalisation into three categories. Firstly, we review models that incorporate the effects of financial liberalisation on income distribution and the incentive to save and the ultimate effect on economic growth(Buckett and Dutt, 1990, 1991). Secondly, other models point to the negative effects of higher interest rates on the stability of the financial system(Diaz Alejandro, 1985; Grabel, 1995a, 1995b). Finally, we discuss models that recognise the theoretical possibility of negative real

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[13] (1) Keynes, J.M(1936) *The General Theory of Employment, Interest and Money,* (London: Macmillian)

(2) Sawyer, M (1985) *The Economics of Michal Kalecki,* (London: Macmillian).

interest rates being consistent with equilibrium in the financial market(Beckerman, 1983, 1988).

2.8.1 Effective Demand and Capital Accumulation

Buckett and Dutt(1991), adopt a Kaleckian type model to assess the implications of financial liberalisation in an economy with an oligopolistic market and under-utilised capital. The model also assumes that there is surplus labour such that actual employment of labour is equal to the firm's demand for it. The effects of financial liberalisation are contingent on the marginal propensity to consume. Firstly, increased deposit rates lead to an increase in the supply of loans by banks which in turn results in a high volume of investment and rapid economic growth. This effect is strengthened if bank deposits are funded out of currency holdings. This outcome is consistent with the liberalisation view.

Secondly, the increase in the deposit rate also results in a high propensity to save. And assuming that the resulting fall in consumption is greater than the initial investment rise, then firm output will contract, which reduces overall growth. The level of output and investment will contract through reductions in effective demand. As a result interest rate liberalisation, by reducing effective demand, has contractionary effects. This will happen even assuming that investment and output are constrained by the cost of credit, and even when the loan deposit rate is lowered. This formulation is based on the premise that the contractionary effects(reduced effective demand) will outweigh the expansionary effects of lower loan interest rates.

We outline the key features of the model below. Buckett and Dutt(1991) develop a three sector model with households and firms and the banking sector. Firms set their prices as a mark up of prime cost

$$p=(1+z)wa \tag{2.16}$$

where w is the money wage, a is the labor output ratio and z the mark up determined by

the degree of monopoly power. Total household income accrues from wage income and interest income earned in holding bank deposits,

$$Y = waX + i_d D \tag{2.17}$$

X is total household income, i_d is deposit interest rates(fixed by the government), and D is the level of bank deposits. Apart from holding bank deposits, the household sector also holds currency(CU), therefore;

$$W = CU + D \tag{2.18}$$

In this model currency is the only substitute to the level of deposits in the market; such that the higher the deposit interest rate the more deposits are held and the less currency.

$$D = b(i_d)\ W \tag{2.19}$$

This leads to an increase in the supply of bank credit in the economy. And because the household sector is assumed not to borrow to finance consumption, household income is divided between consumption and income, where consumption is;

$$pC=[1 - s(i_d)]Y \tag{2.20}$$

The propensity to save depends positively on the real interest rate. The total amount of credit supply is total reserves net of the minimun enforceable reserve requirement ratio(q) which is represented as;

$$L_s = \alpha(i)\ (1-q)D \tag{2.21}$$

α is the proportion of reserves available to lend to firms. This proportion is positively related to the market deposit interest rate. On the other hand, loan demand is given by the difference between the total stock of physical capital(K) and the total wealth of firms net of working capital(F);

$$L_d = pK - F = \bar{L} \tag{2.22}$$

Furthermore, given that firm investment is funded from profits and bank credit, the firm's investment depends on the profit rate(r) and the interest rate on bank loans(i);

$$I = I(r, i) \tag{2.23}$$

To obtain the equilibrium interest rate we substitute 2.19, 2.21 and 2.22 which gives;

$$i^* = \alpha^{-1}\left[\frac{\bar{L}}{(1-q)b(i_d)W}\right] \tag{2.24}$$

Finally, the equilibrium level of output($X^* = C + I(i^*)$ consistent with the market interest rate is obtained by the substitution of 2.20, 2.23 and 2.16 and 2.17 which yields,

$$X^* = [1 - s(i_d)][(X/(1+z) + i_d(D/P)] + I(r, i^*) \tag{2.25}$$

There are two effects of changes in deposit interest rates on output in this model. In the first instance, the model generates the standard neo classical result that due to the substitution between currency and demand deposits, increases in deposit rates will result in higher demand for bank deposits which increases credit supply, investment and economic growth. The Post Keynesian model does not deny the possibility that interest rate decontrol may generate high savings and growth. Secondly, increasing the deposit interest rate will also increase the propensity to save. The point is that this reduction in demand(consumption) may exceed the increase in investment resulting from the fall in the loan rate of interest. The contraction in the level of demand may also offset the expansionary supply response from higher deposit interest rates because investment depends on current and expected profits. Recall that in figure 2.2 the investment demand function does not shift because it is the level of saving that changes in response to income. In this model however, the investment and savings functions may shift to the left as demand is reduced by higher interest rates. This makes it likely that the level of

investment may be lower than before financial liberalisation. This possibility is not considered in the Mckinnon and Shaw model.

The Post Keynesian approach makes advances by focussing on the potential negative effect of high interest rates on effective demand. The negative effect occurs despite the fact that loan interest rates fall in response to increased credit supply. However, the case against liberalisation may be reinforced by other factors. Financial liberalisation may result in the overvaluation of the real exchange rate leading to the contraction of the trade sector(Dutt, 1990-1991). Government debt service payments may also worsen when interest rates are increased(Gibson and Tsakalatos, 1994). This may further worsen the fiscal deficit. And perhaps to alleviate the effect of interest rates on government debt, fiscal restraint is now normally included as one of the components of economic liberalisation programs.

2.8.2 Financial Instability or Speculation-Led Development

This view blends the concepts of adverse selection and moral hazard into a Post Keynesian paradigm. It argues that financial liberalisation may promote Speculation-led development which results in concentration of risky investment projects and fragile financial structures. These encourage the mis-allocation of credit and lead in the long term to a lower rate of economic growth(Grabel, 1995a).

The financial fragility is borne out of the likely increase in directly unproductive and profit seeking activities(Grabel, 1995b). The proposition seeks to explain how the behaviour of lenders might worsen financial crises that seem to follow a financial liberalisation programme[14].

Financial liberalisation has demand and supply effects. On the demand side, it occurs in three ways. Firstly, higher interest rates negatively affect the quality of borrowers and the quality of investment projects undertaken. Though this borrows from

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[14] See Diaz-Alejandro(1985)for the experience of liberalisation in Latin American countries.

the credit rationing literature it attributes the outcome(of selecting high return/risk projects) to changes in the cost of credit. Higher interest costs make unviable projects that would otherwise have been undertaken without financial liberalisation. Secondly, institutional innovations and speculation have the effect of shortening market participant's time horizons. This arises because of the liquidity provided by financial market innovations. Increased liquidity encourages short termism in the market. The net effect is to penalise the investor who takes a long term view of the market diverting funding to risky short term projects(mainly in capital markets) and away from their primary activities of funding direct output.

The other outcome of liberalisation is the increased interest rate spread between long term and short term investment. This could be explained by declining security of collateral and possibly reduced financial efficiency. To the extent that financial markets are volatile, as argued earlier, then long term debt is likely to pay a higher premium than would be the case without financial liberalisation, further widening the interest rate spread.

The boom euphoric expectations that follow liberalisation also exert supply effects. Financial institutions react to changes in economic opportunities by increasing their critical interest rates and reducing credit rationing in the market. We recall that according to Stiglitz and Weiss(1981) high interest rates do not eliminate credit rationing because of asymmetric information in favour of borrowers. Grabel points instead to the possibility of symmetric effects on both borrowers and lenders as they seek to exploit perceived(speculative) profitable opportunities. This adds to the fragility of the financial system. Financial institutions may reduce their reserve margin in a manner that might be prudently unacceptable.

Credit rationing may also be reduced when previously competitive financial institutions are compelled to compete by issuing out more loans to maintain their market share. It is a case of(bad) risk-loving banks driving out more prudent ones. But should the euphoria recede the critical interest rate will be reduced and stricter rationing

practised. Lastly, the implicit insurance provided by the government to financial institutions may add to the weakening of the financial system. Banks may take risks knowing that the government would not allow the financial system to collapse(Diaz-Alejandro, 1985). This sense of adventure in risk taking affects both lenders and borrowers. Instability in financial markets may also be worsened if banks engage in positive maturity transformations under a regulatory regime where they cannot charge a variable rate on loans. Financial stability is also threatened when entrepreneurs are risk averse. Increased bank loans could be used to pay-off curb market debt rather than finance new investment, and in that case banks are simply absorbing the risks that were previously carried in the curb market. Here borrowers' actions contribute to the fragility of the financial system since they view better access to bank loans as a means of reducing dependence on curb market loans. This potential for instability may be as harmful for financial sector development as low interest rates. Therefore in addition to the substitutability and reserve requirement issues it is important to consider the risk allocation effects of interest rate increases(Snowden,1987).

2.8.3 Non Positive Real Interest Rates

This view, advanced by Beckerman(1983,1988), points to the possibility of negative real interest rates being consistent with equilibrium in financial markets under certain conditions in developing countries. The practice among countries that attempt financial liberalisation programmes has been to raise institutional interest rates without considering supply and demand conditions for financial services with the possibility of negatively affecting the profitability and stability of the financial system.

Positive real interest rates are not regarded as something to achieve in the long term but instead are imposed upon the financial system. Negative interest rates if they represent congruence of supply and demand conditions in the market should not be forced upwards because there are no "objective grounds to assert that anyone is being unduly subsidised cheated or even that misallocation of resources is occurring, given

inflationary circumstances"(Beckerman,1983 p.54).

There are also other conditions under which equilibrium interest rates may be negative. These include existences of underemployed resources; uncertainty about the future economic outlook; significant liquidity preference and extensive non financial distortions(Berkerman, 1988). Inflationary conditions may also explain non positive real interest rates even without financial repression. The key point according to Beckerman is that divergence between rates of return on money and assets that are close substitutes for money is minimal and bound to be negative under an inflationary environment. This is possible because under such conditions the return to money is negative and therefore other assets can in fact receive similarly negative returns.

Note that holding money or cash balances costs more in purchasing power than other financial instruments[15]. Positive real interest rates are best achieved by increasing the demand for financial services, reducing inflationary expectations, and increasing business confidence. Policy effort should go into combating inflation instead. Problems of financial market instability may also arise when interest rates are forced to positive levels. Higher interest rates provide incentives for financial institutions to attract more deposits than they can safely lend out. If these resources are lent out it may result in reductions in operating profits. The greater proportion of such assets may be risky with doubtful repayment ability. Moreover, as mentioned under the credit rationing debate, the "lemons" problem may intensify making lending risky. Poor economic prospects may induce expectations of non positive rates of interest on marginal investment projects. The net result will be capital depreciation and dis-saving.

Lastly, it is conceivable for savings to increase even at negative rates of interest.

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[15] The traditional monetarist and neo liberal view is that real goods are a substitute to holding money and that the latter yields a positive return in inflationary conditions. But real goods cannot be substitutes for money as they are not readily convertible. They do not possess the liquidity properties of money. This theoretical possibility points to the likelihood of non positive interest rates.

Depressed economic prospects may generate an accumulation of precautionary liquid and speculative balances by individuals and business entities alike. This could be reinforced by the limited access to credit in the market prompting higher levels of liquidity preference. Moreover, money may be held for its convenience and safety.

2.9 Conclusion

This review has covered different positions regarding the theory of the financial liberalisation model. The main issue that emerges is that financial liberalisation should not focus on the interest rate as the only instrument for financial market reform. Instead financial liberalisation ought to consider the complementary role governments can perform in the market; and the institutional and legal framework specific to each country. What is suggested by the alternative views on financial liberalisation is that instead of concentrating on the interest rate " developing countries should seek rather to promote a strategy which combines liberalisation with the development of appropriate institutions to enable the development of long term, high trust relations between economic agents "(Gibson and Tsakalatos, 1994 p.605). Because if financial market liberalisation results in fragile financial institutions it is equally(perhaps even more) damaging to growth as are negative interest rates.

Chapter Three

Interest Rate, Saving, Investment and Economic Growth in Botswana

3.1 Introduction

This chapter presents empirical results of the estimation of the Mckinnon and Shaw model for Botswana. Apart from being grouped among other developing countries, no extensive study of the determinants of saving, investment and growth has been done for Botswana. When Botswana has been mentioned it has been more in passing. In a study of financial liberalisation in a sample of nine African countries, Seck and EL. Nil(1993) stated with reference to Botswana:

> The case of Botswana is portrayed in this study not because, like other African countries, it faced economic difficulties, but it is an illustration of the potential for stability and growth that liberal policies can bring about, for a small economy. In this regard, throughout ....., Botswana's economic policies where cited will be contrasted with those of the other sample countries that were forced to undergo SAPs(p.1878).

The only recent study (Jefferis, 1993) tests the effects of interest rates on the demand for bank credit, a component of the financial liberalisation model. Jefferies specifies a double-log model that regresses the log of the ratio of bank credit to total private sector credit on the lagged values of the credit ratio, the real lending rate, and on the log of real per capita income. Estimation is done for the household sector, business sector, and for total domestic credit demand.

Jefferies finds that total credit demand is not affected by the level of real interest rates in the economy. When estimating for the household sector, and business and manufacturing sectors, the results are mixed. Bank credit to the household sector is

affected positively by real lending rates whilst credit flows to the business and manufacturing sector are not. He also finds that the level of bank borrowing by the business sector is affected positively by rising per capita incomes. The overall conclusion of his study is that bank borrowing does not seem to be affected by real interest rates. Jefferies concludes that " the government can pursue its high interest rate policy and at the same time boost the quality and quantity of investment through reforms aimed at mobilising long term lending through the development of new financial institutions and markets"(p.11).

Although representing the first known study for Botswana, the study does not test the main elements of the McKinnon-Shaw model. This, the present study attempts to do. And because his study does not test all aspects of financial liberalisation in Botswana the fact that high interest rates may not affect credit demand significantly leaves unanswered the question of whether bank credit is an important source of funding domestic investment. This would seem to be important because Jefferies finds that the manufacturing sector's demand for credit is neither sensitive to interest rates nor to per capita incomes. The insignificance of the interest rate variable is argued to reflect the importance of internal financing(internal profits) as a source of funding for a large number of investment projects. But according to the financial liberalisation theory, the fact that lending rates do not determine the demand for credit by the business sector should be cause for concern because higher interest rates not only signal information on the relative scarcity of capital, but are also supposed to ration domestic resources efficiently. It is also doubtful to attribute the lack of sensitivity of business borrowing to interest rates as due to the shortage of long term finance because most of the credit analysed, in his study, is allocated by the private banking sector and hence short term.

Financial liberalisation in Botswana is not motivated by the shortage of savings or the need to reduce dependence on foreign borrowing. What concerns monetary authorities is that the available resources should be allocated for productive investment

and not finance household consumption. However, given that real lending rates do not determine credit demand by either the manufacturing or business sectors, it seems that other than restricting household consumption high lending rates would not promote an efficient allocation of resources for investment.

There are three key elements of the financial liberalisation thesis. Firstly, positive real deposit interest rates are required in order to raise the domestic savings rate. Secondly, that high interest rates increase the level of investment and promote economic growth. Thirdly, there is a positive relationship between the growth of the financial sector and economic growth.

Strictly, financial repression refers to distortions that inhibit the financial system from effectively mobilising savings(financial in this case) and to allocate them efficiently for capital formation and economic growth. What is central to the financial liberalisation theory is the *financial resources* available in *the financial system,* and not necessarily total saving, even though increases in financial saving may lead to increases in total saving.

Despite the fact that the hypothesis identifies the important role that the financial system performs in the process of economic growth and development, through the financial intermediation ratio, most studies that test the model do so on the basis of a definition of saving that fails to capture the very central role that financial markets are accorded in the model.

The practice in the literature has been to use a definition of saving derived either from the national income and product accounts or the flow of funds accounts. These, however, may be inappropriate measures since they include other consumer durables, like owner occupied dwellings. Moreover, saving, as distinct from financial saving, refers to the flow of real resources not consumed during the specified period. Even though such saving may be available for investment it is not as ready to deploy as financial saving.

It seems, therefore, that in testing the Mckinnon and Shaw model the definition

adopted assumes some importance. The definition has to reflect the amount of loanable funds available for capital formation. This is important because firms require liquid/ cash capital to finance capital formation. Consequently, a definition of financial saving is adopted in this study which makes the availability of credit the transmission through which saving will be channelled to ultimate users and hence affect economic growth. It is argued, therefore, that when real savings are converted into real financial saving, investment and growth will be affected.

Empirical tests of the model are mostly done for savings, investment, and the income growth equations. The aim is to assess the effects of financial variables on the three dependent variables. Studies have provided conflicting and ambiguous results for a variety of reasons. Firstly, most studies have been plagued by model mis-specification and statistical bias in the choice of variables (Khatkhate, 1980). Secondly, data limitations (quality, range and disaggregation) in the developing countries have made estimation problematic which require caution in the interpretation of the results. These data problems have restricted empirical investigation to Latin American and Asian countries with dummy variables used in most studies to represent Africa.

The lack of disaggregated data has also compelled the use of pooled time series data which conceals country specific characteristics. And although pooling provides more observations, it assumes similar saving and investment behaviour among countries. This has allowed cases of successful financial reform included in the samples to bias the estimation results(Giovannini,1985; Gupta, 1987). Countries with highly negative rates may also bias estimation results. As Dornbusch(1990 p. 37) comments:

> Most of the evidence about the harmful consequences of mis-directed capital market policy comes from the outliers- countries that have vastly negative asset returns. Once these outliers are isolated, the evidence no longer supports the claim that positive real interest rates help growth.

Lastly, a large number of studies employ single equation estimation. Exceptions include Leff and Sato(1975) and Yoo Jang(1977) where saving and investment are estimated using simultaneous equation systems. However, Fry(1978, 1995) is doubtful of the usefulness of using a simultaneous equation approach for the majority of developing countries. Fry argues that saving and investment are not determined jointly under free market conditions in developing countries. Instead, savings availability determines the level of investment because interest rates are kept below their equilibrium values, making it conceivable, therefore, that the majority of developing countries may have been on their saving function but not on their investment functions. This is mainly because the type of economy analysed is characterised by fragmented capital markets and hence likely to be constrained to self finance.

3.2 Financial Liberalisation in Botswana

In this section we review the financial liberalisation program in Botswana. Although Botswana's liberalisation program is not undertaken under the World Bank sponsored structural adjustment program, it shares the objectives of the financial liberalisation proposition by aiming to mobilise domestic savings, promote investment, and achieve a higher and sustainable rate of economic growth. Botswana has, however, not experienced the same type of financial repression. Instead, excess liquidity, insufficiency of investment demand, and higher consumer spending, financed by borrowing, are the main concerns of the monetary authorities. This is attributed to the accelerated growth of the mineral sector and, as such, considered to be unsustainable in the long term. The desired policy to pursue, in the long term, is of high real interest rates in order to cultivate a culture of thrift in the economy, and to discourage consumer spending financed by borrowing. The long term objective is to increase the proportion of household and corporate savings in total domestic saving. The Bank of Botswana(1994) succinctly states the policy position as follows:

> The Bank of Botswana[continued] to focus on the real interest rate in the domestic financial markets as the intermediate target of monetary policy. The Bank's interest rate policy continues to be geared towards attaining real levels of interest rates in Botswana that reflect the opportunity cost of capital as represented by comparable real rates of interest prevailing in international capital markets(BOB, 1994. p.13).

The practice and evolution of monetary policy, specifically interest rate policy, can be divided into three sub periods. In the first stage(1976-1981), the central bank kept nominal interest rates low with the aim of providing affordable credit to the key sectors of the economy, especially the manufacturing sector. The financial strategy was to maintain low interest rates in order to promote investment and economic growth. The prime lending rate was used as the focus of monetary policy. This period represented low nominal interest rates, highly negative real rates. The real deposit interest rate ranged from -8.4 percent and -9.7 percent per annum between 1976 and 1981.

The second stage(1981-1985), in the implementation of the interest rate policy, was in response to the balance of payment problems of 1981/82 rather than a planned policy of the central bank; the primary policy continued to be the maintenance of low interest rates because when the balance of payments issue was resolved there was a general reduction of interest rates. In that sense, the increased interest rates in this period do not reflect a basic shift in financial policy.

The policy response to the balance of payments problem was to increase interest rates in order to restrict investment demand in the economy. And although the economy adjusted out of the crisis, the successful adjustment cannot be attributed to the interest rate policy alone as there were other measures undertaken simultaneously. This included a combination of incomes policy measures, taxation and reductions in government spending, and adjustments to the exchange rate(Harvey, 1985). By 1983/84, real deposit rates were positive at 1.5 percent. The real prime lending rate was also positive

at 1.5 percent and increased further to 4.7 percent in 1983 and 1984. It is important to note that this period is the only time in the practice of interest rate policy when interest rates were positive in real terms.

However, against the background of high real interest rates there was an accumulation of excess liquidity in the banking system. As part of comprehensive review of monetary policy, interest rates were consistently reduced from September 1986 until 1989 to stimulate credit demand, and to reduce excess liquidity. The policy measures also included: the reduction of commercial bank lending rates by 15 percent with the lending rate restricted to less than 15 percent per annum and not to exceed 17 percent when dealing with greater risks; deposits rates were also reduced to minimise the effect of reduced lending rates on the incomes of banks; the Bank of Botswana cancelled deposit facilities extended to parastatal organisations with a view to forcing them to invest in productive investment; exchange control regulation restricting commercial bank's lending to non resident controlled businesses were relaxed. This was intended to encourage inward foreign investment, and also increase foreign-owned businesses's access to domestic credit; finally the government reduced lending rates on the Public Debt Service Fund and the Revenue Stabilisation Fund from 9.5 percent to 8.5 percent per annum(Bank of Botswana, 1986).

Though credit demand expanded, deposits continued to grow faster because of the overall growth of the economy. This compounded the liquidity problem further. The strategy of low interest rates brought out other problems, however. It became apparent that whilst credit demand was responding to low interest rates most of the credit was channelled to the household sector, boosting imports, which was undesirable as the economy had just emerged from a period of a restrictive monetary and fiscal policy. There was another concern that low interest rates were promoting capital intensive investment adding to unemployment which was, and still is, one of the major problems confronting the economy.

The third and current stage can be referred to as the financial liberalisation

phase. This is liberalisation in a broader sense because whilst interest rate policy is a key to the financial liberalisation model, liberalisation also includes competition and licensing policy. Moreover, despite the aim of positive interest rates in the market, real interest rates are still negative though they are less severe than during the first period(1976-1981). Most progress has been made in reforming licensing procedures. This can be observed from the increase in the number of financial institutions in the market(see table 1).

There are three factors that may explain the policy shifts between the three periods. Firstly, the inability of the interest rate policy in both cases to stimulate sufficient investment demand in the economy. There is a caveat here, however ; in most cases interest rates were negative in real terms suggesting perhaps that the type of investment undertaken could have been inefficient as claimed by the financial liberalisation model. Secondly, financial liberalisation policy as pursued in Botswana is motivated more by the need to support diversification of the economy. It does not reflect a shortage of loanable funds in the economy as evidenced by the persistence of excess liquidity. Financial liberalisation is intended also to support the efforts to transform Botswana into the major financial services centre of the Southern African region. It is considered that other factors, for example, liberal exchange controls and political stability, are additional advantages to Botswana's position as a prospective regional financial centre.

Thirdly, it is possible that the persistence of excess liquidity may be indicative of the pursuit of an inappropriate policy, save for productive capacity limitations. What may be needed are non-positive market clearing interest rates. Financial market fundamentals unambiguously point to inconclusiveness in the effectiveness of interest rate policy. Moreover, monetary authorities by intervening to force interest rates upwards or to positive levels act against the theme of the pro-liberalisation debate-which is the requirement that intervention be scaled down to allow the financial market to reach equilibrium. This would seem to require that with excess liquidity real interest

rates should be allowed to fall. The policy, on the other hand, may reflect the perception of the monetary authorities in Botswana that the liquidity glut is not sustainable in the long run, and that what is required in the long term are higher but mildly positive interest rates. Capacity constraints clearly limited the extent to which the available credit could be invested in the Botswana economy.

However, it is important that where governments control interest rates because the financial system is not adequately developed, as is the case in Botswana, such control must be flexible enough to respond to inflation pressures and market fundamentals, otherwise the development of the financial system will be hampered.

3.3 The Measurement of Variables

The Botswana Central Bank started operation on the 23rd August 1976. Before then, monetary and financial policy was determined by the Reserve Bank of South Africa when Botswana was a member of the Rand Monetary Area. Because of this, financial data for the study are only available from 1976.

The real interest rate is calculated by the following formula $[(1+r)/(1+P)]*100$. Where P is the inflation rate and r is the nominal deposit savings interest rate(Seck and EL.Nil, 1993; Khatkhate, 1988; World Bank, 1989).

The effect of financial development on economic growth is proxied in the literature by the level of real interest rates(in tests of the Mckinnon and Shaw hypothesis) and the financial intermediation ratio. The majority of studies use the financial intermediation ratio. This is some measure of the money supply(M1 or M2) as a ratio of total output(GDP). There are a number of factors to consider when selecting which monetary aggregate to use. The money supply series selected must reflect, to a greater extent, the development of the financial system and the potential for intermediation. Furthermore, the use of a narrow monetary series conceals the size and development of the financial system especially when the banking system is dominant. In other words, it is important to distinguish the liquidity function of the

financial system from the credit creating function.

When accounting for the effect of financial intermediation, which is the ratio of financial assets to gross domestic product, currency and demand deposits should be deducted from M2 since they are not expected to be responsive to interest rates(Warman & Thirlwall,1994). Moreover, including liquid assets makes it difficult to distinguish the effects of financial development from the evolving process of monetisation. This is especially important when there is a large non monetised sector. Additionally, liquid monetary aggregates relate to the ability of the financial system to provide liquidity and do not reflect the development of the financial sector, which is what the financial intermediation ratio attempts to capture(De Gregorio & Guidotti, 1995). We use the broad measure of the money supply, which is M3 for Botswana. This includes M2 plus Bank of Botswana certificates.

The M3 data series for Botswana was revised in 1991. The call deposit account was terminated from August 1991 with the introduction of Bank of Botswana Certificates(Bank of Botswana Annual Reports, 1981, 1991). And because the published series have only been revised up to 1981, we deducted only currency when calculating our measure of financial saving. The M3 data series prior to 1979 combines current and call account deposits. The appropriate thing to do would have been to also deduct demand deposit accounts as they are not interest earning. But nonetheless, this measure of financial saving is expected to be affected strongly by interest rates than say M1. Total domestic saving is defined as Gross Domestic Product less domestic consumption. Private saving is defined as domestic savings less the overall government budget deficit(including grants). Gross domestic investment is defined as gross fixed capital formation plus changes in stocks. The incremental output capital ratio is calculated by dividing the rate of growth of the real gross domestic product by the investment income ratio(Khatkhate, 1988; Thirlwall, 1994). The measure of credit is the ratio of credit allocated to the private sector to total domestic credit(net of lending by the government to the parastatal organisations). Finally, we measure income as the

value of gross domestic product at 1987 prices.

3.4 Financial Liberalisation and Domestic Saving

3.4.1 Total Domestic Saving

This section estimates the determinants of total domestic saving. Since we have a small number of observations we are unable to apply cointegration and unit root tests in this study, as a result the study uses only the method of Ordinary Least Squares (OLS). There are three main approaches in testing for the effect of interest rates on savings. First, there is the so called Houthakker-Taylor saving function which utilises aggregate or per capita saving as the dependent variable. This is the approach usually adopted in the empirical testing of the Mckinnon and Shaw model(Fry, 1978, 1980, 1982, 1995; Gupta, 1987; De Melo and Tybout, 1986). Secondly, other studies(Boskin, 1978; Giovannini, 1985) use aggregate consumption functions and introduce the interest rate as an explanatory variable. Thirdly, some studies use disaggregated saving data to test the effect of interest rates on savings(Denison, 1958; David and Scadding, 1974).

In this study we distinguish between total savings, financial saving and private saving. There are a number of reasons why this is important. Firstly, financial savings are only a part of total savings, and the decision to save in financial form is a portfolio choice whereas the decision to save is an intertemporal choice. Secondly, the use of private saving highlights the central role that the private sector can play in savings mobilisation. It is also important to distinguish private saving from total saving because mineral economies, like Botswana, accumulate large fiscal balances which account for a significant proportion of domestic savings. As such the failure to account for the effect of government savings in the definition of domestic saving may bias the results by making it more likely that the policy interpretation may be misleading. Because an insignificant interest rate variable could be mis-interpreted to suggest irrelevance of the interest rate to domestic saving when the effect of the interest rate is swamped by large

fiscal surpluses.

It is hypothesised, consistent with the financial liberalisation model, that the types of savings will be affected positively by real interest rates. The effect, however, is expected to be greater for financial and private saving than for total domestic saving. And although the Mckinnon and Shaw model posits a positive relationship between interest rates and total domestic saving, it is argued here that if a negative relationship is found between total domestic saving and interest rates, this does not constitute a sufficient basis for the rejection of the hypothesis. Instead the ultimate test depends on the effect of interest rates on financial savings. Finally, per capita income is expected to exert a positive effect on savings, however defined, in line with the Keynesian absolute income hypothesis.

We now present the results of the log-linear model estimated for total saving over the period 1976-1995[1]. We do not, as in some studies(Abe et.al, 1977; De Melo and Tybout, 1986; Fry, 1978, 1982; Oshikoya, 1992), use ratios of saving over GDP or GNP since the use of ratios presupposes a proportional relationship between savings and income. Instead we use level data (Rittenberg, 1991; Warman and Thirlwall, 1994).

The effect of interest rates on domestic savings may be either positive or negative. The positive effect of interest rates on domestic saving would imply, in a financially repressed economy with borrowing constraints, that savings increase as individuals accumulate financial wealth (substititution effect). On the other hand, the income effect of increased interest rates results in reductions in total domestic saving(Buckett and Dutt, 1991). Moreover, the transformation of physical saving into liquid form may result in increased consumption if the holding of a liquid asset is to

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[1] The data are obtained from the Bank of Botswana Quarterly and Annual reports, and International Financial Statistics(IMF). Real data are obtained from the Central Statistics Quarterly and Annual bulletins. All variables, both monetary and non-monetary, are expressed in real 1987 prices.

facilitate transactions in the economy. This may provide a partial explaination of why cases of financial liberalisation have initially been followed by decreased savings rates(Jappelli and Pagano, 1994), or an explanation of why financial liberalisation is followed by increased household consumption (Fry, 1995).

The other factor to be borne in mind when assessing the effect of interest rates on domestic saving, apart from the income and substitution effects, is the size of contractual savings (typically these are small in LDC's). For example, pension funds are unlikely to be sensitive to current interest rates(Khatkhate, 1988). They as such need to be accounted for in the definition of saving. This was not possible to do for Botswana due to the unavailability of data.

The log of total domestic saving(GDS) is regressed on the real deposit interest rate(RDIR) and the log of real income(RGDPLOG). The logarithmic form is used as it gave a more satisfactory result. The results for diagnostic tests are also presented with the relevant probability values in squared brackets. The following result is obtained(t ratios are below the coefficients):

$$\begin{array}{lllll} GDSLOG = & -839.21 & + 0.644RGDPLOG & -41.45RDIR & \\ & (-4.60) & (11.89) & (-2.27) & (3.1) \\ & \bar{R}^2 = 0.89 & D.W = 1.73 & & \end{array}$$

Diagnostic tests:

Serial correlation $\chi^2(1) = 0.1147[.735]$; Functional form $\chi^2(1) = 1.938[.164]$;

Normality $\chi^2(2) = 33.866[.000]$; Heteroscedasticity $\chi^2(1) = 2.920[.087]$

In the above formulation we are able to explain 89 percent of the changes in total domestic saving. However, not all signs accord with expectations. We find a negative and significant effect of interest rates on total domestic savings at the 10 percent level. This suggests that the income effect of an interest rate increase outweighs the substitution effect. The level of real income affects domestic savings positively and significantly at the 1 percent level. The income coefficient of 0.644 means that a percentage increase in income results in a less than proportionate increase in savings.

The effect of income as a more important determinant of saving than interest rates has been found in other studies(Khatkhate, 1980; Fry, 1978; Warman and Thirlwall, 1994).

We conclude that total saving is determined positively by the level of income and negatively by domestic interest rates. This would seem to suggests that the contention by the financial liberalisation model that interest rates affect total savings positively is not supported in the case of Botswana. It was noted earlier, however, that the ultimate test of the liberalisation thesis is the effect of interest rate on the other types of saving, especially financial saving. The next section presents results for the other types of saving; private saving and financial saving.

3.4.2 Total Private Saving

In this section the log of private saving(PRIVLOG) is regressed on real deposit interest rates(RDIR) and log values of real income(RGDPLOG), and the following result is obtained (t-ratios are indicated below the coefficients) :

$$\begin{array}{lllll} PRIVLOG = 4.14 + 0.007RGDPLOG & & & -0.60RDIR & \\ \quad\quad\quad\quad (16.65) & (9.43) & & (-2.40) & \\ \quad\quad\quad\quad \bar{R}^2 = 0.84 & & D.W = 1.78 & & \end{array} \qquad (3.2)$$

Diagnostic tests:

Serial correlation $\chi^2(1) = 0.425[.837]$; Functional form $\chi^2(1) = 1.42[.232]$;

Normality $\chi^2(2) = 0.356[.837]$; Heteroscedasticity $\chi^2(1) = 0.014[.904]$

The calculated t-ratios indicate that the real deposit interest rate is significant at the 10 percent level. However, the sign does not accord with expectations. Income exerts a positive and significant effect on private saving. Note that when government savings are deducted from total saving the coefficient of income declines significantly. However, the coefficient remains significant at the 1 percent level.

Studies that estimate the determinants of saving using the real interest rate

impose a restriction that the percentage change in the nominal interest rate brings about an equal(but opposite) effect on saving as the same percentage change in the rate of inflation(Gupta, 1987; Seck and EL.Nil, 1993; HadjiMichael M. et.al, 1995). The financial liberalisation model expects the inflation coefficient to take a negative value and the nominal deposit interest rate a positive value, and furthermore the absolute values of the coefficients to be equal. We test this hypothesis for private saving by specifying separately the nominal interest rate and the rate of inflation. In practice, the effect of inflation on savings ratio may be either positive or negative. When the precautionary motive dominates, a positive relationship is expected whereas portfolio effects tend to yield a negative relationship. The negative effect occurs when economic agents respond to higher inflation by diverting resources to inflation hedges to alleviate the burden of the inflation tax.

When estimating the private saving function distinguishing between inflation and nominal deposit interest rates we obtained the following result:

$$\begin{array}{lllll} PRIVLOG = 3.86 & -0.073DIR & +0.08INFL & + 0.007RGDPLOG & \\ & (9.91)\ (-2.24) & (2.62) & (9.13) & (3.3) \\ & \bar{R}^2 = 0.86 & D.W = 1.60 & & \end{array}$$

Diagnostic tests:

Serial correlation $\chi^2(1) = 0.358[.549]$;Functional form$\chi^2(1) = 3.79[.052]$;

Normality $\chi^2(2) = 0.542[.762]$; Heteroscedasticity $\chi^2(1) = 0.043[.834]$

All variables affect private savings significantly. None of the conditions of the financial liberalisation model are met. Nominal deposit interest rates affect private savings negatively, whereas the rate of inflation affects private savings positively. This would imply that savers react to the variability in the consumer price index by increasing their levels of savings. Moreover, inflation can lead to increases in savings through the redistribution of income in favour of profits because of the rigidities in the labor markets that do not allow for the adjustment of wages to inflation(Thirlwall, 1974;

Ghatak, 1981). Furthermore, total savings may increase as resources are shifted to the government through the inflation tax. As with total savings we find that income remains the most significant determinant of private saving.

3.4.3 Total Financial Saving

The following model estimates the effect of interest rates on financial savings by regressing the log of financial saving on the log of real income and real deposit interest rates. We obtained the following result:

$$\begin{aligned} FINSLOG &= 5.00 + 0.005RGDPLOG - 0.081RDIR \\ &\quad (37.77) \quad (13.84) \quad (-1.33) \\ \bar{R}^2 &= 0.922 \qquad D.W = 1.28 \end{aligned} \tag{3.4}$$

Diagnostic tests:

Serial correlation $\chi^2(1) = 2.019[.155]$; Functional form $\chi^2(1) = 9.470[.002]$;

Normality $\chi^2(2) = 1.36[.504]$; Heteroscedasticity $\chi^2(1) = 1.136[.286]$

The effect of real income on financial saving is positive and significant. The real deposit interest rate affects the level of financial saving negatively though insignificantly. The two variables explain 92 percent of changes in the level of financial saving. Even with a definition of financial saving we still do not find support for the positive effect of real interest rates on savings. This would seem to contrast with Fry(1995) who finds a much stronger effect of interest rates on financial saving for a sample of Asian countries. Similar evidence is found by Warman and Thirlwall(1994) who find, for Mexico, that financial saving is positively related to interest rates. However, others find that financial saving is not affected positively by real domestic interest rates(Dornbusch, 1990; Kariuki, 1996).

Similarly we tested for the separate effect of inflation and the nominal deposit interest rate on real financial saving and obtained the following result:

$$FINSLOG = \underset{(26.61)}{5.45} \underset{(-2.68)}{-0.046DIR} + \underset{(1.01)}{0.016INFL} + \underset{(13.48)}{0.0005RGDPLOG} \qquad (3.5)$$
$$\bar{R}^2 = 0.93 \qquad D.W = 2.06$$

Diagnostic tests:

Serial correlation $\chi^2(1) = 0.0082[.774]$; Functional form $\chi^2(1) = 3.850[.050]$;

Normality $\chi^2(2) = 0.2790[.870]$; Heteroscedasticity $\chi^2(1) = 0.0184[.892]$

The income variable emerges as the most significant determinant of financial saving in the regression. We find that changes in the consumer price index affect financial savings positively but insignificantly. On the other hand, the nominal deposit interest rate affects financial savings negatively and significantly at the 5 percent level. This contrasts with Seck and EL.Nil(1993) who find in their study of nine Sub-Saharan countries that nominal deposit interest rates affect financial savings[2] positively and significantly, whereas inflation has a negative effect.

The results presented do not seem to provide support for the Mckinnon and Shaw assertion that high interest rates have positive effects on total savings and especially financial resource mobilisation. In both cases the coefficient is negative. The most important determinant of saving, however defined, is income. The empirical evidence in support of the dominating effects of income has been found elsewhere(Gibson and Tsakalatos, 1994; Yao, 1985; Arrieta, 1988; Fry, 1995; Kariuki, 1996).

It is clear that saving is determined by factors(income) other than the interest rate, implying that interest rate policy if used will not yield the expected outcome as the income effect tends to dominate the substitution effect. Even though the sample is not large enough(thereby limiting the use of recent time series techingues, such as cointegration and unit root tests) to warrant strong conclusions, the findings cast doubt

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[2] Other studies (Seck and EL.Nil, 1993; Kariuki, 1996) use a definition of financial saving that includes currency whilst we deduct currency. This is important because it distinguishes the process of monetisation from the development of the financial system.

on the emphasis on the interest rate as the key policy to achieve higher savings(especially private saving) and a higher rate of economic growth.

The other areas for financial liberalisation include instituting the appropriate legal and macroeconomic framework, and most importantly stricter operating procedures for parastatal organisations. If the policy objective is to promote saving and investment(in that order) then it does not seem, on the basis of the available evidence, that it is achievable. The policy effort should perhaps be geared to the promotion of investment given saving depends on income. This would target key sectors of the economy and complement diversification. The fact that interest rates do not affect savings positively, as claimed by the financial liberalisation hypothesis, would suggest that " a key part of the story is missing, and therefore one must ask whether this does not seriously limit any policy implications " (Dornbusch, 1990 p.38).

3.5 Financial Liberalisation and Domestic Investment

In this section we estimate the determinants of gross domestic investment. The Mckinnon and Shaw model holds that domestic investment depends on the development of the money market proxied by the monetary aggregate or the financial intermediation ratio. Money holding is viewed as a conduit to investment demand and a rapid rate of economic growth. The financial liberalisation hypothesis asserts that real deposit interest rates affect investment positively, with the effect operating through financial saving and the supply of credit to the private sector.

Theoretically, investment is determined by the differential between the market rate of interest and the rate of return on productive physical capital. And even though financial liberalisation may result in higher interest rates, thereby narrowing the gap between profit and interest rates, investment will remain unaltered if the rate of profit on marginal investment is equal to the rate of interest(Khatkhate, 1988). Additionally, negative interest rates lead to an outflow of financial saving from the domestic financial system whereas raising them to positive levels results in an inflow of foreign financial

resources. Higher interest rates (relative to the rest of the world) also retain domestic savings. If the Mckinnon and Shaw model holds then real deposit interest rates will affect domestic investment positively.

We hypothesise, however, that credit allocation to the private sector is a much stronger determinant of gross domestic investment than the financial intermediation ratio. This is because we consider credit availability to the private sector to be the link through which resources are transferred for capital formation. This measure has the added advantage that it excludes credit allocated to the public sector(local government authorities and parastatal organisations). Note that when the greater proportion of total credit is not allocated by the domestic financial system, which is the case in Botswana, this measure may not capture the full effect of credit flows, but we consider the measure appropriate in that it reflects the ability and potential of the private financial system to allocate credit. Finally, we test for the effects of aggregate demand on investment by including the lagged accelerator in the investment function. This is expected to affect investment positively.

The determinants of investment are assessed using a switching regime model(Rittenberg, 1991; Warman and Thirlwall, 1994). The model allows for the distinction to be made between interest rates below and interest rates above "equilibrium". The effect of interest rates operates in two ways. Firstly, when institutional interest rates are set below market determined interest rates the level of investment is constrained by inadequate savings. Secondly, domestic investment may be discouraged when institutional interest rates are set above market interest rates. And depending on the relationship between the set interest rate and the (unknown) equilibrium interest rate, the interest rate variable is expected to take, at certain times, positive or negative values. This suggests the following investment function:

$$I=a_1+b_1(r)+c_1[(r-r^{e})D]+d(Z) \qquad (3.6)$$

where I is gross domestic investment, r is the real interest rate, r^e is the equilibrium

interest rate or the switching point, D is the dummy variable which takes the value of 1 when the institutional interest rate is set above the market interest rate ($r > r^e$), and zero when the institutional rate is set below the market interest rate ($r < r^e$), and Z is the vector of other variables expected to affect the level of domestic investment, for example, private sector credit flows and the lagged accelerator effect. Note that the above specification assumes that the response of investment to changes in other variables is the same under a liberalised and repressed financial system(Rittenberg, 1991). When $r < r^e$ the investment function is;

$$I=a_1+b_1(r)+d(Z) \tag{3.7}$$

Since the interest rate is assumed to be below equilibrium, domestic investment is expected to respond positively to an increase in interest rates. This means b_1 is expected to be positive. On the other hand, when the institutional interest rate is above equilibrium($r > r^e$) equation(3.6) becomes,

$$I=(a_1-c_1r^{e})+(b_1+c_1)r \tag{3.8}$$

where ($b_1 + c_1$) < 0. If we add private sector credit flows(Pc) and the accelerator we have the investment function,

$$I=a_1+b_1(r)+c_1[(r-r^{e})D]+d_1(Pc)+d_2XGDP_{-1} \tag{3.9}$$

The relationship between the supply of credit and the interest rate is captured in the following structural equations,

$$Pc=a_2+b_2(Fs) \tag{3.10}$$

and

$$Fs=a_3+b_3(r) \tag{3.11}$$

The interest rate is expected to affect financial saving positively and financial saving

in turn affects private credit positively. Substitution of (3.11), (3.10) and (3.9) yields the following investment function,

$$I=a_1+(b_1+d_1b_2b_3)r+c_1[(r-r^e)D]+d_1a_2+d_1b_2a_3+d_2XGDP_{-1} \qquad (3.12)$$

when r is below equilibrium the reduced form coefficient is ($b_1 + d_1 b_2 b_3$), and when the interest rate is above equilibrium it is ($b_1 + c_1 + d_1 b_2 b_3$). The estimated parameters will determine the total effect of the interest rate on the level of investment.

In estimating the investment function(equation 3.9) we searched, through a trial and error process, for the value of the equilibrium interest rate that minimised the residual sum of squares. We also include a dummy variable for the year 1987/88 since we observed a sharp drop in domestic investment in that year. The equation is corrrected for serial correlation using the Cochrane-Orcutt method. The following result is obtained(with the t value below the coefficient):

$$\begin{array}{ccccccc} GDILOG= & 5.53 & + 0.139r & - 0.193[(r & -r^e)D] & + 0.001Pc & + 0.002XGDP_{(-1)} \\ & (16.3) & (0.09) & (-0.72) & (2.61) & (1.99) & \\ & & & -0.522D_{1987} & & & \\ & & & (-2.02) & & & \end{array} \qquad (3.13)$$

$$\bar{R}^2 = 0.84 \qquad D.W = 2.13$$

The equilibrium interest rate that minimises the residual sum of squares is found to be zero. The switching coefficient is estimated at (-0.193) and is statistically insignificant. The interest rate variable, on the other hand, is positive, albeit insignificant. Based on the estimates of the above equation it means that increasing interest rates when they are below equilibrium will result in higher investment. However, the coefficient is insignificant. Experimenting with a range of equilibrium interest rates resulted in the coefficient taking both negative and positive values. In fact, when using severely negative values the equilibrium interest rate variable becomes positive and increases in magnitude. This could suggest that when interest rates reach such levels, in the Botswana financial system, raising them to positive levels results

in improved investment. This may also suggest that although interest rates are negative they are not severely so and could therefore be deemed to be consistent with the market fundamentals, e.g excess liquidity or inadequate investment demand. Turning our attention to the other variables in the equation, it is found that the level of private sector credit affects domestic investment positively and significantly. The effect of the accelerator is also positive and significant. The dummy variable for 1987/88 captures the effect of the decline in investment during 1987/88. Equation(3.9) was also estimated without the switcthing term. The following result was obtained;

$$\begin{array}{lllll} GDILOG = 5.46 & -0.006r + & 0.002Pc + & 0.001XGDP_{-1} & -0.43D_{1987} \\ \quad (20.60) & (0.23) & (2.99) & (1.72) & (-1.53) \end{array} \qquad (3.14)$$

$$\bar{R}^2 = 0.68 \qquad D.W = 2.15$$

Diagnostic tests :

Serial correlation $\chi^2(1) = 3.093[0.062]$; Functional form $\chi^2(1) = 0.702[0.375]$;

Normality $\chi^2(2) = 0.519[0.445]$;Heteroscedasticity $\chi^2(1) = 0.558[0.415]$

The interest rate variable is now negative but insignificant. The fact that the interest rate variable has now assumed a negative value underlines the importance of trying to relate interest rates to an equilibrium level. Otherwise it possible to infer, at times wrongly, that higher interest rates result in lower levels of investment when the interest rate consistent with market fundamentals has not been explicitly searched for. All the other variables, except the dummy variable, maintain their expected signs and are still significant. The coefficient for lagged accelerator drops in significance. It is clear from this result that the level of investment is affected principally by the availability of credit and the lagged effects of output on demand.

We now estimate the indirect effects of interest rates on investment that work through the supply of credit, which in turn depends on the flow of finacial savings. This means estimating equations (3.10) and (3.11). The effect of financial saving on credit

is given by(the equation is corrected for serial correlation);

$$\text{Pclog} = 1.50 + 0.66\,\text{Fslog} \qquad (3.14a)$$
$$(1.83) \quad (5.20)$$

$$\bar{R}^2 = 0.77 \qquad \text{D.W} = 2.15$$

The supply of credit has a positive effect on domestic investment through financial savings. When we convert the sensitivity of real credit supply on domestic investment(equation 3.14) to find the absolute magnitude of credit supply we obtained 0.685. This contribution of credit to investment is found by multiplying the mean value of credit(342.51) by the estimated elasticity (0.002). The estimate is interpreted to mean that for a percentage increase in the supply of credit there is an increase of about 0.685 million pula in investment. Note that we make no comment on the effect of interest rates as the interest rate variable is found to be insignificant.

In conclusion, no evidence is found to support the hypothesis of a positive effect of interest rates on the level of investment. But it is important to recognise that when the possibility of different interest rates(search for the equilibrium rate) is allowed for it is found that the interest rate variable takes a positive value. There is therefore the likelihood that when interest rates are below the equilibrium, then raising them would have a positive effect on the level of investment in the economy. This suggests that when setting interest rates a reasonable estimate of the equilibrium(market) interest rate has to be made. We note, however, that the coefficient is negative.

3.6 Financial Liberalisation and Economic Growth

Typically(McKinnon, 1973) models of financial liberalisation and growth start with the Harrod- Domar model:

$$Y_t = \sigma K \qquad (3.15)$$

where output (Y_t) is assumed to depend on the stock of capital (K_t). Technical change

is assumed to be labour augmenting keeping the productivity of capital(σ) constant. Saving is assumed to be a fixed proportion of income(s) and equal to investment. Differentiating the above function with respect to time and dividing through by Y yields:

$$g=\sigma s \tag{3.16}$$

The propensity to save(s) is also a function income(Y), the interest rate(r) and other factors(ξ). Hence:

$$s=f(Y,\ r,\ \xi) \tag{3.17}$$

According to Mckinnon(1973) there is an interdependence between saving and growth. In this model saving influences growth, and growth in turn affects the saving rate. This virtuous interdependence of saving and growth is referred to as the "portfolio effect". By portfolio effect of income on saving is meant the desire by households and firms to hold a target stock of money assets to income over time. And because of the need to preserve the target stock of assets, when income increases there is induced an increase in saving. Apart from the growth in income, the portfolio effect also depends on the development of the financial system measured by the ratio of financial assets to total output. In this framework, " the rise in desired holdings of real money balances not only stimulates saving directly but, once growth begins, channels even more saving through ' organised ' financial processes "(Mckinnon, 1973 p.129). The conclusion here is that financial liberalisation not only leads to higher economic growth, but also that economic growth is self reinforcing through its second round effects on saving.

To demonstrate this interdependence between economic growth and savings, we follow the extension to Mckinnon's virtuous circle model suggested by Warman and Thirlwall(1994). We resume by substituting equation(3.17) into (3.16) which yields,

$$g=\sigma s(Y,\ r,\ \xi) \tag{3.18}$$

Note that equations 3.16 and 3.17 demonstrate the dependence of saving on growth and vice versa. This can be represented by the following partial derivatives,

$$\frac{\delta g}{\delta s}>0\ ;\ \frac{\delta s}{\delta g}>0 \tag{3.19}$$

The partial derivatives imply that a high growth rate depends on a high saving ratio in order to maintain a constant money balance-income ratio, but how the growth of income affects the propensity to save depends on the level of financial development of the economy. The dependence of saving on income is a standard Keynesian proposition. The extension to this is the requirement that the fortuitously increased income ought to find adequate outlets(financial assets) to afford individuals the opportunity to maintain their asset balance. As a result it is important that the economy has a developed and efficient financial system to achieve a higher and stable ratio of financial assets to income. This is achievable through the maintanance of high and positive real interest rates that work through saving and investment. An improved financial system would then enhance the efficient use of capital, increasing the productivity of capital and leading to a higher level of economic growth. In order to ensure equilibrium stability the portfolio effect of growth on saving is restricted to less than the capital-output ratio. This means that:

$$\frac{\delta s}{\delta g} < (\frac{1}{\sigma}) \tag{3.20}$$

The requirement means that the actual rate of growth of income must generate sufficient desired savings to support the investment consistent with long run equilibrium growth. Apart from saving and growth being dependent on each other, they are affected by some other variables. These include the growth rate of exports(x), foreign savings(S_f) ratio

and private sector credit ratio(Pc). Foreign savings and the growth of exports relieve developing countries of the balance of payments constraint on investment and growth. The availability of private sector credit has positive effects on economic growth through its effect on investment. It is also argued that the ease with which credit is available may result in less effort made to mobilise domestic saving. But credit remains an important route through which savings are converted into productive investment. We therefore re-specify the savings equation as,

$$S=s(g,\ r,\ x,\ S_f\ ,\ Pc) \tag{3.21}$$

We now solve for the model accounting separately for the different types of saving: private, public, and foreign savings. Taking private saving to depend on real income we have,

$$PS=sY \tag{3.22}$$

where s is the marginal propensity to save. Substituting for s in 3.21 and the result into 3.22 yields,

$$PS=(\phi_1 g+\phi_2 x+\phi_3 r+\phi_4 S_f+\phi_5 Pc)Y \tag{3.23}$$

Given the equality,

$$S=I+X-M \tag{3.24}$$

and that total domestic saving consists of private and public saving, we have:

$$S=PS+P_uS=PS+(T-G) \tag{3.25}$$

where P_uS is public saving, T is tax revenue and G represents government expenditure. Substituting (3.24) into (3.25) yields the following investment identity,

$$I=PS+(T-G)+(X-M) \tag{3.26}$$

which states that investment can be financed from three main sources, namely: private saving, public saving and foreign saving. Further substitute 3.22 into 3.26 to obtain,

$$I=sY+(T-G)+(X-M) \tag{3.27}$$

Differentiating equation 3.15 with respect to time and substituting for $I = \delta k/ \delta t$ we have,

$$\frac{\delta Y}{\delta t}=\sigma I \tag{3.28}$$

If we substitute (3.27) into (3.28) and divide through by Y the growth equation becomes;

$$g=\sigma(s_p+s_g+s_f) \tag{3.29}$$

where s_p is private savings ratio, s_g is the government saving ratio and s_f is the foreign savings ratio. Finally, in order to obtain the reduced form which will permit the calculation of the structural parameters we substitute equation 3.23(note that s in 3.22 is equal to the coefficient of Y in 3.23) into 3.29 which results in:

$$g=\pi_1 x+\pi_2 r+\pi_3\ s_f+\pi_4 s_g+\pi_5\ Pc \tag{3.30}$$

where

$$\pi_1=\frac{\sigma\phi_2}{1-\phi_1\sigma};\pi_2=\frac{\sigma\phi_3}{1-\phi_1\sigma};\pi_3=\frac{\sigma(1+\phi_4)}{1-\phi_1\sigma};\pi_4=\frac{\sigma}{1-\phi_1\sigma};\pi_5=\frac{\sigma\phi_5}{1-\phi_1\sigma} \tag{3.31}$$

ϕ_i are the structural parameters and σ is the productivity of investment. Estimation of equation 3.30, the growth equation, yields the following result(the equation is corrected for serial correlation using the Cochrane-Orcutt method):

$$g = \underset{(3.65)}{3.54} + \underset{(1.29)}{0.029x} + \underset{(1.54)}{0.019\,r} - \underset{(-0.87)}{0.25\,Fs} + \underset{(2.98)}{0.87\,sg} + \underset{(3.95)}{0.683\,Pc} \qquad (3.32)$$

$\bar{R}^2 = 0.90 \qquad D.W = 1.51$

The real deposit interest rate affects the rate of economic growth positively but insignificantly. On the other hand, the ratio of private sector credit affects economic growth positively and significantly at the one percent level. Export growth affects the rate of economic growth positively, but insignificantly. Government saving is also found to affect economic growth positively and significantly.

To test the portfolio effects of growth on the propensity to save, we make use of the estimates of $\pi_i = 1 - 5$ to calculate the ϕ_i which are the determinants of the propensity to save in equation 3.31. The incremental capital- output ratio($I/\Delta O$) is estimated independently over the sample period and found to be 1.98 giving an estimate of the productivity of capital of 0.505.

Given the estimates of equation 3.32 and using equation 3.31 the coefficients of equation 3.34 are as follows; $\phi_1 = 0.83$, $\phi_2 = 0.03$, $\phi_3 = 0.02$, $\phi_4 = -0.28$, $\phi_5 = 0.78$. These are calculated according to the following:

$$\phi_1 = \frac{1}{\sigma} - \frac{1}{\pi_4}; \quad \phi_2 = \frac{\pi_1}{\pi_4}; \quad \phi_3 = \frac{\pi_2}{\pi_4}; \quad \phi_4 = \frac{\pi_3}{\pi_4}; \quad \phi_5 = \frac{\pi_5}{\pi_4} \qquad (3.33)$$

The savings equation is accordingly,

$$s = 0.83g + 0.03r + 0.02x - 0.28Fs + 0.78Pc \qquad (3.34)$$

The effect of the rate growth rate on saving is found to be positive. This supports the portfolio effect of growth on the propensity to save. The effect of interest rates on savings, within the virtuous circle model, is found to be positive. Foreign saving affects the propensity to save negatively. Finally, the flow of private sector credit has a positive effect on the savings ratio. The coefficient of the credit ratio is more than twice the interest rate coefficient. As we found earlier the transmision is through the

effect of credit on investment, and ultimately on economic growth which in turn promotes savings.

3.7 Conclusion

This chapter empirically tested one of the main arguments of the financial liberalisation model. It is argued that increases in interest rates will lead to higher savings, investment and economic growth. In testing this proposition of the model we adopted three basic approaches.

Firstly, tests of the effects of interest rates on savings were done on three definitions of savings, namely: total savings, private savings, and financial savings. This is important because interest rates are not expected to affect types of savings equally. Furthermore, the financial liberalisation model is concerned with the mobilisation of financial savings or increases in the ratio of financial assets to total output. These are considered to lead to a higher rate of economic growth. Secondly, when estimating the determinants of domestic investment we take explicit account, with regard to the interest rate, of the effects of institutional interest rates set above or below the market interest rate by using a switching model of investment. Thirdly, for the determinants of economic growth we estimate a virtuous model of growth which attempts to capture the interdependence between saving and economic growth. In this regard we depart fundamentally from the way the financial liberalisation model has been traditionally estimated for a number of countries.

To summarise the findings of this chapter, we find no evidence to support the positive effect of interest rates on savings. This is the case for all measures of saving. In fact, a negative relation is found for total and private savings. This suggests that the income effect of higher interest rates outweighs the substitution effect. We find no significant effect of interest rates on financial saving. The major determinant of saving, however defined, is income; a finding which is consistent with the Keynesian absolute income hypothesis.

Turning now to the investment function, we find that interest rates do not have a significant effect on domestic investment even though the coefficient is positive. Domestic investment is found to be affected strongly by the availability of private sector credit and to a lesser extent by past levels of demand. Although the switching term emerged as insignificant it is interesting that experimentation with a wide range of interest rates resulted in the switching term taking negative and at times positive values. Most notably, when severely negative interest rates(-8.00) were selected the switching term assumed positive values. This suggests that increasing interest rates from those levels may lead to higher levels of investment.

The growth of income is found to depend positively on government saving and the availability of private sector credit. On the other hand, the deposit interest rate has an insignificant effect on economic growth. When estimating the reduced form estimates of the savings function, i.e deriving the saving function within the virtuous model, there is some evidence for the dependence of savings on the growth rate of income. The growth of income, government saving, and interest rates affect savings positively.

Finally, we discuss the effects of financial sector reforms adopted since 1989[3]. This is assessed by considering the impact of institutional reforms in the financial system, and the extent to which interest rate policy has increased savings and investment.

Institutional reforms have had two fundamental effects. Firstly, they have led to an increase in the number of licensed commercial banks. This has resulted in improved competition, and an efficient delivery of service in the banking market. And although commercial banks continue to lend primarily for short term investment, the ratio of loans with a maturity of more than five years has increased since the beginning of the reforms. Secondly, the establishment of the Botswana Stock Exchange has

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[3] See Bank of Botswana(1996), *Economic Review* (Gaborone: Botswana).

provided an avenue for companies to raise long term capital. The number of companies listed increased from five to eleven between 1989 and 1997. However, despite the growth of the stock exchange, parastatal organisations still obtain credit from the government at subsidised interest rates, leading to the continued separation of the lending market into short term lending provided by the commercial banks, and long term lending undertaken by the government(see chapter 1).

With regard to the policy of positive interest rates, it is observed that positive interest rates have affected borrowing more than savings probably because real interest rates on savings are still negative, whilst real lending rates are positive. This resulted in the reduction in the total amount of credit allocated for investment in the economy. As a result, even though institutional reforms had positive effects on the financial system, the primary task, as mentioned earlier in the chapter, seems not to be the mobilisation of savings for growth, but the provision of credit for investment and growth.

Chapter Four

The Elasticity and Buoyancy of the Botswana Tax System

4.1 Introduction

This chapter discusses the revenue generating activities of the Botswana government and evaluates the performance of the fiscal system on the basis of the estimates of revenue productivity over the period 1973-1995. This is measured in two ways; by tax elasticity and by buoyancy. Distinguishing between elasticity and buoyancy allows for an assessment of expenditure plans that can be sustained by the tax system without the need for fiscal tax changes. In principle, a higher tax elasticity is to be preferred, otherwise additional revenue may be generated by use of discretionary changes, reflected in higher buoyancy estimates. The Divisia Index Method developed by Choudhry(1979) is used in this study to estimate elasticities.

The engine of economic development is increased productivity. Ultimately it is capital formation and efficient resource use that is important for growth. But finance plays the important role of transferring resources to productive physical investment. Monetary policy as an instrument of financial resource mobilisation, especifically interest rate policy, was the subject of the previous chapter within the framework of the McKinnon and Shaw model. This chapter deals with the other major aspect of resource mobilisation, namely fiscal policy. The main emphasis is on taxation. There are two ways in which taxation can be analysed; as an incentive to improve effort and efficiency and/or as a means of resource mobilisation.

The concern here is with the role of fiscal policy as an instrument of resource mobilisation to fund not only government expenditure but, more broadly, economic development. Because high taxes may retard growth and development by acting as a disincentive to private investment and work effort, lower taxes are often used to promote growth in developed and developing countries. On the other hand, while lower

taxes may be important as incentives to promote investment and growth, they may have unfavourable effects on public revenues with deleterious effects on development programmes in developing countries. The incentives given are usually in the form of tax concessions or tax havens to specific sectors of the economy in accordance with economic diversification programmes pursued in these countries. Whether the tax incentives have negative effects on revenues depends on the elasticity of the tax bases with respect to the rate changes.

The extent to which tax incentives are used often depends on whether countries feel able to forgo the revenue lost in the short term. An efficient tax system requires an appropriate balance to be maintained between the revenue(resource) and incentive(efficiency) functions of taxation. Strict adherence to a revenue-maximising strategy may result in the worsening of efficiency and undermine voluntary compliance. Though the principle of mobilising the surplus forms the corner-stone of taxation policy, other cannons of an efficient tax system must be borne in mind. These are equity; the ability to pay principle, progressivity of the tax system to ensure that consumption does not rise proportionately with income, especially in the initial stages of development. The difficulty remains to find an administratively and political feasible way to release resources whilst promoting equity and efficiency. Some form of balance has to be made between revenue, administration, political acceptability, equity and efficiency (Musgrave,1987;Burgess and Stern,1993) which is not an easy task. In the words of Thirlwall(1994):

> It is often the case that taxes which would make tax revenue highly elastic with respect to income are taxes which would be met mainly out of saving and have the most discouraging effects on incentives. For example, very progressive income tax will discourage work effort if the substitution effect of the tax outweighs the income effect; and to the extent that the marginal rates of tax fall primarily on the upper income groups with low propensities to consume, saving may fall by nearly as much as tax revenue rise(p.282).

This prompts suggestions of an expenditure tax on upper income groups which exempts saving from taxation in order to encourage more voluntary saving. This does not, however, necessarily avoid the disincentive effects of taxation on work effort(see Musgrave,1987).

Fiscal policy reform is one of the key components of World Bank Structural Adjustment Programs implemented in many developing countries, especially in Sub-Saharan Africa. There is an emerging consensus both within and outside the World Bank that fiscal "discipline" is important for long term macroeconomic stability(World Bank,1990)[1]. This requirement for fiscal reform has lately received impetus from the wave of democratic changes taking place across the developing world. The motive of these reforms is to ensure that developing countries fund a greater part of their development programmes through internally generated resources. This objective can be realised if private and financial sector reforms, which are some of the elements of stabilisation packages, are complemented by prudent fiscal policy.

Revenue instability in developing countries has been found to have unsettling effects on economic policy through its effect on expenditures in a sample of forty-nine countries, and most seriously in sub-Saharan Africa(Bleaney et al.,1995). This is because the structure of taxation in developing countries is such that taxes on international trade dominate, and developing countries are more likely to suffer from external shocks than developed countries due to their dependence on the export of primary products whose prices are volatile. The authors find that Sub-Saharan Africa has a Revenue Instability Index of 3.4 compared with 1.65 for Asia and 1.20 for developed market economies[2]. This revenue instability has manifested itself in instability in the development expenditures of most countries. This has been especially

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[1] See also IMF(1996) *World Economic Outlook: Focus on Fiscal Policy*, May, (Washington: IMF).

[2]The Instability Index is measured as the standard deviation of year to year changes in the tax revenue and grants received by the central government as a percentage of trend GDP.

severe in countries that kept low fiscal reserves as a safeguard against falling revenues, and partly also reflects the extent of limited alternative revenue sources. This would seem to suggest that efforts should be concentrated on the reduction of revenue instability given that revenue instability "causes" expenditure instability(Lim,1983). The reliance on trade taxes is undesirable from the stabilisation and resource allocation point of view. Foreign trade taxes tend to aggravate fiscal stabilisation problems by tying government revenues to fluctuations in export revenues. There may also be a worsening of the fiscal budget when import restrictions imposed for demand management reasons result in lower revenue from import duties. Trade taxes also impose both a production and consumption distortion cost which may lead to excessive effective protection and encourage an inefficient domestic industry.

In part of the literature, fiscal policy is often discussed as an aspect of the debate on the size of government vis-a-vis the private sector(Phelps,1965). Firstly, proponents of government intervention base their arguments on the prevalence of market failure, which is assumed to be more severe in developing countries than in developed countries, justifying the need for corrective taxes and regulatory instruments. Secondly, poverty and low living standards put pressure on developing country governments to play a much more active role in the market by securing an increase in productive investment to attain a *socially optimal* allocation of resources. Thirdly, some markets are simply non-existent in developing countries, which establishes a role for government to participate in certain sectors of the economy(Ram,1986; Burgess and Stern, 1993). This requires that government involvement extends beyond its more traditional functions of law and order and laying ground rules, to become a participant in the market.

On the other hand, a reduced role for government has been argued on the basis that government operations are often undertaken inefficiently and at times corruptly, which results in regulation imposing excessive burdens and costs on the economic system. Here we take the middle ground that the undeveloped nature of the private

sector in many developing countries requires appropriate contribution by the public and the private sector to economic development. Some studies have found that the size of government as proxied by the share of government revenue in Gross National Product promotes economic growth(Rubinson,1977). Also, Ram(1986) and Lim(1994) find the overall impact of government expenditure and size to be positive on economic growth in both developed and developing countries. Other studies and using different measures of the size of government(for example, the share of government consumption in Gross Domestic Product) find that larger government reduces economic growth(Landau,1983). The role of fiscal policy has received renewed attention in the endogenous growth models (Barro,1990; Barro and Sala-i-Martin,1992). Assessing the role of fiscal policy, specifically taxation, Rebelo(1991) finds that steady-state growth can be affected adversely by government economic policy. The posited transmission mechanism is that income tax increases result in the reduction of the rate of return on private investment and a permanent decline in the rate of capital accumulation and economic growth. Higher income taxes also reduce after-tax wages and in turn the savings rates, contributing to further declines in the long-run rate of economic growth.

The main conclusion of Rebelo is that a higher rate of tax has negative effects on economic growth. This conclusion emphasises the incentive effects of tax policy on capital accumulation. Another strand of the literature, however, (Barro,1990; Barro and Sala-i-Martin,1992; Cashin,1995) considers models in which the stock of private physical capital and government-provided services are inputs into private production. Investment in transport and communication(infrastructure investment) and human capital contribute positively to economic growth. These findings are important for our study. They highlight the importance for developing countries of raising revenues with minimal disincentives and to channel such funds into growth promoting investment. It is the general conclusion of this chapter that a non-diversified, non-elastic revenue structure imposes a constraint on the country's ability to fund the requisite investment and the constraint is more severe where the private sector is not adequately developed.

4.2 Types of Funding

There are various sources of finance available to fund economic development. The first major source is government revenue. This includes taxes, public sector profits, mineral royalties, and net revenues of marketing boards or parastatal organisations. Secondly, the government may borrow from the domestic market. This is dependent on the level of development of the domestic financial system. The reality is, however, that most developing countries have underdeveloped capital markets, and in certain cases, none at all. But where financial markets are emerging and there are prospects for borrowing, it is possible that government borrowing may crowd-out private investment(Buiter,1989). Another potentially harmful effect is the possibility of capital flight in anticipation of higher taxes to pay off government debt in the future.

The additional constraint on domestic borrowing, apart from undeveloped capital markets, is the incentive on the part of government to renege on its debt through inflation. This brings us to the third source of finance, inflationary finance. This is a possible source of finance because inflation reduces the real value of people's money holdings, and the attempt to restore the real value of money holdings reduces real consumption(Eshag, 1983; Thirlwall, 1994). However, the inflation tax is inequitable in that it affects the poor more given that they hold a larger proportion of their assets in currency form. Moreover, Easterly et.al(1994) have recently provided evidence to show that the amount of revenue that can be obtained from the inflation tax is very limited(see also Agenor and Montiel,1996). Fourthly, governments can borrow from the international markets. This allows the country to command more resources than available in the domestic market, but this may add to an already high debt service ratio.

It seems, therefore, that taxation is, at a certain level of development, the

instrument that governments of developing countries must mainly rely on to complement voluntary saving, and to direct funds into productive investment. These may fund a whole host of infrastructure developments that can complement private investment.

The importance of public revenue to the underdeveloped countries can hardly be exaggerated if they are to achieve their hopes of accelerated economic progress. Whatever the political ideology of a particular government, it must steadily expand a whole host of non revenue-yielding services- education, health, communication systems and so on - as prerequisite to a country's economic and cultural development(Kaldor, 1965).

4.3 Fiscal Performance in Botswana

This section discusses the revenue performance of the Botswana economy over the period 1973 to 1995. The fiscal position in which the Botswana economy found itself at independence, in 1966, was dismal. The country ranked, at the time, among the poorest in the world, with a budget of P13 million against total revenues of P6 million[3]. The United Kingdom government provided the difference to balance the budget. This was unacceptable to the Botswana government, especially for a newly independent country seeking acceptance into the wider international community. The government then sought as its main objective to find alternative sources of funding within the economy to finance its expenditure. As the following statement from the Transitional Plan for Social and Economic Development of 30th September, 1966 states;

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[3] The current British Pound - Pula exchange rate is £1: P4.50

> The Fundamental plan of government is the determination to make the country a financially viable entity in the shortest possible period. No political independent nation can or should depend for any lengthy and continued period on grants to meet ordinary recurrent expenditure on existing services. Such is the plight of government now and for sometime to come. But the government intends that the affairs of the country will be handled in such a way as to expedite the reduction of dependence on foreign assistance for ordinary budget purposes[4](p. 76).

The first major task was to renegotiate the terms of the Customs Union Agreement with effect from fiscal year 1969-70. The old agreement was signed in 1910. The renegotiation was based on the following factors: that movements in customs-revenue receipts were related more to changes in the South African economy than that of Botswana; tariff levels were set to benefit South Africa much more than other member countries; member states lost sizable revenue due to the imposition of high protective duties for South African industries; members also suffered a diversion of demand to more expensive South African products hence subsidizing its industrial development (Colclough and McCarthy, 1980).

Botswana's share of revenue from the Union pool was calculated according to the following formula: Revenue accrued = 1.42R X M where 1.42 is the multiplicative factor applied to the average rate of duty for customs and excise duties(R) and M is the level of imports plus the value of production of excisable commodities produced and consumed in Botswana. The factor 1.42(multiplier) was to compensate for loss of fiscal discretion. As a result of renegotiation, revenue payments could not fall below 17 percent nor rise above 23 per cent of the value of all dutiable goods imported by the

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[4]Quoted from Colclough and McCarthy(1980) *The Political Economy Of Botswana:A Study of Growth and Distribution*(Oxford: Oxford University Press)

member states. This ensured a minimum revenue of 17 percent from the Custom Union revenue pool. Note, however, that total revenue for the fiscal year, from the Customs Union pool is paid with a lag of at least two years since the actual data are not known for the year when revenue payments are made[5].

Whilst the renegotiation of the Customs Union agreement was on, effort was directed at mineral prospecting. Two major discoveries were made. In 1967 Copper Nickel was found in Selibe Phikwe. Diamonds were discovered further north in Orapa by the Be Beers prospecting company. The diamond deposits turned out to be the second largest kimberlite in the world(Nganunu,1983). There were two main objectives of mining policy. First, consistent with the revenue declaration, government aimed to get as much revenue from any mining venture to meet the growing demands on its budget and also to reduce dependence on aid from outside. Second, the government aimed to acquire shares in the mining companies but left the management to the companies themselves. Production started on 1st July, 1971 with a share holding of 85 per cent to De Beers mining company and the rest to the Botswana government. But as it turned out, the government underestimated the profitability of the project, prompting re-negotiation (see Palmer,1980)[6]. This resulted in the signing of a new agreement granting a 50 - 50 share-holding between the two parties. Profits are shared such that not "less than 60-70 percent of the profits of Debswana accrue to the government, as the custodian of the nation's resources"(Harvey and Lewis, 1990). This partnership between the government and a multi-national corporation has ensured a steady flow of resources to the state.

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[5]For an extensive discussion of the SACUA see IMF(1996) Botswana- *Recent Economic Developments and Selected Economic Issues*. Staff Country Report No 96/23.

[6]This is the so called " obsolescing bargain" were the investor holds the bargaining leverage before exploration as governments offer liberal fiscal terms(ex ante). However, ex post profitability of projects make the original agreement seem over generous prompting re-negotiation.

As emphasised by Lewis and Mokgethi(1983, p.76):

> The general nature of the revenue arrangement is for a split of profits between the government and De Beers. Thus if profits rise, both the government and De Beers benefit in proportion to their share of profit split; and the reverse happens when profits fall. The split of profits is negotiated between the two parties on the basis of providing De Beers with an after-tax return on its investments with the remainder of expected profits going to the government. The arrangements are fixed for long periods of time, and *cannot be unilaterally changed by, for example, raising the tax rates of profits(own emphasis)*. So long as the diamond business remains profitable government will benefit alongside De Beers.

Though this arrangement is beneficial to both the government and the multi-national corporation, it has one major disadvantage; this major source of revenue to the government has no discretionary element. It is not clear what the government would have done with such discretion in the light of arrangements in the market for diamonds. The lack of discretion is also true of revenue from the Customs Union. As noted earlier, however, the revenue factor in the Custom Union Agreement was meant to compensate member countries for loss of fiscal discretion.

Table 4.1 provides a breakdown of the types of tax revenue as a proportion of total tax revenue over the period 1973-1995. Over the entire period, mineral revenues and Customs Union revenues represent the major contributors of government finance. Mineral revenues rose from 15.5 percent in 1973 to 75.8 percent in 1988, declining to 63.8 percent in 1995. Custom Union revenues have declined over the period from 60.9 percent in 1973 to 21.6 percent in 1995. The strength of these two sources of finance is attributable to the government's ability to negotiate the two agreements and the difficulty of raising other sources of revenue. Two additional factors also explain the rise in government revenues, namely the pre-1980 rise in diamond prices, and the

coming onto stream of the third mine in 1982 that increased taxable income. There is an observable fall in diamond revenues in the period 1980-1982 due to the decline in the international price of diamonds. This resulted in the imposition of a quota on diamond sales. It is likely, therefore, that the rise in mineral revenues after that period partly reflects the off-loading of stock-piled diamonds onto the market.

The increase in mineral revenues is also explained by the easing of the quota on diamond sales from 75 percent in September 1992 to 80 percent in May 1993 and thereafter to 85 percent in July of the same year. In addition, there was the 1.5 percent rise in the price of rough diamonds which added to the increase in mineral revenues. One would have expected, though, that Customs Union revenues rise with the growth of mineral production because of the effect that the mining industry has on total import demand. The fall in the relative contribution of Customs Union revenues can be explained by the faster growth of the diamond industry and the success of manufacturing industry in achieving import substitution.

The third source of revenue is the non-mineral income tax. The Income Tax Act at independence was based on the 1959 proclamation. The current Income Tax Act was enacted in 1973. The tax differentiates between individuals and companies. Whereas companies are subject to a flat rate of tax, individuals are subject to a progressive tax through rising marginal rates of tax. Non-mineral income tax contributed, as a proportion of total revenue, 18.9 percent in 1973 and has since declined to 9.5 percent in 1995. It is a cause for concern that the only source of revenue with a discretionary element contributes less than 10 percent to government revenues. This points to the need for improvements in both tax coverage and administration. The low proportion of non-mineral income tax can also be partly attributed to legislative changes to reduce rates of tax. The aim of tax reforms over the past several years has been to provide a series of concessions to the private sector with the expectation that they will enhance incentives for domestic and foreign investment, improve competitiveness and create more employment opportunities(Budget Speech, 1995). Tax concessions are thought

to stimulate private capital investment by increasing the supply of internal funds. Also, higher after-tax profits may enable companies to absorb the larger part of their operating costs thereby moderating inflationary pressures. But the aim of tax policy remains to generate revenue for government and to improve the efficiency of resource allocation.

The other sources of revenue, export duties and property taxes, contribute very little to total tax revenues. Export taxes cover mainly taxes on cattle exports. These facts would seem to put in question the stated aim of fiscal policy; that government consumption be financed from non-mineral tax revenue so that the bulk of mineral revenues are invested in present and future ventures to create new productive capacity in replacement of depleted natural resources. For example, according to the Budget speech(1996):

> [Policy] involves the management of resources from a non-renewable source such as diamonds in a way that can ensure future generations of income long after their depletion. It is for this reason that revenue from diamonds has to be invested in the creation of productive assets. Correspondingly *the growth in our recurrent expenditure, which is mostly consumption, must be curtailed or limited to the extent of the growth in non-mineral revenues(Own emphasis)*(p.5).

Revenue instability is a critical factor undermining expenditure planning in Botswana. The expressed policy of government - sustainable budgeting - requires stable revenue sources. Bleaney et.al(1995) found from a sample of African countries, that Botswana had a revenue instability index of 4.38, third after Zaire with 4.65 and Swaziland at 7.94. Inadequate balance and diversity in the tax system does not make for sound fiscal policy in that the tax system is susceptible to major revenue losses due to an over reliance on mineral revenues. It is important therefore that the tax system should be able to cope with periods of lower revenues, but that is difficult

to achieve without a tax structure that is adequately diversified.

The lack of diversity and the limited "tax handles" helped caution the government against spending all its mineral revenues. What it did instead was to establish, in fiscal year 1972-1973, two funds; the Revenue Stabilisation Fund(RSF) and the Public Debt Service Fund(PDSF). The funds were to be invested in suitable development ventures in the domestic economy. The RSF operates as a temporary surplus fund, required to smooth out fluctuations in revenue over the budget period. The PDSF, on the other hand, was intended to be a source of domestic repayments that could match interest and principal repayments on foreign loans. The reality has been different. The PDSF has become the principal source of finance for parastatal organisations[7]. Revenue instability is also cushioned by drawing down accumulated government cash balances in case of a deficit in the government budget.

4.4 The Government Tax Effort

This section undertakes a review of tax effort in Botswana. This is measured as a ratio of GDP. Tax capacity refers to the ability of people to pay taxes and the ability of the government to collect it whereas tax effort reflects the degree to which taxable capacity is utilised. Tax effort is measured by the ratio of national income that is compulsorily transferred from private ownership to the public sector for public purposes(Chelliah,1971). It thus demonstrates the degree of control that the government can exercise over resource utilisation in the economy providing an indication of its influence on economic policy.

There are several factors that may affect taxable capacity of an economy. These include per capita income; the degree of monetisation; the openness of the economy; the share of mining in Gross Domestic Product; the ratio of trade to GDP(excluding

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[7] See Chapter One on the effects of such lending on the development of the domestic financial system.

mining); literacy and the degree of urbanisation (Tanzi, 1987). Studies have used some of these variables(and others) to explain international differences in tax ratios among developing countries, between developed and developing countries and between high and low income groups of countries(Chelliah et.al,1971; Lotz and Morss, 1967). However, cross country comparisons conceal features that are specific to each country unless this is taken care of by country specific dummies. Only on the basis of these international cross section studies it is really possible to make informed decisions about whether there is scope for an increase in tax levels in each country to finance development programs; in other words, to compare actual effort with the estimate of capacity. Lotz and Morss(1967) identify per capita income, and the size of the foreign trade sector, as important in influencing tax performance. The tax ratio was found to be positively related to the level of per capita income(suggesting that if two countries with different levels of per capita income have the same tax ratio then the country with a lower per capita is making a greater tax effort to utilise its capacity, ceteris paribus). They also find that due to the administrative ease of export taxes, a positive association exists between the tax ratio and the size of the foreign trade sector.

Different measures have been used to capture the size of the foreign trade sector. Studies have used either the ratio of imports, exports or the sum of imports and exports to total income(GDP). Lotz and Morss(1970) find the use of the export ratio more significant than the other ratios. However, in a more recent study, and using data for a sample of fifty countries, Greenaway(1980) finds that despite the dependence of least developed countries on trade taxes, income per capita and the size of the foreign traded sector are totally unimportant in explaining inter-country variations. This may simply indicate that the type of goods traded are more important than the volume of trade, and may proxy better for taxable capacity than the size of the foreign trade sector.

One of the key sectors in developing countries which is a potential source of revenue is the agricultural sector. The share of agriculture to GDP has been used as a

proxy for taxable capacity. But there is the problem, especially in less developed countries, of vested political interests against taxing the agricultural sector(e.g land taxes). As a result, the expectation is that the higher the share of agriculture to GDP, the lower the ratio of tax to GDP.

It is not clear how mineral revenues are to be treated in the discussion of taxable capacity. If tax revenues are defined as compulsory levies not necessarily related to any particular benefits, then mineral revenues may not be considered a part of taxes. If this is correct, then the amount of revenue generated from mineral exploitation would not indicate the effort undertaken by government to restrain consumption. Eshag(1983) argues that such revenue should instead be classified as capital receipts since it arises from the sale of a national asset in the form of a depleting natural resource.

But mineral revenues, by generating increases in per capita income, provide developing countries with an important tax handle. They also make possible a mixture of both capacity and administrative ease which provides a justification for their inclusion in the tax ratio function. Moreover the revenues provide resources for government which might otherwise have been consumed. In fact, Chelliah et.al(1975) found the mining ratio to be an important determinant of tax ratios in a sample of developing countries.

We now proceed to analyse the tax effort of the Botswana economy with respect to the magnitude of the ratio of tax to GDP. The ratio of tax revenue to GDP rose from 5.1 percent in 1974-1975 to 84.2 percent in 1993-1994. This is a large increase for a country that could not meet its recurrent expenditures at independence. The high ratio implies that revenues have increased much more rapidly than the growth in GDP. The problem with these ratios is that they are dominated by the contribution of mining revenues. Taking the ratio of non- mineral tax revenues as a proportion of non-mining

GDP results in almost a halving of the tax ratio. The ratio of non-mining revenue was 6.5 percent in 1974-1975, increasing to 49.7 percent in 1993-1994. But given that the main aim is to have a reasonable evaluation of government "effort" in raising revenue we consider that the figures given are still inflated by the share of revenue from the Customs Union Pool. The situation changes drastically without the two types of revenue. The ratio of non-mineral income tax was 1.6 percent in 1974- 1975 increasing to 15.0 percent in 1993-1994. This would seem to be the ratio to use if we are to have a realistic assessment of the revenue situation, if the two main revenue sources in the economy were to collapse. The two main sources of revenue embody a high degree of uncertainty.

Table 4.1

Structure of Revenues: 1973- 1995*

Year	Mineral	Customs	Non-Mineral	Gst
1973	15.5	60.9	18.9	
1974	16.1	59.7	20.5	
1975	36.9	38.9	20.8	
1976	34.8	31.2	29.2	
1977	29.5	46.5	21.6	
1978	34.6	44.4	18.7	
1979	41.6	43.5	13.2	
1980	41.4	41.8	15.7	
1981	33.9	46.0	18.3	
1982	35.6	40.9	20.9	1.0
1983	43.9	35.6	17.9	1.8
1984	59.9	24.8	13.9	0.8
1985	69.6	17.9	11.2	0.8
1986	71.8	16.3	10.3	1.1
1987	72.7	16.5	9.1	1.3
1988	75.8	14.7	8.3	0.8
1989	71.4	15.8	10.9	1.6
1990	70.5	16.8	10.2	2.1
1991	61.1	24.6	11.6	2.3
1992	55.3	29.6	10.9	3.7
1993	61.9	22.4	11.4	3.7
1994	65.1	19.4	10.8	4.3
1995	63.8	21.6	9.5	4.5

*Note that totals do not add to 100 as minor taxes have been excluded.

Other sources of revenue constitute less than five percent of GDP. For example, General Sales Tax revenue, introduced in 1982-83, contributed only 4.9 percent during fiscal year 1993-1994. Export or trade taxes account for less than 3 percent of GDP.

Studies on tax effort and capacity have used international cross section data to compare individual country's efforts in utilising their capacity to raise revenue for development. This involves identifying economic variables that influence the capacity to levy taxes and with the estimated coefficients a tax ratio is predicted which would be taken to represent the average use of capacity factors(Chelliah et.al,1975). The actual tax ratio for a country is then divided by the predicted ratio to obtain the tax effort index. When the index is greater than unity the country is considered to make a reasonable effort, but when it is below unity, effort is considered below average. The tax effort index therefore gives some indication of the ability of the country to respond to fiscal problems by raising the level of taxation. The last published international comparison of tax effort was by Tait et. al(1979). There seems to be no more recent study to gauge tax effort in Botswana. The most that can be done is to assume that the coefficients from that study still hold. The Tait study estimated the following cross section equation over the period 1972-1976;

$$T/Y = 9.9949 - 0.0008(Y_p - X_p) + 0.4068N_y + 0.1938X_y \qquad (4.1)$$

$$(6.15) \quad (-0.34) \quad (5.41) \quad (0.1938)$$

$$R^2 = 0.413$$

where T/Y is the tax ratio, Y_p is the level of GNP per capita in US dollars, X_p is the export income per capita(the difference between Y_p and X_p is non export income per capita), N_y is the share of mining in GDP and X_y is the export ratio excluding mining. The values in brackets below coefficients are the t ratios.

The average values for Botswana were substituted in the above equation over the period 1973-1976 giving an estimate of taxable capacity of 19.57. The actual tax

ratio for Botswana for the period was 19 percent which gives a tax effort ratio of 0.97. On the basis of this index it seems Botswana was making a slightly below average effort to mobilise resources through the tax system. The situation now is likely to have improved. The share of mining to GDP has increased more that three-times since 1974, increasing from 8.1 percent in 1974 to 36 percent in 1994. There have also been legal reforms aimed at enhancing the ability of the tax system to mobilise revenue and diversify the tax structure. These two factors make it likely that the tax effort index may now be above unity. In fact, when substituting average values for the 1991-93 period we obtain a taxable capacity estimate of 23.61 against an actual ratio of 29.5, which gives a ratio of 1.25. This shows an improvement in the effort to raise revenue through the tax system.

4.5 Fiscal Legislation

This section provides a brief summary of the tax changes that followed the Income Tax Act of 1973. These are outlined in detail in the various Annual Reports of the Department of Taxes and Budget Speeches. We will discuss here only tax changes that bear mostly on the aggregates of interest to the present study: Income taxes, General Sales taxes, Customs union revenues.

The aim of fiscal legislation has been to broaden coverage of the general sales tax whilst lowering tax rates on individuals and companies. It was intended to diversify revenue sources and at the same time to raise revenue for the government. Various amendments were made to individual and company taxes. These represent the only major revenue sources that the government can influence unilaterally. The Income Tax Amendment Act of 1984 liberalised the rate structure to reduce progressivity and also to provide relief for the effects of inflation. The top marginal rate of tax was reduced from 60% to 50% in 1987 and further reduced to 40% in 1990. This was accompanied by raising the tax threshold(nominal) for single and married persons. The thresholds were further increased in 1989, 1993, and 1994.

With regard to Companies, the 1987 amendment increased the company tax rate from 35% to 40%. The company tax rate had remained unchanged for about eleven years(Budget Speech, 1987). This was subsequently reduced to 35 % in 1989 and again to 25% in 1994.

In 1982 the General Sales Tax was introduced. This tax has grown in coverage over the years. But from the resource mobilisation point of view, the amount of revenue raised by the sales tax was offset by the revenue loss from reduced company taxes. The government absorbed a short term loss in revenue with the expectation of higher revenues from a more flourishing private sector in the future. For example, the 1989 tax changes led to P24 million income tax losses, and only a gain of P13 million in sales tax revenue, a net loss of P11 million. The 1994 tax changes resulted in a P25 million loss in revenue. Overall, the resulting effect of tax changes was to shift the emphasis from direct to indirect forms of taxation. Also, there are instances when income tax changes were not announced with company tax changes. For example, in 1990 the top marginal rate of tax was reduced from 50% to 40%.

In conclusion, the effect of legislation has been mixed. It is not yet known whether the tax concessions given to companies will yield the necessary revenue for government during periods of lower mineral revenues. But it seems to confirm the observation made in most developing countries that because of the narrow tax bases and the lack of a broadly based tax, adjustment of tax revenues for stabilisation purposes are effected through the raising of indirect tax rates; in this case the General Sales tax.

4.6 The Buoyancy and Elasticity of the Tax System

The section on tax effort, though providing an indication of the level of effort that the government has made to raise revenue as a proportion of GDP, makes no attempt to distinguish between the effort that arises from legal changes to tax bases and/ or rates and the "effort" resulting from the inherent built-in elasticity of the tax system. The idea is that though the legal machinery is available to governments, it is more desirable that the tax system be able to raise revenues without frequent legal changes(a high tax elasticity), thereby relieving governments of the often difficult political decisions to effect tax changes. These are, however, often unavoidable in most countries since the tax systems tend to have quite low elasticities. Frequent legal changes to tax systems are therefore a feature found in most countries either for incentive/efficiency reasons or for financial resource mobilisation.

The growth in tax revenues arises from either the buoyancy or the elasticity of a tax system. Buoyancy measures the total increase in tax revenue with respect to income changes, whereas elasticity measures the responsiveness of tax revenue net of discretionary tax changes. The difference between the two provides an indication of the degree of government effort to raise revenue in the economy (Mansfield, 1972; Choudhry, 1975). In this section we estimate the elasticity and the buoyancy of the Botswana tax system.

4.6.1 The Buoyancy of the Botswana Tax System

The buoyancy of the tax system refers to the growth in revenue resulting from the automatic growth in the base caused by the increase in income or expenditure and from discretionary tax changes. This means that for a given percentage change in income, buoyancy measures the total percentage change in tax revenues. This is

represented for the whole system as;

$$\xi_{ty} = \frac{\Delta T_t}{\Delta Y} \cdot \frac{Y}{T_t} \tag{4.2}$$

whereas for a specific tax(T_k) ;

$$\xi_{T_{ky}} = \frac{\Delta T_k}{\Delta Y} \cdot \frac{Y}{T_k} \tag{4.3}$$

This implies the following specification

$$T = aY^{b} \tag{4.4}$$

which when expressed in logarithmic form gives;

$$\log T = \log a + b \log Y \tag{4.5}$$

where T is total tax revenue or any specific tax, and Y is national income or any measure selected to proxy for the specific tax chosen. The buoyancy coefficient, b, is measured as an elasticity, and its magnitude when compared with the built-in elasticity provides an indication of tax effort.

Table 4.2 provides estimates of the buoyancy of the Botswana tax system. The base for total tax revenues is overall GDP, whereas for non-mineral income tax we use a measure which consists of compensation of employees and operating surplus of corporate, quasi-corporate and unincorporated enterprises(CEOS). Since non-mining income tax includes individual and company taxes we use compensation of employees as the base for individual income tax and operating surplus of companies as the measure of company profits. We also select appropriate bases for the other revenue sources, which are Private Consumption Expenditure for government sales tax revenues; the volume of imports for Customs Union Revenues, and Mineral Output for mineral revenues.

Table 4.2

Buoyancy Estimates:1973-1995

	Intercept	GDP	CEOS	PCE	IMPTS	MNO	$\bar{R}^2$	D.W
TR	-14.36 (-33.92)	2.69 (49.23)					0.99	1.91
MR	-1.28 (-5.54)					1.09 (29.09)	0.98	1.06
CU	-1.99 (-5.69)				1.02 (20.31)		0.96	1.91
GST	-9.26 (-6.57)			1.70 (11.08)			0.91	2.25
NMIT	-2.33 (-5.04)		0.92 (15.03)				0.98	2.05

Notes: 1) NMIT = Non-mining income tax; MR = Mineral revenues; CU= Customs Union revenues; GST= Government Sales Tax revenues; TR= Total Tax revenues MNO= Mining Output; PCE= Private Consumption Expenditure; CEOS = Non Mining Income; IMPTS = Volume of imports 2) All variables are expressed in logs. 3) t- values in brackets. 4) coefficients significant at least at the 0.01 level.

The only other previous study for Botswana is by Lewis and Mokgethi(1983). The study covered the data periods, 1967-68-70-72-73-74-80-81 to estimate buoyancies for the Botswana tax system. A number of observations can be made of the study's findings. First, it covered a limited time period. Secondly, no attempt was made to distinguish between elasticity and buoyancy. In general, however, their estimates of buoyancy conform with what is found in our study. They find that non-mining taxation is buoyant with respect to non-mining GDP with a buoyancy estimate of 1.2 while the current study finds a buoyancy figure of 0.92. This difference may be explained by the fact that whereas Lewis and Mokgethi used non-mining GDP as the base for non-mining taxation, we use a more specific base. It is possible when using a broad base to

bias the buoyancy estimates upwards if the measure includes other components of income growing more slowly than the more specific tax base. Note that non-mining income tax is the largest contributor to total taxes that the government can influence unilaterally through fiscal legislation.

In our study, it can be seen from Table 4.2 that total tax revenue is highly buoyant with respect to overall GDP at 2.69 and the estimate is statistically significant at the 0.01 level[8]. It is interesting to evaluate the buoyancies for individual taxes in order to identify the tax bases that generate the highest levels of revenue.

The two major individual sources of revenue, Mining and Customs Union, have reasonable buoyancies with respect to their specific bases. Using the value of imports as the base for Customs Union revenues, the buoyancy coefficient is 1.02, which is also significant at the 1 percent level. Mineral revenues are also buoyant with respect to mining output at 1.09. Though this source of revenue is the largest contributor to total revenues it is subject to negotiation if the government wanted to increase tax rates on mineral profits. Therefore, it may take time to effect tax changes in case of fiscal difficulties.

General sales tax has increased as a source of revenue since its introduction. As is typical of the use of this tax in many countries it is anything but "general". It includes a zero rate of tax on food imports. The buoyancy estimate for general sales tax with respect to private consumption expenditures is 1.70.

Though the two revenue sources that government has discretion over have reasonable buoyancies, they cannot be depended upon during times of fiscal difficulties as they contribute at most only 14 percent of total tax revenues.

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[8] Notice that the overall buoyancy is higher than any weighted average of the individual buoyancies. This is possible since not all income is taxed and it appears that non taxed income grows slower than taxed income.

4.6.2 The Elasticity of the Botswana Tax System

Tax elasticity refers to the built-in responsiveness of revenue yield to movements in national income (or some component of national income or expenditure), abstracting from discretionary changes in tax rates over a defined period. A high tax elasticity allows for higher levels of expenditure to be financed without the need to raise tax rates . A high elasticity implies a large difference between the marginal rates of tax and the average rates.

The critical factor in the estimation of elasticities is how the researcher goes about correcting for the discretionary element in total tax revenue. This has been most problematic in developing countries where estimates of the revenue impact of discretionary tax changes are difficult to find or estimate directly. Instead, estimates from annual budget speeches are used, but these can be biased for various(political) reasons. There are four methods that have been used in past studies. Firstly, the proportional adjustment method developed by Prest(1962), and used by Mansfield(1972), Choudhry(1975) and Gillani(1986). Secondly, the Divisia index method developed by Choudhry(1979). Thirdly, the dummy variable method(Khan,1973); and fourthly the constant rate structure method. The elasticity estimate given by the methods is usually for the aggregate tax system, but a disaggregated approach can also be used to shed more light on the various bases that constitute the tax system(Mansfield, 1972). In a system of n taxes, elasticity is represented by:

$$\xi_{ty}=\frac{T_1}{T_t}\left[\frac{\Delta T_1}{\Delta Y}\cdot\frac{Y}{T_1}\right]+.....+\frac{T_k}{T_t}\left[\frac{\Delta T_k}{\Delta Y}\cdot\frac{Y}{T_k}\right]+\frac{T_n}{T_t}\left[\frac{\Delta T_n}{\Delta Y}\cdot\frac{Y}{T_n}\right] \qquad (4.6)$$

This states that the elasticity of the total tax system to income is equivalent to the weighted sum of the individual tax elasticities. Decomposing the elasticity into base and individual taxes, the elasticity with respect to base and income is ;

$$\xi_{ky}=[\frac{\Delta T_k}{\Delta B_k}.\frac{B_k}{T_k}][\frac{\Delta B_k}{\Delta Y}.\frac{Y}{B_k}] \qquad (4.7)$$

When taking account of the importance of the specific tax in the total tax system, the elasticity of total revenue will depend on the elasticity of tax to base and base to income, which can be represented as;

$$\xi_{T_{ty}}=\frac{T_1}{T_t}\left[(\frac{\Delta T_1}{\Delta B_1}.\frac{B_1}{T_1})(\frac{\Delta B_1}{\Delta Y_1}.\frac{Y}{B_1})\right]+\frac{T_k}{T_t}\left[(\frac{\Delta T_k}{\Delta B_k}.\frac{B_k}{T_k})(\frac{\Delta B_k}{\Delta Y}.\frac{Y}{B_k})\right]+\frac{T_n}{T_t}\left[(\frac{\Delta T_n}{\Delta B_n}.\frac{B_n}{T_n})(\frac{\Delta B_n}{\Delta Y}.\frac{Y}{B_n})\right] \qquad (4.8)$$

It is possible with this formulation to identify the likely sources of revenue growth and also the components that the government could influence in its endeavour to raise more revenue. We comment here on two methods namely; the proportional adjustment method(PAM), and the Divisia index method(DIM) since these are the most frequently used methods. The proportional adjustment method(Prest, 1962) proposes the following formulation for correcting revenue data;

$$T_{ij}= T_{j-1,\ j}\times\frac{T_{j-2,\ 1}}{T_{j-1}}\times.....\times\frac{T_{2\ 3}}{T_3}\times\frac{T_{1\ 2}}{T_2} \qquad (4.9)$$

where $T_1, T_2, ...,T_n$ represent actual tax yields for a series of n years, and $T_{i\,j}$ represents the j th year' s actual tax yield corrected for the tax structure that existed in year i. The data adjustment proceeds in two stages. First, estimates of the amounts attributed to the discretionary changes are deducted from the historical series. Second, the adjusted data are then corrected for the continuing impact of each discretionary change. The factor used is the ratio of actual tax yield(net of discretionary yield for that year) to total tax yield. This would then give the amount of tax revenue that would have accrued had the tax system remained unchanged. This method is useful when there is a long historical series on the discretionary changes but these are not always available. Secondly, there is the Divisia Index Method proposed by Choudhry(1979).

The method assumes there is an underlying tax function from which the elasticity of the tax system may be estimated. Take the following homogenous tax function,

$$T(t)=f[x_i(t).....x_k(t);t] \tag{4.10}$$

where T is the aggregate tax yield at time t; x_i denote the proxy tax base for the k categories of taxes, and the time variable t is a proxy for discretionary tax changes. The tax function indicates the single tax yield obtainable at time t from any n type of tax bases.

The linear homogenous assumption poses a problem when a tax system is progressive, but it has been shown that by an appropriate transformation of the Divisia index the linearity assumption can be overcome(Hulten, 1973). Moreover, the function is continuously differentiable. The index is considered to be invariant when the absence of discretionary tax changes results in no change in the index. That is, the index changes only in response to legal tax changes; in other words, when the buoyancy is not equal to the elasticity. The index is defined as the weighted sum of growth rates where the weights are the component shares in total value(Hulten, 1973).

Differentiating equation 4.10 with respect to time and rearranging the terms we obtain the following result;

$$\frac{f_t(t)}{f(t)}=\frac{\dot{T(t)}}{T(t)}-\sum_{i=1}^{k}\frac{f_i(t)x_i(t)}{f(t)}\frac{\dot{x_i(t)}}{x_i(t)} \tag{4.11}$$

If we set

$$\frac{f_i(t)x_i(t)}{f(t)}=\beta_i(t) \tag{4.12}$$

and

$$\frac{f_t(t)}{f(t)} = \frac{\dot{D}(t)}{D(t)} \tag{4.13}$$

where the Divisia index of discretionary tax changes is represented by D(t). Re-writing equation(4.11) we obtain,

$$\frac{\dot{D}(t)}{D(t)} = \frac{\dot{T}(t)}{T(t)} - \sum_{i=1}^{k} \beta_i(t).\frac{\dot{x}_i(t)}{x_i(t)} \tag{4.14}$$

Integrating over the interval(o, n) the index of discretionary tax changes is then

$$\frac{D(n)}{D(0)} = \left[\frac{T(n)}{T(0)}\right] \exp\left[-\sum_{i=1}^{k} \int_{o}^{n} \beta_i(t).\frac{\dot{x}_i(t)}{x_i(t)} dt\right] \tag{4.15}$$

The above specification is in continuous form which presents difficulties when estimating. To obtain the discrete form requires setting D(0) =1. D(n) can then be viewed as the index of revenue growth stemming from discretionary tax measures at time (n). The discrete version is used to approximate the true values of the underlying relationship. Using the discrete form also requires that we replace $\beta_i(t)$ with a weighted average of $\beta_i(t)$. The weights are the ratios of the rates of growth of the bases to their average rates of growth. Taking logarithms we get the index of discretionary tax changes as,

$$\log D(n) = \log\left[\frac{T(n)}{T(0)}\right] - \sum_{i=1}^{k} \beta_i \log\left[\frac{x_i(n)}{x_i(o)}\right] \tag{4.16}$$

The discrete counterpart of

$$\beta_i \log\left[\frac{x_i(n)}{x_i(0)}\right] = \sum_{t=1}^{n} \beta_i(t).\frac{X_i(t)-X_i(t-1)}{X_i(t-1)} \tag{4.17}$$

where the discrete weights are computed as ;

$$\beta_i(t) = \frac{T_i(t)-T_i(t-1)}{X_i(t)-X_i(t-1)}.\frac{X_i(t)}{T(t)} \tag{4.18}$$

Substituting the weights(4.18) into (4.17) and the result into (4.16) we obtain the disaggregated index;

$$\log D(n) = Log\frac{T(n)}{T(0)} - \sum_{i=1}^{k}\sum_{t=1}^{n}\left[\frac{T_i(t)-T_i(t-1)}{T(t)}.\frac{X_i(t)}{X_i(t-1)}\right] \tag{4.19}$$

whereas the aggregative index is,

$$\log D(n) = Log\frac{T(n)}{T(0)} - \sum_{t=1}^{n}\left[\frac{T(t)-T(t-1)}{T(t)}.\frac{X(t)}{X(t-1)}\right] \tag{4.20}$$

Observe that the index of discretionary tax changes is derived as the difference between the rate of growth in the bases and the total growth in revenue, clearly shown by equation 4.16. Finally the elasticity of the tax system is obtained by subtracting the estimate of the discretionary tax changes from the buoyancy estimate:

$$r = b - \frac{\log D(n)}{\log[\frac{x(n)}{x(0)}]} \tag{4.21}$$

where r is the elasticity, b is the buoyancy, log D(n) is the Divisia index of

discretionary revenues[9] and log [x(n)/x(0)] is the index of automatic growth of the proxy tax base.

The results of estimates of the elasticity of total tax revenue and its various components are presented in Table 4.3. When the effect of fiscal legislation is to generate more revenue, the elasticity is expected to be smaller than the buoyancy and the opposite is true when the effect is to reduce revenue. Furthermore, when discretionary changes produce large revenue effects, the larger will be the difference between buoyancy and elasticity.

A number of observations can be made about the results found in this study. The elasticity estimate found for total tax revenue is greater than unity. It is estimated at 2.88, which would give a rising tax ratio over the years without any discretionary changes. when comparing the elasticity with the buoyancy estimate of 2.69 the result is consistent with the fact that rates of taxes have been reduced overall which would result in a decline in tax revenue.

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[9] Equ 4.21 is derived by specifying the index as;

$$D(n)=\left[\frac{x(n)}{x(0)}\right]^{(b-r)} \qquad (4.22)$$

where b is the buoyancy estimate. Note that the Index is invariant in that when there are no discretionary tax changes in the interval(o,n) the elasticity equal the buoyancy. The elasticity is found by taking logs and solving for r.

Table 4.3

Buoyancy and Elasticity Estimates

Type of Tax	Buoyancy	Elasticity	Buoyancy(L&M)
Total Tax Revenue	2.69	2.88	1.20
Mineral Revenue	1.09	0.94	1.00
Custom Revenue	1.02	0.76	1.20
G. Sales Tax	1.70	0.64	None
Non-Mining Inc	0.92	1.24	1.20

Note: L & M are the buoyancy estimates from the Lewis and Mokgethi(1983) study.

As regards individual taxes, observe that the two major sources of government revenue, Mining and Customs Union revenue, have lower than unitary elasticities. They are 0.94 for mining revenues and 0.76 for customs revenues. It is difficult to compare the elasticity to the buoyancy with these revenue sources since they have not been renegotiated in the past two decades[10]. The important thing to note, perhaps, is that the two revenue sources are buoyant with respect to their bases which would ensure a steady flow of revenue.

The elasticity for general sales tax is estimated at 0.64 against a buoyancy of 1.70 which indicates a greater effort to raise revenue with this tax. In fact, there has been a greater use of this type of tax over the last 5 to 7 years. The effort was effected through the widening of the sales tax to cover previously untaxed goods and services.

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10 The SACUA has been under renegotiation since the early 1980's and the negotiations are still not concluded. These have been delayed by the new political developments in South Africa and the need to take account of the requirements of the Uruguay round. What the final outcome would be remains unclear. Note, however, that revenue shares will only be affected if the sharing formula is altered otherwise tariff reductions need not, necessarily, have any effect on the distribution of revenue among member countries.

Lastly, the elasticity estimate for non-mining income tax is 1.24 and is greater than the buoyancy. This suggests that there was less effort to raise revenue with this tax. As noted earlier, the government reduced top marginal rates of tax on individuals and company incomes. But despite falling rates, the widening of tax bands, and the reduction of tax thresholds, the elasticity estimates indicate that the progressivity of the tax system has not been eroded.

4.7 Conclusion

In this chapter we have provided estimates of buoyancy and elasticity for the Botswana tax system and for the various categories of taxes. The Divisia index method was used to derive elasticity estimates for the Botswana tax system.

Two key findings emerge. The first is that the Botswana tax system is found to be buoyant and elastic. This implies, from the point of view of resource mobilisation, that the tax system is able to sustain a rising level of government expenditure without frequent changes to fiscal legislation. Secondly, when there were changes to fiscal legislation, the elasticity estimates when compared with their respective buoyancies supported the fact that the effect of changes in fiscal legislation resulted in declining revenues. This is consistent with the observation that a higher(lower) elasticity relative to the buoyancy implies a reduced(greater) effort to raise revenue with the specific tax or the tax system.

However, despite the tax system being elastic and buoyant, the structure of government revenue is still dominated by minerals and customs union proceeds. The importance of general sales tax as a significant contributor to total revenue remains to be realised as it contributes only 4.5 percent of total revenue. It is an issue of concern, therefore, that the two major sources of government revenue are not subject to government unilateral action, but this we argued could also have helped to instil fiscal discipline.

Finally, given the uncertainty associated with the two major sources of

government revenue, and the fact that the structure of revenue is not likely to be reversed in favour of other revenue sources in the short term, it seems that to continue to maintain a healthy fiscal position which can be sustained in the medium term, control is required over government expenditures rather than increased levels of taxation. Controlling expenditure has the added advantage that it would allow for the development of the private sector, and enhance prospects for a diversified structure of government revenue. On the basis of the estimates of tax effort, an above average effort is being made already to mobilise resources through the tax system limiting the options for higher taxes.

Table 4.5

Botswana: Tax Changes and Revenue Estimates, 1987-1995

Year	Tax Changes	Revenue Estimates*
1987	The rate of company tax increased from 35 percent to 40 percent. This rate had remained unchanged for eleven years.	_____
1988	The local government tax abolished with effect from February 1st. The general Sales Tax widened to include additional goods	(+P3.5Million)
1989	The rate of company tax reduced to 35 percent. There was a further widening of the Sales tax.	(- P24Million) (+P13Million)
1990	The top marginal rate of tax reduced from 50 percent to 40 percent	(-P20Million)
1991	No fiscal changes announced in the budget	_____
1992	Further widening of the Sales tax coverage	(+P68Million)
1993	No fiscal policy changes announced	_____
1994	Company income tax reduced to 25 percent. Sales tax increased further in coverage.	(- P85Million) (+P60 Million)
1995	Reductions in marginal rates of tax Sales tax widening	(-P170 Million) (+P20Million)

* Estimates obtained from Budget Speeches for various years.

Chapter Five

Capital Inflows, Saving, Investment and Economic Growth in Botswana

5.1 Introduction

One of the conclusions of the McKinnon and Shaw models (1973) is that in addition to mobilising domestic savings, high real interest rates also attract foreign private capital inflows. This is because of the potential returns that foreign investors would earn under a liberalised financial system. Moreover, economic and financial liberalisation allows investors to diversify asset portfolios and increase a country's access to foreign savings. Foreign capital inflows also finance investment and thereby promote economic growth. And, in addition to supplementing domestic resources, foreign capital inflows are welfare enhancing because they allow for the release of the budget constraint that restricts absorption to the domestic availability of resources. This means that the rate of capital formation in the economy is not confined to the rate of national saving.

It seems, therefore, that how the developing countries respond to challenges and opportunities presented by world capital markets is critical for continued economic growth. This is especially so for Sub-Saharan Africa. When commenting on the prospects for continued growth among the less developed countries, the World Bank(1986) points out that:

> How developing countries use their resources largely determines their rate of economic growth..... Foreign capital inflows are one such resource: they supplement domestic savings and can compensate temporarily for foreign exchange shortages(p.55).

But whether developing countries are able to attract external resources depends

on the speed and sustainability of economic and financial and capital market reforms. It is important, however, that policies that aim to attract foreign resource inflows are integrated with other policy measures to reduce distortions and improve allocative efficiency, and also to ensure their sustainability over the medium term. Large capital inflows, if not sterilised, may lead to any one of the following: rapid monetary expansion; inflationary pressures; real exchange rate appreciation; and the widening of the current account deficit(see McKinnon, 1993)[1].

Although Botswana has managed to accumulate savings and foreign exchange reserves the role of capital inflows will be discussed within the framework of the two gap models. This is justifed by the following reasons. Firstly, Botswana depended for almost seven years after political independence on grants from the British government to finance her recurrent expenditures(Harvey and Lewis, 1990). Secondly, the development of the mining industry could not have taken place without large inflows of capital, in the form of foreign direct investment. The Botswana government did not have the capacity nor the resources to develop the mining industry on its own. Thirdly, even without either of the constraints, foreign capital inflows continue to remain important for the majority of the developing countries, Botswana being no exception. Finally, despite the fact that Botswana has experienced surpluses over a number of years, it is important to test the effects of capital inlows on saving, investment and economic growth.

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[1] McKinnon(1993) points out the difficult task of ordering economic and financial liberalisation. Large inflows of capital turn the real exchange rate against exporters, and firms competing with imports, making the adjustment to the removal of trade barriers difficult. It is therefore important when attracting capital imports that appropriate policy measures be undertaken to smooth out the harmful(price) effects in order to ensure sustainability of economic liberalisation. This is especially the case with short term capital flows.

5.2 Dual Gap Theory

The effects of capital inflows on saving and investment are discussed within the two gap models of Chenery and Bruno(1962) and Chenery and Strout(1966)[2]. These models identify two constraints on the rate of economic growth in less developed countries, namely, the savings and the foreign exchange constraints. The point of departure for the two gap model is the recognition that economic growth depends on both investment and imports to achieve the target rate of economic growth. On the one hand, a saving constraint exists when the available domestic saving is inadequate to finance the rate of investment required to achieve a set growth rate of the economy. A binding savings constraint means that the growth rate that can be achieved with the available saving is less than that permitted by the available foreign exchange(Thirlwall, 1994). When the savings constraint is binding there is an under utilisation of foreign exchange resources. The policy response must be to raise saving and to use foreign exchange to substitute for domestic resources, e.g. the direct import of labour.

On the other hand, and assuming the lack of substitutability between domestic and foreign resources, and also that domestic investment has a sizable import content, a foreign exchange constraint exists when the available foreign exchange is inadequate to finance the imports required to achieve the target rate of economic growth. This means that the growth rate permitted by the available domestic saving is higher than that permitted by the available foreign resources. Here domestic savings are underutilised. One of two things can be done. First, ways have to be found to earn more foreign exchange from unutilised domestic resources. Second, the productivity of imports can be enhanced. When the foreign exchange constraint is binding increasing the savings ratio will not raise investment, but will lead to further underutilisation of resources. This is because such resources are not transformable into imports which are

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[2] See also McKinnon, R. (1964), Foreign Exchange Constraints in Economic Development. *Economic Journal*. Vol 74. June

a requisite for investment. The saving and investment and foreign exchange constraints are derived below[3].

If we assume initially that the economy is savings constrained, then the foreign resource inflows required in the initial period can be represented as the difference between investment and saving:

$$F_t=I_t-S_t=Y_tcr-S_t \quad where \ I_t=Y_tcr \tag{5.1}$$

I_t , S_t and Y_t are respectively, investment, saving and income at time t; r is the target rate of economic growth and c is the capital-output ratio.

Assuming a rising savings ratio, the saving function can be expressed as:

$$S_t=(s_a-s')Y_t-s'Y_t \tag{5.2}$$

where s' is the marginal saving rate and s_a is the average saving ratio . If we substitute (5.2) into (5.1) and rearranging terms gives:

$$F_t=(cr-s')Y_t+(s'-s_a)Y_0 \tag{5.3}$$

To obtain the growth rate consistent with a given inflow of external resources we solve for r:

$$r = \frac{1}{c}\left[(s_a-s')\frac{Y_0}{Y_t}+s'+\frac{F_t}{Y_t}\right] \tag{5.4}$$

The above expression specifies that with a given capital-output ratio and marginal

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[3] Thirlwall, A.P. (1994) *Growth and Development*. Fifth Edition(London: Macmillan).

savings ratio, an increase in the inflow of foreign resources will result in a higher rate of economic growth.

In order to show the growth rate consistent with a binding foreign exchange gap it means that the investment function be reexpressed to indicate the minimum level of imports required:

$$M_t = m_i I_t = m_i Y_t cr \tag{5.5}$$

where m_i is the import-investment coefficient. Given that $F_t = M_t - X_t$ we substitute for M_t and solve for r hence:

$$r = \frac{1}{m_i c}\left[\frac{X_t}{Y_t} + \frac{F_t}{Y_t}\right] \tag{5.6}$$

This is the growth rate consistent with a binding foreign exchange gap. It demonstrates the positive association between the proportion of exports to total output and the rate of output growth and also that foreign inflows will raise the growth rate. It is to be expected that when the marginal change in exports exceeds the marginal change in imports, the foreign exchange constraint on the growth rate of the economy will be eased. The foreign exchange constraint on growth will also ease as the proportion of required imports in investment decline over time. This may be through an import substitution program.

The conclusion derived from the two-gap model that foreign inflows will raise the economic growth rate is based on two key assumptions. Firstly, the assumption that foreign capital inflows are used to finance domestic investment. Secondly, that the foreign resource inflows do not reduce the productivity of investment. If anything, the productivity of capital may improve due to the positive externalities that arise from the effects of a knowledge spillover from say, direct foreign investment. It ought to be borne in mind, however, that it is not necessary that foreign inflows be devoted wholly to productive investment because capital imports may also be required for essential food

imports with beneficial effects on the growth of the economy. But when directed to investment, as it is normally the case with some forms of capital inflows, the growth rate of the economy will be directly increased(Levy, 1987).

It is important to determine which constraint is binding in the application of two gap models because the productivity of capital imports depends on which constraint is effective. It can be expected, however, that for non-mineral countries the import constraint will be the most binding because of foreign exchange shortages. On the other hand, the saving constraint is likely to limit the rate of economic growth in mineral economies(Weiskopf, 1972). Mineral economies tend to experience an outflow of capital which rules out the possibility of a binding trade constraint on economic growth. Mineral rich countries are also more likely to be subject to additional constraints; for example, skills shortages. A number of studies have attempted to classify countries according to whether the growth rate of their economy is restricted by the availability of foreign exchange or saving(Weisskopf 1972; Blomquist, 1976; Gersovtz, 1982). The main limitation of this method of classifying countries is the assumption made that countries do not switch from one regime to the other during the estimation period.

5.3 Capital Inflows and Domestic Saving

There are two views regarding the effect that foreign capital inflows have on economic growth. The one view identifies the fundamental constraint on growth, given the productivity of capital, as the willingness to save. The transmission to economic growth is through the positive effect that capital inflows have on saving. However, if the inflow of foreign resources augments private or public consumption there will be a fall in *ex ante* saving, for a given income level(Weiskopf,1972). The alternative view identifies the slow growth among the developing countries as due not only to the saving constraint, but also to the shortage of foreign exchange. The difference of opinion as to the effect of foreign resource inflows on domestic saving, investment and growth has

generated much debate over the past twenty five years. The effect of capital inflows on domestic saving is the most contested of the issues.

Griffin(1970) questions the implication of the two-gap model that capital inflows are used to raise the rate of domestic saving, arguing, instead, that the effect of capital inflows[4], and aid in particular, is to reduce domestic saving. Griffin concludes that aid does not promote economic growth because of the unwillingness of the society to save, as a result failing to alleviate the only constraint on economic growth. He states that:

> It is possible, of course, that a government is *unwilling rather than unable (own italics)* to introduce policies which would earn or save foreign exchange. In such cases it might appear that foreign exchange is the binding constraint, but it is the willingness to reduce domestic consumption in order to expand exports or reduce imports which is the source of the difficulty. In other words, there can be only one constraint on investment, viz. saving(Griffin, 1970.p102).

This view does not recognise that saving can increase without the need for increased thrift by the community. This is because foreign exchange receipts can lead to an increase in domestic output, and generate a higher level of savings. In fact, in the short run it is difficult for developing countries to overcome a foreign exchange constraint without a reduction in the rate of output growth(Kennedy and Thirlwall, 1971). Without the inflows of capital, the constraint on growth can be relieved only by reductions in domestic consumption.

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[4] In the majority of studies aid and capital inflows are used interchangeably. This may simply reflect the perception that public flows constitute the major source of finance in most developing countries. It may also be the result of the lack of disaggregated data on capital inflows in less developed countries. However, other than aid, foreign capital inflows may be in the form of foreign direct investment; short term commercial borrowing; change in foreign exchange reserves, and the liquidation of foreign assets.

Griffin(1970) estimated the following saving function for a cross section of 32 less developed countries over the period 1962-64:

$$\frac{S}{Y} = \underset{(0.11)}{11.2 - 0.73\frac{A}{Y}} \qquad \bar{R}^2 = 0.54 \tag{5.7}$$

where S/Y is domestic saving as a percent of GDP; A/Y is foreign saving as a percent of GDP[5] and the value in brackets is the standard error.

The ratio of aid to GDP apparently has a negative and significant effect on domestic saving. The result of a negative relationship has been found in subsequent studies. Another study, Weisskopf(1972), estimates the following savings equation using time series data from a sample of 44 less developed countries;

$$S = a + bY + cF + dE \tag{5.8}$$

where Y is national income; F is net foreign capital inflows, and E is total exports. The coefficient for capital inflows is interpreted as the marginal response of domestic savings to a change in the level of net foreign capital inflows. The above specification was estimated in two stages. Firstly, it was estimated for individual countries. Secondly, it was estimated using pooled data for the total sample. The result supports the finding that foreign capital inflows substitute for domestic savings. This applies for single country regressions and for the total sample. Weisskopf finds for the total sample that almost 23 percent of foreign capital inflows substitute for domestic savings. Mosley(1980), using data from a cross section of 83 less developed countries over the period 1969-1977, also found a negative and significant effect of capital inflows on savings.

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[5] Foreign saving or aid is measured as the deficit on the current account of the balance of payments.

Papanek(1973) takes a sample of 34 developed countries during the 1950's and 51 less developed countries for the 1960's period, and finds when employing an aggregate measure of foreign capital inflows that capital inflows affect savings negatively. Moreover, even when distinguishing between the principal types of capital inflows(aid, foreign private investment, and other capital inflows) all the types of inflows still affect savings negatively.

There are several reasons why the apparent negative relationship found between aid and domestic saving can occur. Firstly, an inflow of foreign resources may lead to a reduction in government saving which reduces domestic saving. Government may spend more or reduce tax effort. Secondly, saving partly depends on investment opportunities and if foreign capital inflows preempt such investment opportunities, then domestic savings effort will be reduced. Thirdly, the direction of causation could be the reverse(Papanek, 1971; Kennedy and Thirlwall, 1971). Low domestic saving may lead to higher inflows of capital. Fourthly, if saving is measured as the difference between investment and foreign capital inflows(I - F) then savings and foreign capital inflows are bound to be negatively related if not all foreign inflows are invested. It is to be expected that any inflow of resources will be partly consumed and partly invested. Fifthly, the results obtained from cross-country studies are likely to be biased because of the inclusion of countries for which there was an outflow of capital together with those for which there was an inflow of capital. When there is an outflow of capital causality is expected to be from domestic saving to capital flows, and not the other way round(Weisskopf, 1972).

Finally, studies tend to deal with a homogenous measure of inflows as either aid or capital inflows, measured as the deficit in the current account of the balance of payments. It is not to be expected however that the various types of inflows will have an equal effect on the domestic saving(Papanek, 1972). For example, foreign private investment could affect saving differently from foreign aid in two ways. Firstly, foreign private investment may be overestimated to justify the repatriation of profits or to

secure safeguards against nationalisation. Secondly, the negative correlation can be attributed to the fact that the result picks up the effect of a previously high level of foreign investment which is followed in the next period by lower private investment and higher savings. In other words, the cyclical behaviour of high saving-low investment in the subsequent period(Papanek, 1973).

Synder(1990) tests for the possibility of aid switching among recipient countries. Aid switching is the use of external aid to fund domestic consumption expenditure resulting in no increment in national saving. When there is aid switching, higher levels of aid inflows are associated with lower saving rates. However, the negative relationship which is interpreted as aid switching could be spurious due to the effect of omitted variables. For example when per capita income is used to allocate aid, then domestic savings and aid will be negatively related. Other variables may also lower domestic income and savings and lead to higher aid receipts. The income variable is included in the model to test for the effects of omitted variables. Synder specified the following model:

$$(\frac{S}{Y})=a_0+a_1(\frac{Y}{N})+a_2(\frac{A}{Y}) \tag{5.9}$$

$$(\frac{A}{Y})=\lambda_0+\lambda_1(\frac{Y}{N})+\lambda_2(\frac{S}{Y}) \tag{5.10}$$

where Y/N is per capita income, A/Y is the proportion of official development assistance(ODA) to GNP and S/Y is the ratio of domestic saving to GNP. When $a_2 < 0$, $\lambda_1 = 0$, and $\lambda_2 = 0$ causality is from aid to domestic saving. This means that aid is not allocated according to need(income per capita or the savings of the recipient country) but according to political considerations. On the other hand, when $a_2 = 0$, $\lambda_1 < 0$, and $\lambda_2 \leq 0$ aid is allocated according to recipient need which suggests that lower income

levels are correlated with higher aid receipts. Observe that when $\lambda_2=0$, both aid and savings depend on income though not causally related.

Synder finds that aid does not affect domestic saving significantly although the coefficient is negative. But when regressing the savings ratio on the ratio of aid he finds a negative and significant effect. On the other hand, income per capita affects aid negatively and significantly which suggests that higher levels of aid are associated with lower levels of income. Overall, income per capita is found to be the most significant determinant of saving.

In his study Mosley(1980) does not find any evidence of aid fungibility among a cross section of 83 less developed countries during period 1969-1977. Instead, a positive correlation between aid and the government tax effort is found. The positive association between aid and government tax effort is interpreted as indicating the desire on the part of LDC governments to achieve higher economic growth rates with lower rates of tax. In other words, increases in recurrent government expenditures are not paid for by higher tax rates.

Levy(1987) consider that the main issue to be concerned with should be what proportion of aid intended for development is consumed. This would require the distinction to be made between the different types of capital inflows because they have varying marginal propensities to raise consumption. There are basically two types of aid transfers. Firstly, there is relief aid which is intended for consumption. Secondly, there is development aid which is mainly project aid and technical support. This is permanent and likely to be anticipated by the recipient countries[6]. This type of aid is also less fungible as it is normally tied to specific projects and hence likely to be saved. After classifying aid into whether it is unanticipated(emergency) or anticipated Levy finds, for a sample of 39 developing countries over the period 1968-1982, that recipients of aid used the portion allocated for consumption for that purpose; that development aid

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[6] It is possible that non-transitory aid may be acquired for consumption purposes. This would occur when aid is provided to finance recurrent government expenditures.

is invested. It would seem that the failure to distinguish between the objectives of aid is also likely to result in erroneous conclusions about the effectiveness of aid.

Moreover, the fact that a negative relationship is found between aid and domestic saving does not necessarily imply causality. Both variables are endogenous to the economic system. Bowles(1987) tests for causality between aid and saving by applying the Granger causality test on time series data for a sample of 20 less developed countries. Bowles estimates the following model:

$$\begin{aligned}(\frac{S}{Y})_t &= c+\alpha(\frac{A}{Y})_{t-1}+\beta(\frac{S}{Y})_{t-1} \\ (\frac{A}{Y})_t &= c+\lambda(\frac{S}{Y})_{t-1}+\lambda(\frac{A}{Y})_{t-1}\end{aligned} \qquad (5.11)$$

where A/Y is the aid ratio. Aid is defined as net disbursements of concessional assistance by the OECD and other multilateral organisations, and S/Y is the savings ratio. The lag period is restricted in the study to one year.

When α is negative and significant, whilst λ is insignificant, it means that saving responds to aid inflows. But if aid inflows respond to low savings ratios then the reverse result holds. However, if both α and λ are negative and significant there is bidirectional causality. Bowles's study obtained mixed results. For some countries causality was found to be from aid to saving, and from saving to aid for others. The study also finds that the relationship between aid and domestic saving is negative and insignificant, but no evidence is found that causality is from aid to saving for the total sample[7].

Morisset(1989) evaluates the effects of capital inflows on domestic savings for Argentina during the period 1960-1981. The study differs from other studies in two respects. Firstly, the specified saving function is derived from an underlying consumption function. Secondly, the study tests for the effects of policy variables on

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[7] The possibility of the reverse effect is also raised by Kennedy and Thirlwall(1971).

foreign capital inflows and domestic savings. Desired consumption is specified as:

$$C^{*}=\alpha_0+\alpha_1 Y+\alpha_2 F+\alpha_3 r+\alpha_4 \pi \qquad (5.12)$$

Desired consumption depends on the level of real income(Y), real capital inflows(F), interest rate(r), and the inflation rate(π). Assuming that consumption adjusts with a lag of one period and that the adjustment is linear:

$$C-C_{t-1}=\mu(C^{*}-C_{t-1}), \quad 0<\mu\leq 1 \qquad (5.13)$$

With S = Y- C, substitution of (5.12) into (5.13) yields a short run savings function;

$$S=\beta_0+\beta_1 Y+\beta_2 F+\beta_3 r+\beta_4 \pi+\beta_5 C_{t-1} \qquad (5.14)$$

where

$$\beta_0=-\alpha_0\mu;\ \beta_1=(1-\alpha_1\mu);\ \beta_2=-\alpha_2\mu;\ \beta_3=-\alpha_3\mu;\ \beta_4=-\alpha_4\mu;\ \beta_5=-(1-\mu) \qquad (5.15)$$

If the argument that foreign capital inflows lead to a reduction in savings holds, then $\beta_2<0$. Two definitions of capital inflows are used: current account deficit; and the annual net inflow of external resources. Finally, the effect of foreign inflows on domestic saving is tested separately for foreign private investment and aid. None of the types of inflows affect domestic savings significantly. Only income emerges as the most important determinant of domestic saving.

The relationship between domestic saving and foreign capital inflows may also be due to other variables not included in the regression. For example, a temporary fall in export revenue may be countered by engaging in external financial transactions in order to support domestic consumption. In that case, the relationship between foreign capital inflows and domestic saving is influenced by rational policy action. Morriset tests for the effect of policy variables, growth of the money supply and the fiscal deficit, on foreign capital inflows and domestic savings in the following model:

$$S=\alpha_0+\ \alpha_1\mu+\ \alpha_2 r^{*}+\ \alpha_3\tau+\ \alpha_4 B$$
$$F=\Omega_a+\ \Omega_1\mu+\ \Omega^2 r^{*}+\ \Omega_3\tau+\ \Omega_4 B \qquad (5.16)$$

where μ is the money supply growth; B is the fiscal deficit; τ is the variation in the terms of trade, and r^{*} is the change in the external interest rate. On the one hand, Morisset finds that the growth of the money supply affects saving and foreign capital inflows positively and significantly. On the other hand, the fiscal deficit affects domestic saving negatively but it has a positive effect on foreign capital inflows(see also Fry, 1995). The study concludes that omitting monetary and fiscal policy variables may be biasing the results of the relationship between foreign capital inflows and domestic savings.

The majority of studies find evidence in support of the substitution effect of aid on the domestic saving effort. In order to take account of some of the theoretical issues raised earlier, the present study uses a definition of saving that is not derived as the difference between investment and foreign inflows. Instead saving will be defined as the difference between real income(GDP) and domestic consumption.

5.4 Capital Inflows and Investment

The important point about whether capital inflows promote economic growth is not the effect of resource inflows on domestic savings, but their effect on domestic investment. This is the approach adopted by Levy(1987) who starts from the premise that "If the point of interest is the extent to which an inflow of foreign resources contributes to economic growth, then the main question to be examined should be how much of the transfers goes to investment, and not whether any of it goes to increase consumption "(p.152). To test for the effect of capital inflows on domestic investment Levy specifies the following function:

$$(\frac{I}{Y})_i=\alpha+\beta(\frac{S}{Y})_i+\Gamma(\frac{A}{Y})_i \qquad (5.17)$$

where $(I/Y)_I$, $(S/Y)_I$ and $(A/Y)_I$ are the investment, saving and aid ratios respectively. Aid is defined as the ratio of official development assistance(ODA) aid to GNP. Subscript i denotes the specific country. An estimate of the coefficient of the aid ratio that is close to unity would imply that most of the aid inflow is invested. On the other hand, an estimate of β close to unity would imply that most of the increases in domestic saving are invested domestically. The author finds, for a sample of less developed countries, that most of the aid transfer tends to be invested.

In their study of 11 Latin American countries Massell et.al(1972) estimate the following investment function:

$$\Delta I_{it}=\beta_0+\beta_1\Delta X_{it}+\beta_2\Delta X_{i,t-1}+\beta_3\Delta G_{it}+\beta_4\Delta G_{i,t-1}+\beta_5\Delta P_{it}+\beta_6\Delta P_{i,t-1}+V_{it} \qquad (5.18)$$

where I is domestic investment; X is exports of goods and services; G is net public foreign capital inflow; and P is net private foreign capital inflows. They find that current and lagged values of private capital inflows are significant determinants of domestic investment. All the other variables are found to be insignificant. The lack of significance of public capital inflows may suggest that the inflows are consumed.

Seck and EL. Nil(1993) test for the effect of capital inflows, measured by the deficit on the current account, on a sample of nine African developing countries. Their model regresses the domestic investment ratio on the deposit rate of interest, the inflation rate, financial saving, and foreign savings. They find that foreign savings affect the domestic investment ratio negatively and significantly. But since the study was primarily concerned with the effect of interest rates on saving, investment and the rate of economic growth(i.e a test of the McKinnon and Shaw model) the foreign savings variable is not included in the savings function nor in the growth equation. It is presumed that the transmission to economic growth is through the effect of foreign savings on domestic savings.

5.5 Capital Inflows and Economic Growth

The basis of the two gap model is that foreign capital inflows promote investment and economic growth. In order to assess the effect of capital inflows on economic growth it is important to distinguish between the types of inflows. Required imports may be of three types: Firstly, they may be intermediate goods required for the utilisation of the existing productive capacity. Secondly, capital imports may be needed for the creation of additional productive capacity. Finally, consumer goods may also be imported. And depending on the type of capital inflow the growth rate of GDP may be affected positively or negatively. Moreover, capital inflows contribute positively to economic growth by providing access to modern technology and through the provision of access to international markets.

However, Griffin (1970) not only argues that foreign capital inflows substitute for domestic savings, but also that the productivity of capital may fall(a rising capital-output ratio) leading to a lower rate of economic growth. The modified Harrod-Domar model is presented as follows:

$$g=\frac{(s'+(1-\alpha)A)}{v'} \tag{5.19}$$

where s' is the savings rate after the initial inflow of aid, α is the proportion of aid spent on non productive expenditure or consumption, A is capital imports as a proportion of national income, and v' is the incremental capital-output ratio after the inflow of aid. The capital -output ratio is expected to rise because the nature of project selection in developing countries is biased towards large scale capital intensive projects with a low productivity.

Even when this may be the case, an important distinction has to be made between the capital-output ratio for individual projects and for the economy as a

whole(Kennedy and Thirlwall, 1971; Thirlwall, 1994) because the capital-output ratio relevant for the two-gap model is for the overall economy and not for specific projects. Kennedy and Thirlwall(1971) capture the relationship between economic growth and growth due to capital imports in the following equation:

$$g=\frac{s+(1-b)A}{q+c}-\frac{s}{q} \tag{5.20}$$

where g is the growth rate due to capital imports; s is the original domestic savings ratio; A is capital imports as a proportion of national income; b is the proportion of capital imports consumed; q is the capital-output ratio, and c is the change in the capital-output ratio due to capital imports. The growth rate of the economy due to capital inflows depends on two factors. Firstly, it depends on the proportion of capital imports consumed. Secondly, it depends on the change in the productivity of capital. Two key points emerge in the contribution by Kennedy and Thirlwall. Firstly, the effect of the proportion of capital inflows consumed depends on the types of goods considered because certain types of consumption expenditures(for example, investment in human capital(health and education)) have positive effects on growth through improvements in the productivity of capital(see also Bruton, 1969)[8]. Secondly, there are positive spill-over effects into other sectors of the economy because " the greater availability of foreign exchange could enable a more productive use to be made of resources as a whole" (Kennedy and Thirlwall, 1971.p137).

The effect of capital inflows on the growth rate of the economy also depends, in the long run, on how capital imports are financed. These may be financed by asset transactions; drawing down of foreign exchange reserves; and net external borrowing. Many developing countries have financed economic growth through external borrowing. However, growth financed by debt depends on two factors. Firstly, debt will

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[8] See also King, R. and Levine, R. (1993) Finance, Entrepreneurship and Growth: Theory and Evidence. *Journal of Monetary Economics*. Vol 32. Number 3. December.

promote the growth of output to the extent that lost saving resulting from interest payments is not in excess of resource inflows. Secondly, the rate of growth of income will depend on the productivity of capital vis-a-vis the rate of interest(Ball, 1962; Massell, 1964). When the effect of debt is positive either new debt finances interest payments, or it is being invested productively.

When testing for the effect of foreign capital inflows on economic growth for a sample of 22 less developed countries, Voivodas(1973) also tests the proposition by Griffin and Enos(1970) that higher capital inflows are associated with a higher capital-output ratio. Voivodas's study fails to find evidence that foreign inflows result in a lower rate of economic growth through a decline in the productivity of capital.

Massel et. al(1972) test for the effect of foreign resource inflows on income for a sample of 11 Latin American countries over the period 1955-1966. The sources of foreign exchange receipts are classified into: exports; net private capital inflows; and net public capital inflows. Lagged values are included to capture the dynamic effects. They estimated the following income equation:

$$\Delta Y_{it}=a_0+a_1\Delta X_{it}+a_2\Delta X_{it-1}+a_3\Delta G_{it}+a_4\Delta G_{it-1}+a_5\Delta P_{it}+a_6\Delta P_{it-1}+u_{it} \qquad (5.21)$$

where Y is Gross National Income; X is exports of goods and services, G is net public foreign capital inflows(net change in official and banking long term liabilities and assets plus official donations on transfer payments accounts), and P is net private foreign capital inflows(net private transfers, net changes in private long term and short term liabilities and assets plus errors and omissions). The authors find that the current level of exports affects income positively and significantly. Most importantly, private capital inflows have the largest effect of all the other variables. On the other hand, public foreign capital inflows affect income insignificantly.

Mosley(1980) estimates a growth equation for a cross section of 83 less developed countries over the period 1969-1977. The growth rate of GDP is regressed

on the aid ratio, the savings rate, the level of per capita income, other financial flows, and the lagged values of aid and other financial flows. Mosley finds the relationship between aid and growth positive and significant. Papanek(1973) tests for the effect of capital inflows on growth for a sample of 34 developing countries for the 1950's and 51 developing countries for the 1960's. He distinguishes between the types of inflows, namely: aid; foreign private investment; other inflows(net private transfers, net short term borrowing, other capital, and net errors and omissions). Papanek obtained the following result

$$\begin{array}{lccccc} Growth= & 1.5 & + & 0.203Sav+0.39Aid+0.17FPI+0.19OINFLOWS & & \\ & (2.5) & & (6.0) \quad (5.8) \quad (2.5) \quad (2.1) & & \\ & & & r^2=0.37 & & \end{array} \tag{5.22}$$

The various types of inflows affect the rate of economic growth positively and significantly. Papanek's main finding is that foreign aid has a more significant effect on growth than savings or other forms of foreign resource inflows.

Gupta(1975) estimates a simultaneous equation model of saving and growth. The saving function is specified as:

$$\frac{S}{Y}=a_0+b_0Y+c_0G+d_0DR+e_0F \tag{5.23}$$

Y is per capita income; G is the growth rate of income; DR is the population dependency ratio and F is the ratio of foreign capital inflows to GNP. It is expected that: $b_0 > 0$; $c_0 > 0$; $d_0 < 0$; $e_0 < 0$. The growth equation is formulated as:

$$G=a_3+b_3\frac{S}{Y}+c_3F \tag{5.24}$$

Substitution of (5.23) into (5.24) gives the reduced form for the growth equation as;

$$G=\frac{b_3a_0}{1-b_3c_0}+\frac{b_3b_0}{1-b_3c_0}Y+\frac{b_3d_0}{1-b_3c_0}DR+\frac{b_3e_0c_3}{1-b_3c_0}F \tag{5.25}$$

Gupta finds that saving and foreign capital inflows affect economic growth positively and significantly. Per capita income, the growth rate of income, and the population dependency ratio are the most significant determinants of savings. Because foreign capital inflows affect savings negatively but insignificantly, the effect on growth is thought to be through the investment ratio(but note that the investment function is not estimated in Gupta's study).

Finally, Singh(1985) regresses the growth rate of GDP on the ratio of foreign aid, total population, per capita income(in US dollars), an index of state intervention, and dummy variables for Africa and oil producing countries. The estimation is done over two periods, 1960-1970 and 1970-1980. The study finds that the effect of aid on growth is positive and significant. The effect is found to be stronger for the 1970's than for the 1960's. This is attributed to the favourable economic climate(adoption of market reforms) that allowed for the effective implementation of aid programs. Nonetheless, savings is found to have a stronger effect on growth than aid. The index of state intervention has a detrimental effect on growth. In fact, when the intervention variable is included, the aid variable loses significance. The key conclusion of Singh's study is that the effect of aid on growth has to be assessed taking into account the economic conditions during which the aid inflows occur given that the ability of a country to attract foreign direct investment depends on prevailing domestic economic conditions.

5.6 Capital Inflows in Botswana

This section reviews the pattern of capital inflows into the Botswana economy during the period 1973-1993. Foreign capital inflows have played an important role in the development of the economy of Botswana, especially in the development of the mining sector. Other major foreign resource inflows are external aid(ODA), external debt, and migrant workers remittances(private transfers). The data are reported in Table 5.1.

We now comment on the trends in the current account over the period 1973-1993. The current account was in deficit for the period 1973-1982. In this period savings was less than investment. The investment was made possible by inflows of development aid and direct foreign investment. This period marked increased investment into the provision of infrastructure in education and health, and in public road networks. Investment was also high because of the housing market boom that started in the late 1970's. The surge in investment receded towards the mid 1980's. In the following period(1983-1993) investment was less than domestic saving.

5.6.1 Direct Foreign Investment

The inflow of direct foreign investment financed the current account deficits in the balance of payments during the period before 1982, and also provided employment in the economy. Direct foreign investment has advantages over other types of inflows because it does not increase the country's level of debt. And although there may be resource outflows as profits are repatriated, the long term benefits to the economy in terms of employment are significant. Direct foreign investment increased from US$53.0 million in 1973 to US$153.2 million in 1991. This represents an annual growth rate of 6 percent per annum. Inflows of foreign direct investment in the 1970's largely represent the investment into the construction of the Selibe-Phikwe copper and nickel mine, and the Orapa-Letlhakane diamond mines. Direct foreign investment more than doubled in the period 1978 to 1980. It increased from US$ 40.8 million to US$ 109.2 Million. This marked the construction of the third diamond mine in Jwaneng. It can also be observed that direct foreign investment declined consistently after 1979 when the mining project was completed.

5.6.2 External Aid

As discussed earlier(chapters 1), Botswana relied in the years immediately after political independence on British grants(aid) to finance recurrent government

expenditures. And even though by 1973 recurrent government expenditures were financed from domestic revenue, foreign aid continued to be received for development projects. Total aid receipts increased from US$5.5 million in 1975 to US$66.2 million in 1985, an increase of 28 percent per annum. In the period 1986-1993 total aid increased at a slower rate of 18 percent from US$129.3 million to US$415.5 million. This increase in aid occurred despite the healthy current account surplus in the balance of payments. The continued inflow of aid is thought to be the result of the reputation that the country established for the efficient management of aid financed projects(Harvey and Lewis, 1990). The strong balance of payments position has resulted in the accumulation of foreign exchange reserves. These increased every year except in 1981 when the collapse in the diamond market led to a stock pile of diamonds and reserves were drawn down to finance the deficit. Total foreign reserves declined by 16 percent between 1980 and 1981.

5.6.3 Migrant Workers Remittances

Migrant workers remittances constitute a significant proportion of total transfers. These are mainly private transfers by migrant labourers employed in the South African mining industry. The other major component of total transfers is the contractual transfers from the customs union revenue pool which represent compensation and stabilisation elements of the customs agreement. These increase with the growth in import demand by the member country. Migrant workers remittances were US$53.9 million in 1976. These subsequently declined to US$28.9 million in 1982 because of the changes in labour relations in South Africa. The number of migrant workers declined from 18,437 in 1982 to 12,755 in 1993. This is reflected in the decline in migrant workers remittances from a peak of US$53.5 million in 1988 to US$17.5 million in 1993. Migrant workers remittances declined most severely between 1988 and 1993 by about 20 percent per annum. However, for the whole period the fall was only 6 percent per annum.

5.6.4 External Debt

Botswana has not experienced the levels of debt incurred by many developing countries. This, as noted earlier, is partly due to the sound performance of the diamond industry which permitted the accumulation of foreign exchange reserves, and partly a deliberate policy decision not to run down the accumulated foreign exchange reserves. Table 5.1 gives a summary of aggregate debt indicators for Botswana.

Table 5.1 : Debt indicators*(US Dollars)

Year	Total debt	Short term debt	Debt Ratio	Interest ÷ GNP
1970	17.4			
1980	146.7	4.0	16.3	1.0
1986	412.3	3.1	36.8	2.5
1987	549.8	4.3	40.4	2.6
1988	538.5	3.8	27.7	1.9
1989	552.6	3.6	22.5	1.5
1990	559.6	5.8	18.8	1.3
1991	621.6	6.9	17.7	1.0
1992	627.9	7.2	19.7	1.1
1993	674.1	8.3	18.8	0.9

Source: World Bank(1994), World Debt Tables: External Finance for Developing Countries.

The total stock of debt increased, over the period 1970-1980, from US$17.4 million to US$146.7 million. Debt levels have since increased to US$674.1 million in 1993. It is important to note, however, that most of the debt is long term loans with multilateral organisations, for example, the World Bank(IBRD) and the African Development Bank(ADB). And of the total debt of US$146.7 million in 1980 only US$ 4.0 million was short term. Short term debt increased to only US$8.3 million in 1993. Though the stock of debt has increased rapidly, in recent years it has declined as a ratio of GNP from 40.4 percent in 1987 to 18.8 percent in 1993. This shows that although

in nominal terms stocks of debt increased most of it was obtained on concessional terms, with longer maturity and grace periods, and at low interest rates.

Table 5.2

Types of Capital Inflows(US$Millions)

Year	Aid	FDI	Mwremit	Debt	LTD	STD	Reserves
1973	4.7	53.0		114.9	114.9		
1974	3.5	46.0		134.1	134.1		
1975	5.5	-38.3		147.9	147.9		
1976	13.7	11.2	53.9	169.1	169.1		74.9
1977	15.0	12.0	53.4	192.1	189.1	3.0	100.1
1978	24.4	40.8	41.1	134.4	131.4	3.0	150.6
1979	30.6	127.9	34.6	140.5	123.4	17.1	267.3
1980	30.0	109.2	33.3	146.7	142.7	4.0	343.7
1981	30.9	88.3	31.8	168.1	160.1	8.0	253.4
1982	43.5	21.1	28.9	211.8	208.8	3.0	293.0
1983	52.5	22.5	38.9	234.1	230.1	4.0	395.7
1984	45.2	61.9	42.4	271.5	266.5	5.0	474.3
1985	66.2	52.1	32.9	351.0	349.0	2.0	783.2
1986	129.3	70.4	36.8	412.3	409.2	3.1	1197.7
1987	192.9	113.6	51.7	549.9	545.6	4.3	2057.1
1988	185.1	39.9	53.5	538.5	534.7	3.8	2258.1
1989	79.7	42.2	49.9	552.7	549.1	3.6	2841.1
1990	227.3	38.2	39.8	559.7	553.9	5.8	3385.3
1991	132.5	153.2	45.8	621.6	614.7	6.9	3772.4
1992	211.3		25.5	627.9	620.7	7.2	3844.6
1993	415.5		17.5	674.2	665.8	8.4	4153.1

Source: World Tables(1995).

5.7 Estimation Results

This section presents the results of estimating the effects of capital inflows on saving, investment and the rate of economic growth. The study uses the aggregative measure of capital inflows, and also makes the distinction between the different types of capital inflows. The basic method of estimation is ordinary least squares. When evidence of serial correlation is found during estimation it is corrected by the Cochrane-Orcutt method.

5.7.1 Capital Inflows and Domestic Saving

The effect of capital inflows on the level of domestic saving is estimated using the following general specification:

$$GDS=\alpha_0+\alpha_1\sum_{i=1}^{k}FSAV_i+\alpha_2 RGDP \qquad (5.26)$$

where GDS is gross domestic saving[9], $FSAV_i$ is the specific capital inflow, e.g. aid or foreign direct investment; RGDP is the level of real income. The level of real income is expected to affect domestic saving positively. If capital inflows supplement domestic saving then α_1 is expected to be positive and significant. In contrast to other studies we use a definition of saving that is not derived as the difference between investment and foreign capital inflows, but a definition that is derived as the difference between gross domestic income and domestic consumption.

We also present the following diagnostic tests; the Lagrange multiplier test for serial correlation, the functional form test(reset test); the normality test; and the heteroscedasticity test(the relevant probability values are given in squared brackets).

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9 We follow the World Bank(1995) World Tables in defining the variables. Gross domestic saving is defined as gross domestic product less consumption. Gross domestic investment is the sum of gross fixed capital formation plus the change in stocks. And, finally foreign saving is defined as the negative of the current account deficit excluding official transfers.

Initially, gross domestic saving was regressed on foreign saving and real income over the period 1973-1993, and the following result, with the t ratios indicated below the coefficients, was obtained:

$$GDS = -323.85 + 1432.1FSAV + 0.507RGDP \quad (5.27)$$
$$(-2.26) \quad (1.46) \quad (8.71)^{*}$$

$$\bar{R}^2 = 0.88 \qquad D.W = 1.56$$

Diagnostic tests:

Serial correlation $\chi^2(1) = .796[0.372]$; Functional form $\chi^2(1) = 2.56[0.109]$;

Normality $\chi^2(2) = 14.34[0.001]$; Heteroscedasticity $\chi^2(1) = 2.08[0.149]$

We find that foreign capital inflows do not have a significant effect on domestic savings, although the coefficient is positive. The level of real income is found to be the main determinant of domestic saving. The income coefficient is significant at the 1 percent confidence level.

The various components of foreign capital inflows are expected to affect domestic saving differently from the aggregate measure(Papanek, 1972). This is tested using three measures of capital inflows, namely: aid; direct foreign investment; and migrant workers remittances[10].

A brief comment on migrant workers remittances is necessary. Botswana, like other members of the SACUA, supplies labour to the South African mining industry. This provides income to the country in the form of unrequited transfers. It would be interesting to establish whether these transfers augment domestic saving or not. However, we expect migrant workers remittances to augment consumption because the majority of the migrant workers are from a low income background. We now regress domestic saving on the components of capital inflows, namely, aid, migrant workers

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[10] Aid is defined as net transfers received by government and loans converted into grants, plus the value of technical assistance provided.

remittances and direct foreign investment. We obtained the following result:

$$GDS = \underset{(-2.31)}{-962.02} + \underset{(3.71)}{0.541}RGDP - \underset{(-0.541)}{1.04}AID + \underset{(1.20)}{10.82}MWREMIT - \underset{(-0.438)}{0.79}DFI \quad (5.28)$$

$$\bar{R}^2 = 0.84 \qquad D.W = 1.72$$

Diagnostic tests:

Serial correlation $\chi^2(1) = 0.079[0.778]$; Functional form $\chi^2(1) = 0.204[0.651]$;

Normality $\chi^2(2) = 6.496[0.039]$; Heteroscedasticity $\chi^2(1) = 4.33[0.037]$

It is clear from the above result that even when the capital inflow is disaggregated, none of the components has a significant effect on domestic savings. The fact that migrant workers remittances are found to have an insignificant effect on domestic saving suggests that the transfers are used for consumption. This seems to confirm the assertion we made earlier that most migrant workers, especially those employed in the South African mining industry, are from low income groups, and therefore likely to devote a larger proportion of the transfers to consumption. The level of real income emerges as the main determinant of domestic saving. However, we tried a different savings function specification. The savings equation was reestimated in log form. The data series for direct foreign investment could not be expressed in logs because of negative values. Re-estimating the equation produced the following result:

$$GDSLOG = \underset{(-4.60)}{-9.92} + \underset{(5.60)}{1.90}RGDPLOG + \underset{(1.23)}{0.528}MWREMITLOG - \underset{(-0.245)}{0.078}AIDLOG + \underset{(0.889)}{0.001}DFI \quad (5.29)$$

$$\bar{R}^2 = 0.88 \qquad D.W = 1.61$$

Diagnostic tests:

Serial correlation $\chi^2(1) = 0.126[0.722]$; Functional form $\chi^2(1) = 0.749[0.387]$

Normality $\chi^2(2) = 0.698[0.705]$; Heteroscedasticity $\chi^2(1) = 0.286[0.593]$

It seems that changing the specification does not affect the basic result. The lack of statistical significance of the components of capital inflows may be due to the following. Firstly, it may be that the effect of the components is swamped by the strong correlation between domestic savings and income; a correlation coefficient of 93 percent. This appears not to be the case because when the income variable was dropped the variables did not become significant. Secondly, the result may be due to the collinearity between the components of capital inflows. The following estimated correlation matrix suggests otherwise.

Table 5.3

Estimated Correlation Matrix

	AID	MWREMIT	DFI
AID	1.00	.247	.334
MWREMIT	.247	1.00	-.201
DFI	.334	-.201	1.00

There is no strong correlation between the inflow of aid, direct foreign investment, and migrant workers remittances.

It is concluded, therefore, that the aggregate measure of capital inflows has no significant effect on domestic saving. This seems to contrast with other studies that find capital inflows to substitute for the domestic saving effort. When distinguishing between the types of inflows we find that none of the components of capital inflows affects total domestic savings significantly. And although the sign of the aid coefficient is negative, it is insignificant. Inflows of aid do not seem to have any significant and direct effect on domestic savings.

5.7.2 Capital Inflows and Domestic Investment

We now estimate the effects of foreign capital inflows on domestic investment. The level of domestic investment is regressed on total foreign saving(FORSAV), and the real deposit interest rate(RDIR). The following result was obtained and the equation corrected for serial correlation using the Cochrane-Orcutt(C-O) method.

$$GDI = \underset{(3.70)}{695.08} + \underset{(5.92)}{1.49}FORSAV + \underset{(0.15)}{4.11}RDIR \qquad (5.30)$$

$$\bar{R}^2 = 0.73 \qquad D.W = 1.92$$

Foreign capital inflows affect the level of domestic investment positively and significantly. This suggests that inflows of capital are related to domestic investment through which income is increased. The real deposit interest rate has no significant effect on domestic investment which is the result we obtained in chapter 3.

We also expect the components of capital inflows to vary in their effect on domestic investment. Capital inflows are dis-aggregated into: direct foreign investment; migrant workers remittances; debt creating flows(long-term and short-term flows); and aid(public grants and loans converted into grants plus the value of technical assistance). Furthermore, we include the real deposit interest rate and gross domestic saving in the regression equation. The latter is included to test the proposition by Feldstein(1983) and Feldstein and Horioka(1980) that domestic investment depends on domestic saving. The following result is obtained.

$$GDI = \underset{(4.08)}{508.6} + \underset{(0.21)}{6.3}RDIR + \underset{(1.93)}{0.50}GDS + \underset{(2.71)}{3.3}AID - \underset{(-0.75)}{8.0}MWREMIT - \underset{(-0.55)}{0.82}DEBT \qquad (5.31)$$

$$\bar{R}^2 = 0.68 \qquad D.W = 2.06$$

Diagnostic tests:

Serial correlation $\chi^2(1) = .344[0.557]$; Functional form $\chi^2(1) = 1.443[0.230]$

Normality $\chi^2(2) = 7.08[0.029]$; Heteroscedasticity $\chi^2(1) = 0.436[0.509]$

Migrant workers remittances have an insignificant effect on domestic investment. The effect of external debt on domestic investment is also insignificant. Aid inflows are found to augment domestic investment at the 5 percent level of significance. The effect of aid inflows on investment confirms the fact that most of the aid inflows are directed towards development programs. We also find that domestic saving has a significant effect on domestic investment(Feldstein, 1983 and Feldstein and Horioka, 1980).

In conclusion, we find that the aggregate measure of foreign capital inflows affects domestic investment positively and significantly. And when using a disaggregated measure of capital inflows, the positive effect of foreign capital inflows on investment occurs through the inflow of aid. This is because most of the aid allocated is usually tied to specific development projects.

5.7.3 Capital Inflows and Economic Growth

The effect of capital inflows on the growth of real income is assessed within a model that regresses real income growth on the ratios of gross domestic savings(GDS), foreign capital inflows. The model is estimated over the period 1973-1993, and the following result is obtained.

$$\underset{}{RGDPG} = \underset{(5.855)}{3.193} + \underset{(9.675)}{0.593GDS} - \underset{(-0.842)}{0.00025FORSAV} \qquad (5.32)$$

$$\bar{R}^2 = 0.89 \qquad D.W = 1.31$$

Diagnostic tests:

Serial correlation $\chi^2(1) = 1.933[0.164]$; Functional form $\chi^2(1) = 0.060[0.806]$;

Normality $\chi^2(2) = 0.498[0.779]$; Heteroscedasticity $\chi^2(1) = 0.215[0.643]$.

The aggregate measure of capital inflows affects income growth negatively, albeit insignificantly. On the other hand, the domestic savings ratio is found to have

a positive effect on the growth rate of income.

We also specified the growth equation including the components of capital inflows: debt creating flows; debt and loans converted into grants plus the value of technical assistance; migrant workers remittances; and direct foreign investment. We also include the mining and domestic savings ratio. The following result was obtained.

$$\begin{array}{ccccccc} RGDPG = & 6.53 + & 0.174GDS + & 0.0016DEBT + & 0.008AID - & 0.0153MWREMIT & \\ & (10.11) & (2.07) & (3.45) & (1.50) & (-3.60) & \\ & & -0.0007DFI + & 0.00036MNGDP & & & (5.33) \\ & & (-0.91) & (0.08) & & & \end{array}$$

$$\bar{R}^2 = 0.95 \qquad D.W = 1.38$$

Diagnostic tests:

Serial correlation $\chi^2(1) = 1.625[0.202]$; Functional form $\chi^2(1) = 6.795[0.009]$; Normality $\chi^2(2) = 5.356[0.0069]$; Heteroscedasticity $\chi^2(1) = 0.675[0.411]$.

The result indicates that the domestic savings ratio has a positive and significant effect on real income growth. Debt accumulation affects income growth positively and significantly. This is to be expected because the major proportion of debt is long term debt which is secured by the government for specific development projects. The result suggest that borrowing has been invested productively.

5.8 Conclusion

This chapter presented the empirical results of the effect of capital inflows on saving, investment and growth. Estimation was done for two measures of capital inflows. First, it was carried out for an aggregate measure of capital inflows approximated by the deficit in the current account of the balance of payments. Secondly, estimation was done for the components of capital inflows because of the recognition that they may impact differently on the dependent variable.

It has been found that the inflow of foreign capital has a positive and significant

effect on investment, but not on saving and income growth. The positive effect of capital inflows on investment reflects partly the strength of debt creating flows which are mainly long term loans secured by the government, and partly the positive effect of development aid on investment. It has been argued that aid does not affect domestic saving directly, but through investment. And although aggregate capital inflows do not affect income growth significantly, aid and debt accumulation have positive and significant effects on the growth rate of income.

Chapter Six

The Balance of Payments Constraint and Economic Growth in Botswana

6.1 Introduction

In the preceding empirical chapters we considered the different means by which resources are mobilised to fund economic growth and development. Chapter three dealt with the relevance of interest rate policy for resource mobilisation within the McKinnon and Shaw model. The use of taxation was discussed in chapter four. Finally, chapter five discussed the use of foreign resources to promote economic growth. Foreign resource inflows are considered to alleviate the foreign exchange constraint by enhancing the capacity to import which results in the full utilisation of domestic resources. These chapters identify two resource constraints that face countries at different stages of economic development: the domestic resource constraint(private and public), or the external resource constraint. However, policies that are intended to shift resources from consumption to investment, have implications for the balance of payments through their effects on imports. Because of the implications for imports, countries may be unable to achieve the growth rate consistent with long run balance of payments equilibrium.

This chapter extends the work of the previous chapters by testing a post Keynesian model of balance of payments constrained growth(Thirlwall, 1979, 1982). The model identifies the balance of payments as the dominant constraint on the growth rate of an open economy. By balance of payments constrained growth it is meant that " a country's performance in external markets, and the response of the world financial markets to this performance, constrain the growth of the economy to a rate which is below that which internal conditions would warrant"(McCombie and Thirlwall, 1994). The rate of growth of output is determined by the rate of expansion in effective demand with supply reacting passively. Effective demand is restricted in turn by the balance of

payments. The balance of payments may thus affect the growth rate of income either adversely or favourably. Firstly, if the balance of payments deteriorates as aggregate demand is expanded the economy's productive capacity is never fully utilised because demand is restricted to preserve equilibrium in the balance of payments. This results in a lower level of investment and reduced technological progress which may further deteriorate the long run balance of payments. Secondly, if the rate of growth of imports remains less than the growth of exports as demand is expanded a higher rate of economic growth can be achieved without the balance of payments deteriorating. We develop the model below.

6.2 The Balance of Payments Constrained Growth Model

In this section we derive the balance of payments constrained growth model(Thirlwall, 1979, 1982). The model states that the long run growth rate of an economy is approximated by ratio of the economy's rate of growth of exports to the income elasticity of demand for imports. In other words, the long run rate of economic growth is determined by the capacity to export, and the dependence of the economy on imports. It is mainly income that adjusts the balance of payments and not prices. The model represents Thirlwall's dynamic reformulation of the basic Harrod(1933) foreign trade multiplier.

The original Harrod foreign trade multiplier makes a number of simplifying assumptions. Firstly, the economy is assumed to produce for two types of markets, for domestic consumption and exports. Secondly, all income is spent on domestic goods or imports. Thirdly, there are no leakages of income into savings and taxation. Fourthly, it is assumed that there is a constant terms of trade. These assumptions ensure equilibrium in the trade balance. If we define income(Y) as the sum of both consumption(C) and exports(X), and that income is spent on consumption(C) and imports(M), then X=M. The quantity of imports is specified as a function of income

M = mY. Substituting the import function into the equilibrium condition and taking changes of the variables we have the Harrod foreign multiplier as: $\frac{\Delta Y}{\Delta X} = \frac{1}{m}$. This means that for any change in exports the multiplier will, through changes in imports, bring the balance of payments back into equilibrium[1]. The Harrod foreign multiplier can be cast differently to derive the balance of payments constrained growth rule. The maintenance of a trade balance requires the growth of exports to equal the growth of imports. Thus we can multiply the expression $\frac{\Delta Y}{\Delta X} = \frac{\Delta Y}{\Delta M}$ by $\frac{X}{Y}$ on the LHS and by $\frac{M}{Y}$ on the RHS which yields:

$$\frac{\Delta Y}{Y} = \frac{\Delta X}{X} / (\frac{\Delta M}{M} / \frac{\Delta Y}{Y}) \qquad (6.1)$$

The above states that the rate of growth of the economy approximates in the long run to the rate of export growth divided by the income elasticity of demand for imports. Deviations from this long run growth path can only arise if relative price changes are an efficient balance of payments adjustment mechanism or if capital inflows bridge the gap between domestic expenditure and income. This means that "no country can grow at a rate different from its balance of payments equilibrium growth rate unless it can finance an ever growing deficit or decides to accumulate reserves if in surplus" (Thirlwall, 1982 p8).

Thirlwall's model adopts the same assumption of a constant terms of trade as made in the Harrod trade multiplier model. The requirement for balance of payments equilibrium in the long run is that the rate of growth of imports equals the growth rate of exports, which we express as:

$$p_d + x = p_f + m + e \qquad (6.2)$$

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[1] Note that when the assumptions made to derive the basic Harrod multiplier are relaxed the same conclusion will result if other leakages equal other injections.

where p_d is the rate of change in the domestic price of exports, x is the rate of change in the quantity of exports, p_f is the rate of change in the foreign price of imports, m is the rate of growth in the quantity of imports, and e is the rate of change in the domestic price of foreign currency(exchange rate). The demand for exports can be specified in the following form:

$$X = b\left(\frac{P_d}{P_f E}\right)^{\eta} Z^{\varepsilon} \tag{6.3}$$

where X is total quantity of exports; η is the price elasticity of demand for exports ($\eta<0$); Z is world income; ε is the income elasticity of demand for exports($\varepsilon>0$). To obtain the rate of growth of exports requires taking logs and differentiating the function with respect to time to get:

$$x = \eta(p_d - p_f - e) + \varepsilon z \tag{6.4}$$

The import function is also specified in the same multiplicative form:

$$M = a\left(\frac{P_f E}{P_d}\right)^{\psi} Y^{\pi} \tag{6.5}$$

where M is the total quantity of imports; ψ is the price elasticity of demand for imports($\psi<0$); Y is domestic income; π is the income elasticity of demand for imports($\pi>0$). Similarly, taking logs and differentiating with respect to time to obtain the growth rate of imports:

$$m = \psi(p_f + e - p_d) + \pi y \tag{6.6}$$

Given the equilibrium requirement that the rate of growth of imports equal the growth rate of exports we substitute (6.6) and (6.4) into (6.2) to obtain the growth rate

consistent with balance of payments equilibrium:

$$y_B = \frac{(1+\eta+\psi)(p_d - p_f - e)+\varepsilon z}{\pi} \tag{6.7}$$

The balance of payments equilibrium growth rate is shown to depend on four factors. Firstly, it depends on how domestic prices are changing relative to foreign prices p_d and p_f, such that if the price elasticity of imports and exports is greater than unity in absolute terms $|\eta + \psi| > 1$ then a higher rate of growth of domestic prices relative to the rest of the world will reduce the balance of payments growth rate. Secondly, the long run equilibrium growth rate depends on the rate of change of the exchange rate(e). This suggests that provided the Marshall-Lerner condition holds, continually raising the domestic price of foreign currency will improve the growth rate of income, everything else remaining the same. Thirdly, it depends on the income elasticity of demand for exports and the growth of world income. The higher the income elasticity of demand for exports, the higher the equilibrium growth rate for any given growth of world income. Finally, it depends on the income elasticity of demand for imports(π); the lower the income elasticity of demand for imports the higher the equilibrium growth rate, and vice versa.

If it is assumed that relative prices do not change over time(i.e $p_d - p_f - e = 0$), the above expression reduces to the growth rule:

$$y_B = \frac{\varepsilon z}{\pi} = \frac{x}{\pi} \tag{6.8}$$

where, according to equation(6.4) $\varepsilon z = x$. The above expression states that the long run equilibrium growth rate can be approximated by the ratio of the rate of growth of the volume of exports and the income elasticity of demand for imports.

In the above specification, the model does not account for the effects of capital inflows on the long run equilibrium growth rate because trade balance is assumed. The

incorporation of capital inflows is especially important for developing countries because they are the major recipients of capital inflows which allow them to achieve a higher rate of economic growth than would be warranted by available domestic resources. For the developing countries the rate of economic growth is constrained by inflows of capital. The balance of payments equilibrium growth rate can be re-formulated to incorporate capital inflows in the following way: Let

$$P_d X + F = P_f M E \tag{6.9}$$

where X is the volume of exports; P_d is the domestic price of exports; P_f is the foreign price of imports; E is the domestic price of foreign currency(exchange rate); M is the volume of imports; and F is the value of capital flows measured in domestic currency (F > 0 measures capital inflows). When taking rates of change of the variables:

$$\theta(p_d + x) + (1-\theta)f = p_f + m + e \tag{6.10}$$

where $\theta = \frac{P_d X}{R}$, which is the share of exports as a proportion of total receipts to pay for imports. (1-θ) is F/R, the share of capital inflows to total receipts. The rate of growth of imports and exports is given by equations(6.4) and (6.6). Substituting in (6.10) gives:

$$y_b = \frac{(\theta\eta + \psi)(p_d - e - p_f) + (p_d - e - p_f) + \theta\varepsilon z + (1-\theta)(f - p_d)}{\pi} \tag{6.11}$$

The equilibrium growth rate is given, firstly, by the volume effects of relative price changes. Secondly, it is given by the terms of trade effects. Thirdly, by the effect of exogenous changes in income abroad. Fourthly, it is given by the effect of the rate of growth of real capital imports. Assuming a constant terms of trade, the rate of growth of equilibrium income reduces to :

$$y_b^* = \frac{\theta\varepsilon z + (1-\theta)(f - p_d)}{\pi} \tag{6.12}$$

This means that, starting from initial disequilibrium, the balance of payments constrained growth rate is determined by the growth of exports due to the exogenous growth in world income and the growth of real capital inflows, divided by the income elasticity of demand for imports. If we assume again that $\varepsilon z = x$, the above expression becomes:

$$y_b^* = \frac{\theta x + (1-\theta)(f - p_d)}{\pi} \tag{6.13}$$

We observe that equation(6.13) is equal to the simple growth rule when, starting from initial equilibrium, with the growth of capital inflows zero, so that $\theta = 1$ and $y^*_b = x/\pi$. However, when starting from initial disequilibrium in the current account, but with no capital inflows(f=0), the current account disequilibrium will worsen even if exports and imports are growing at the same rate. In that case the growth of income will have to fall to reduce imports in order to restore equilibrium in the current account. Assuming an initial disequilibrium position and that there are no capital inflows, the equilibrium growth rate will be reduced to:

$$y_B^{**} = \frac{\theta x - (1-\theta)(p_d)}{\pi} \tag{6.14}$$

But by how much the growth rate of income will fall is found by subtracting (6.14) from (6.8) which results in :

$$y_B - y_B^{**} = \frac{(1-\theta)(p_d + x)}{\pi} \tag{6.15}$$

For an economy to achieve the growth rate consistent with balance of payments

equilibrium, starting from initial disequilibrium, it requires that the growth rate of exports equal the rate of growth of capital inflows, i.e $f = p_d + x$.

It seems, therefore, that when starting from initial disequilibrium, the extent to which the simple growth rule(equation 6.8) will over- predict or under- predict the actual growth rate depends on the growth rate of capital inflows vis-a-vis the rate of growth of exports. Such deviations from the basic rule are given by the difference between equation(6.8) and equation(6.13):

$$y_b - y_b^* = \frac{(1-\theta)(p_d + x - f)}{\pi} \qquad (6.16)$$

When $y > y_b^*$ the rate of growth of real capital inflows is greater than the growth rate of exports ($f - p_d > x$). This means that the dynamic Harrod multiplier under predicts the actual growth rate. In other words, the economy would be growing faster than the rate warranted by the available domestic resources. There is an inflow of capital to compensate for the slow growth rate of exports. On the other hand, when $y < y_b^*$ the growth rate of real capital imports is less than the growth rate of exports($f - p_d < x$). The Harrod foreign trade multiplier therefore over predicts the actual growth rate. The economy is accumulating foreign exchange reserves because it does not have the capacity to grow any faster.

The accuracy of the balance of payments constrained growth model in predicting the actual growth rate will depend on the interplay between the growth rate of real capital imports and the growth rate of exports. It will also depend on whether relative price changes have been favourable or not. The extended model is expected to predict better for the developing countries because of inflows of capital imports that allow growth rates higher than would be possible with domestic resources alone. However, when the developing countries are mineral rich or oil exporting, the extended model may not predict well the actual growth rate if balance of payments surpluses cannot be used productively.

6.3 Balance of Payments Constrained Growth Model: A Survey of Studies

The estimation of the balance of payments constrained growth model proceeds in two stages. Firstly, import and export demand functions are estimated. Secondly, the estimated elasticities are used to fit equations 6.8 and 6.13. Because of the importance of import and export demand functions for the estimation of the model, we briefly consider the determinants of import and export demand.

The import demand function typically regresses the quantity of imports on some of the following variables: the level of real income which is used to proxy for the level of expenditure; the domestic price of imports or the relative price of imports expressed in a common currency; the level of foreign exchange reserves; domestic credit availability; some measure of capacity utilisation; and lagged dependent variables(Houthakker and Magee, 1969; Leamer and Stern,1970; Khan, 1974; Khan and Ross, 1977; Thirlwall and Gibson, 1992).

The main issue to resolve in estimating an import demand function is the choice of the measure of relative prices to use. Most often, because of data problems, authors use a variety of measures for the price variable in the estimation of the import function. The most appropriate measure to use is the index of import prices divided by the price index of domestic goods. But the domestic price index used ought not to be calculated to include all domestic prices relative to import prices because not all goods that enter the aggregate price index are traded or substitutable for imports(Thirlwall and Gibson, 1992). The decision on the price index to use also depends on the level of aggregation for the study. If total imports are taken using an aggregate index of prices, (which implicitly assumes that imports substitute for all domestic goods), the explanatory power of the price coefficient is reduced. Moreover, in most cases price indexes are not available and unit value indexes of imports are often used. And because a unit value index is not a "true price index" but a weighted average of the unit values of specific

classes of imports, it may change without any variations in prices but because of changes in the composition of commodities(Leamer and Stern, 1970). Houthakker and Magee(1969) used the ratio of the price index of imports to the wholesale price index. The authors cautioned against the use of the GDP deflator because of the large share of non-traded commodities in total GDP, especially services.

The use of lagged dependent variables is intended to allow for delays in the speed of adjustment, e.g the effects of delays in product delivery. It also allows for the calculation of long run multipliers which are more meaningful than impact multipliers. Including foreign exchange reserves is important for the developing countries because import demand may respond more to the availability of foreign exchange than to the level of real income. Alternatively, the level of domestic credit availability may be included in order to capture the extent to which credit is provided for imports. The amount of credit made available for imports depends on the accumulated foreign exchange resources.

The import function is normally specified either in linear or double-log form. The double-log specification is preferred because the coefficients are interpreted as elasticities. This is the form consistent with the earlier model with the lagged dependent variable included to allow for the calculation of long run elasticities. The import demand function normally takes the following form:

$$\log M_t = a + b \log(Y_t) + c \log\left(\frac{P_f}{P_d}\right) + d \log M_{t-1} \qquad (6.17)$$

where M_t is the real quantity of imports; Y_t is the level of income; (P_f / P_d) is the price of imports relative to the price of domestic goods measured in a common currency and b and c are income and price elasticities, respectively. The above general specification is normally used by researchers with different types of measures to capture the effect

of relative prices.

The export demand function is also commonly specified in double-log form. The demand for a country's exports is affected by the same factors that affect the demand for imports. A typical export function is specified as:

$$\log X_t = \alpha + \beta \log Z + \delta \log(\frac{P_d}{P_f}) + \lambda \log X_{t-1} + u \qquad (6.18)$$

where X_t is the quantity of exports; Z is the level of world income; and $\frac{P_d}{P_f}$ is the price of exports relative to competitor's prices in export markets measured in a common currency. β and δ are, respectively, income and price elasticities of export demand.

Thursby and Thursby(1984) test for the appropriate model to use in estimating price and income elasticities of imports. The estimated import demand function regresses the quantity of imports on income(expenditure), and the relative price of imports to domestic goods for a sample of five developed countries. They estimate nine basic models that vary according to; functional form, and each functional form is estimated using two different measures of the dependent variables(import quantity index, real value of imports) and three measures of the price variable(implicit price deflator, wholesale price index, consumer price index); lag structure; and specifications of price and income variables. Models are selected according to statistical performance of the following tests: first order autocorrelation; reset tests; and tests for higher order autocorrelation; significance of the price and income variables; and the goodness of fit measure. The authors find that the double-log import demand model, with the dependent variable included as a regressor, performs better than the other specifications. This is the specification used in most studies that test the validity of the balance of payments constrained growth model.

The empirical estimations of the balance of payments constrained growth model have generally confirmed the basic conclusion of the model that differentials in income elasticities can through a balance of payments constraint restrict the long run growth

rate of income. The evidence is found for developed and developing countries(Atesoglu, 1993; Andersen, 1993; Bairam, 1988, 1990, 1993; McCombie, 1985; Thirlwall, 1979; Thirlwall and Hussain, 1982, Hussain, 1995)[2].

Thirlwall(1979) estimates the basic dynamic multiplier model(equation 6.8) using two data sets for a sample of 18 developed countries over the period 1953-1976 and 1951-1973. He finds that the model accurately approximates the actual growth rates of the sample of countries in the study. The study finds, however, that there is an upward bias in the estimates of the balance of payments equilibrium growth rate due, possibly, to the fact that the estimates of the income elasticity of demand for imports were too low, taken from Houthakker and Magee(1969).

Thirlwall and Hussain(1982) fit the extended version of the Harrod trade model that incorporates the effect of capital inflows to a sample of twenty developing countries over the period 1951-1978. Because of the importance of capital inflows in the developing countries the model that takes account of capital inflows is expected to provide a better prediction of the actual growth rate of countries than the basic dynamic model. The divergence between the actual and the predicted rate may be due to either of the following: the growth of capital inflows being less than the growth rate of exports, in that case the basic Harrod multiplier model will over predict the actual growth rate ($y_b > y$); whereas when the growth of real capital inflows is greater than real export growth, the model will under predict. Other than the effect of capital inflows, the difference between the actual growth rate and that predicted by the model will also reflect the effect of relative price changes.

To assess the causes of the divergence between the actual and the predicted growth rates Thirlwall and Hussain divided the sample into two sets of countries: those

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In this brief survey we shall not report the results of estimated income and price elasticities, but mainly report the results of fitting the Balance of Payments Constrained Growth Model. Suffice to mention, however, that most of the studies find significant income elasticities of imports and exports, and price elasticities that are insignificant and with the wrong sign.

countries for which the multiplier over predicts the actual growth rate of income, and those for which the multiplier under predicts. They find that where the estimated equilibrium growth rate was less than the actual rate, the constraint on the balance of payments was relaxed by about 2.03 percentage points but was offset by the effect of relative price changes that tightened the balance of payments constraint by about 0.65 percentage points.

On the other hand, when the growth rate predicted by the Harrod trade multiplier was greater than the actual growth of income the source of the disparity was found to be the effect of relative price changes. The faster rate of growth of exports relative to capital inflows was found to have constrained growth by only 0.80 percentage points. About 1.61 percentage points of the deviations of the actual from the predicted growth rate is attributed to the effect of relative price changes.

Bairam(1990) applied the basic dynamic model to a sample of 15 oil exporting countries and other developing countries over the period 1961-1985. Bairam estimated the following two versions of the model: $y_1^* = \frac{\varepsilon z}{\pi}$, and $y_2^* = \frac{x}{\pi}$. To test whether the actual growth rate can be predicted from the balance of payments constrained growth model requires testing the null that the difference between the actual and the predicted growth rate is zero(Ho: $y - y^* = 0$). He found that the difference between the actual and the predicted growth rate was larger for oil exporting countries than for the other developing countries, but in general the model predicts well for the non oil developing countries. He concludes that "whilst Thirlwall's model could be used to predict the rate of overall economic growth, in the case of the oil exporting countries using such a model could lead to misleading results"(p715).

In another study, Bairam and Dempster(1991) test the relevance of the Harrod foreign trade multiplier for a sample of 11 Asian countries over the period 1961-1985. The authors test the predictive power of the basic dynamic multiplier and find that the differential between the actual and the predicted growth is statistically insignificant only

for Japan and India. The model seems to predict the growth rate of the other Asian countries well. In addition Bairam and Dempster test the specification suggested by McGregor and Swales(1986). This regresses the actual growth rate on the predicted growth rate. That is, $y = \beta_i y_i^* \quad i = 1, 2$. When $\beta = 1$ the actual growth rate can be explained by reference to the disparities in export and import elasticities, which would validate the main conclusion of the balance of payments constrained growth model. The study finds that the model accurately predicts the actual growth rate of income; that it is variations in income elasticities of exports and imports that explain differences in the growth rates of Asian countries. Bairam and Dempster conclude that to achieve increases in demand and supply, and a strong balance of payments position, requires increasing income elasticities of exports and lowering elasticities of demand for imports.

The issue of the appropriate specification to use in estimating import and export demand functions has been revisited in a study by Bairam(1993b). Bairam estimates an error correction model for a sample of five industrial countries over the period 1970-1989. When investigating the properties of the data he found that the data attained stationarity after first differencing. Estimating the dynamic import and export demand equations he found positive and significant income elasticities, whereas price elasticities were not significant although negative. The author found similarly significant results when applying the static equations. Bairam concludes that " although the correct specifications are the dynamic specifications, using the static specification does not significantly change the values of the estimated elasticities"(p740). It is important , however, to test for the performance of various model specification and use the results from the model that produces the best results. Finally, when fitting the dynamic Harrod multiplier model, the author found the model to accurately predict the actual growth rate of income in the sample of countries.

Andersen(1993) estimates the balance of payments constrained growth model for a sample of 16 industrial countries over the period 1960-1990. The model is also estimated for the sub periods; 1960-1973 and 1973-1980. The model is found not to accurately predict the actual growth rate in the short and medium term. This is attributed to large differences in the current account position of countries and changes in the real effective exchange rates. The model predicts actual growth well when estimated for the whole period. This, however, is to be expected because the balance of payments constrained growth model is essentially a long run model.

Further evidence of the relevance of the balance of payments constrained model is provided in a study of the United States by Atesoglu(1993) for the period 1955-1990. The author finds that long term economic growth in the United States is explained by variations in income elasticities of exports and imports. Additional support is found with the regression of the actual growth rate on the predicted rate; this yields a positive and significant coefficient.

Using a total sample of 40 countries (29 African and 11 Asian), Hussain(1995) fits both the static and extended Harrod model, and tests the extent to which the actual and the predicted growth rates differ for each individual country. The test proceeds as follows [3]. Firstly, the implied balance of payments equilibrium income elasticity of demand for imports is calculated for each country. By the implied elasticity is meant that which equates the actual and the predicted growth rate. This is then compared with the estimated elasticity from each individual country regression. The balance of payments constrained growth model is supported when the two are not statistically different from each other. Overall his study finds evidence in support of both the basic and the extended model. And for those countries for which the model does not predict

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See McCombie, J.S.L(1989) "Thirlwall's Law" and the Balance of Payments Constrained Growth - A Comment on the Debate, *Applied Economics*, May.

accurately, the error is only marginal. Hussain concludes that for the majority of countries in the sample "income elasticities for exports and imports play a major role in determining growth because they impose a balance of payments constraint on demand that can only be exceeded by enduring external deficits financed by capital inflows"(p28).

In this section we reviewed empirical studies of the balance of payments constrained growth model. In the majority of studies the income elasticities of exports and imports were found to be positive and significant, whereas price elasticities were either insignificant or had the wrong sign. Furthermore, most studies find that in the long run the growth rate of income can be predicted by the Harrod foreign trade multiplier.

Before estimating the model for Botswana we provide an overview of the performance of exports and imports of the Botswana economy.

6.4 Botswana's Trade Account

Botswana's economy is highly dependent on external trade. The principal exports are diamonds, copper, nickel and beef. Diamonds contribute the largest percentage of total exports. To indicate the contribution of these items, we observe that their share of total exports was 84 percent in 1982 and had increased to 93 percent by 1989. This averaged about 88 percent per annum in the period 1982-1995. As a proportion of total exports diamonds increased from 34 percent in 1973 to 90 percent in 1994, with fluctuations in between as can be seen from table 6.1. The second major item is beef and beef products. Beef and its related products contributed 30 percent in 1976 reflecting the strength of agriculture in total gross domestic product. However, due to the repeated occurances of drought, and occasional outbreaks of foot and mouth disease, beef exports have declined considerably as a percentage of total exports. Since 1985 beef exports have maintained an average share of only 5 percent of total exports.

The third major single item is copper and nickel. Exports of copper and nickel were 10 percent in 1974 and reached a peak of 34 percent in 1976. But since the late 1970's copper prices have fallen due largely to the discovery of copper substitutes. The share of copper and nickel in total exports has now declined to 5.3 percent in 1994.

The two major foreign exchange earners, diamonds and beef exports, are marketed through special arrangements. The bulk of Botswana's beef exports are sold to the European community. This market guarantees higher than world prices under the Lome convention agreement. It is expected that this arrangement will change as the propositions of the Uruguay round are implemented. On the other hand, diamonds which are marketed through the Central Selling Organisation(CSO) depend on how successful the diamond controlling authority(DeBeers) manages to keep the cartel together. The diamond stockpile of 1981/82 serves as a sharp reminder of the vulnerability of the economy to a single product. As a result of the fall in the international price of diamonds, exports of diamonds declined by 20 percentage points, from 61 percent in 1980 to 41 percent in 1981. The structure of total imports is dominated by capital goods, food(including beverages and tobacco) imports, and vehicles and transport equipment. Food imports have accounted for an average of 17 percent of total imports per annum between 1973 and 1993. Capital goods(machinery and electrical equipment) accounted for 21 percent of total imports in 1973 and declined to 18 percent in 1993. The import of vehicles and transport equipment constituted 14 percent of total imports in 1973 and have averaged 12 percent between 1973 and 1993.

Table 6.1

Exports by Principal Commodity: 1973-1993(% Total Exports Earnings)

Year	Diamonds	Copper and Nickel	Beef
1973	34		
1974	37	10	
1975	31	21	
1976	25	34	30
1977	31	26	30
1978	41	27	16
1979	52	17	21
1980	61	21	9
1981	41	24	22
1982	53	14	20
1983	66	9	13
1984	72	8	9
1985	76	8	8
1986	75	8	8
1987	85	4	4
1988	74	14	4
1989	76	13	4
1990	79	8	4
1992	79	8	4
1993	79	7	5

Source: CSO- Statistical Bulletins and Bank of Botswana Annual Reports.

6.5 Direction of Trade

The other feature about the trade structure of the economy is that Botswana depends for a larger percentage of its import requirements from the Southern African Customs Union, whereas only a small percentage of trade is exported into the customs

area. Tables 6.2 and 6.3 give data on the direction of imports and exports between Botswana and the rest of the world.

Table 6.2

Direction of Imports(Percentage values)

Year	Customs Union	Other Africa	Europe	USA	Other
1974	75.3	13.8	5.4	4.0	1.0
1975	79.8	12.8	4.6	2.4	0.5
1976	81.4	12.2	3.3	2.0	1.1
1977	85.8	9.9	2.2	1.7	0.4
1978	84.7	9.9	2.6	2.0	0.7
1979	87.7	6.9	3.2	1.3	0.9
1980	87.0	6.7	2.5	1.1	0.8
1981	87.6	6.3	2.9	2.2	1.0
1982	86.5	6.4	4.0	1.6	1.5
1983	83.1	7.4	6.5	1.1	2.0
1984	78.0	8.7	9.6	1.8	1.8
1985	74.4	7.5	12.4	2.8	3.1
1986	76.7	7.6	8.7	2.8	4.2
1987	79.6	7.7	9.1	1.9	1.8
1988	77.8	6.7	10.8	2.1	2.6
1989	81.0	6.4	9.3	1.2	2.1
1990	82.3	5.7	8.7	1.1	2.2
1991	83.8	5.6	7.5	1.2	1.9
1992	85.0	5.3	7.1	1.0	1.7
1993	82.5	5.7	8.8	1.6	1.6

Source: Statistical Bulletins(CSO).

Table 6.3

Direction of Exports(Percentage values)

Year	Customs Union	Other Africa	Europe	USA	Other
1974	37.5	4.2	47.1	10.5	0.6
1975	23.6	4.5	49.4	21.6	1.0
1976	15.2	7.5	62.9	34.0	0.3
1977	11.6	8.4	53.1	26.8	0.3
1978	13.6	7.4	50.8	27.6	0.6
1979	7.0	8.4	66.8	17.3	0.5
1980	6.6	8.4	63.5	21.0	0.5
1981	16.6	10.5	48.3	24.3	0.3
1982	11.3	13.2	62.8	11.9	0.8
1983	8.3	9.2	74.7	7.4	0.4
1984	8.8	4.0	77.8	8.2	1.2
1985	5.6	3.9	84.7	5.3	0.4
1986	5.6	6.0	87.7	0.2	0.5
1987	4.1	4.8	90.5	0.2	0.3
1988	5.4	8.0	85.9	0.3	0.3
1989	4.9	8.1	86.4	0.3	0.3
1990	4.7	8.4	86.5	0.1	0.2
1991	5.0	8.3	86.3	0.3	0.0
1992	6.9	6.0	86.7	0.3	0.1
1993	8.8	4.6	86.2	0.3	0.1

Source: Central Statistics Bulletins.

6.6 Estimation Results

6.6.1 The Import Demand Function

The import function estimated regresses the log of the volume of real imports on the log of real gross domestic product, the log of the ratio of foreign prices to domestic prices, and the log of lagged values of the real volume of imports. The measure of income is gross domestic product expressed in 1987 prices(millions of Botswana Pula). The price variable is measured by the ratio of the import price index to the consumer price index(1987=100), all expressed in domestic currency. The volume of imports is the value of imports deflated by the import price index. The double-log specification gave the most satisfactory result. Moreover, the model passes the functional form test and there is no evidence of serial correlation(Durbin' h- statistic of .555). The following result was obtained,

$$\underset{\substack{(-1.544)\\ \bar{R}^2=0.929}}{LogM=-5.1509} + \underset{(2.456)}{0.6568\log Y} + \underset{(0.741)}{0.2420\log\left(\frac{P_f E}{P_d}\right)} + \underset{\substack{(3.065)\\ D.W=1.844}}{0.5340 logM_{-1}} \qquad (6.19)$$

Diagostic tests: Serial correlation $\chi^2(1) = 0.0173[.895]$; Functional form $^2\chi\ (1) = 3.461[.063]$; Normality $\chi^2\ (2) = 0.662[.718]$; Heteroscedasticity $\chi^2(1) = 0.1226[.726]$.

It is found that total import demand depends significantly on real income. The effect is significant at the 5 percent level. The price term has the wrong sign(positive) but is insignificant. The import adjustment coefficient is significant at the 5 percent level. The long run import elasticity is calculated as 1.409. This is the estimate used to fit the basic and extended dynamic Harrod trade multiplier model.

6.6.2 The Basic and Extended Model

The appropriate test of the balance of payments constrained growth model requires estimation of both the import and export demand functions to test: $y = \varepsilon z / \pi$. We shall, however, only test the model, $y = x/\pi$, and the extended model that incorporates the effect of capital inflows(equation 6.13) on long run economic growth to Botswana data for the period 1975- 1993.

It is important to note that the balance of payments constrained growth model is being applied to an unusual country in the sense that for a long time Botswana has been in surplus. But it is interesting to fit the model to see how well it predicts overall, and also to estimate the effect of capital outflows in reducing growth below what otherwise would have been the case. The balance of payments constraint growth model is about the relationship between the growth rate of exports and the income elasticity of demand for imports as the predictor of long run growth rate of income. For the surplus countries, productive capacity imposes the limit to which resources could be invested domestically, which has implications for the model predictions.

The results are presented in Table 6.4. The main results are in columns 1 and 2. Column 1 gives the results of the basic multiplier, and column 2 gives the results of the extended multiplier[4]. Although the predictions of the basic model when compared with the actual growth rate can be used to make inferences about the effect of capital inflows on the growth rate of income, the predictions of the growth rate of income accounting for the effect of capital flows is captured by fitting equation 6.13. Moreover, the difference between the prediction of the basic model and the actual growth rate also reflects the effect of relative price changes. This is also true for the extended model.

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[4]When calculating the multipliers the long run income elasticity of import demand is assumed to hold over the two sub periods.

We observe for the whole period, 1975-1993, that the basic Harrod trade multiplier predicts the actual growth rate more accurately than the extended model because surpluses and deficits have cancelled out. Note, however, that the model slightly underpredicts actual growth. On the other hand, the extended model undepredicts the actual growth rate for the entire period.

According to the results of the basic dynamic model, the growth of exports alone allowed the economy to grow at 9.33 percent per annum but given that on average there was a net outflow of capital over the whole period the effect of outflows of capital was to reduce the growth rate of income by 1.45 percentage points to 7.88 percent per annum. This negative effect of capital outflows was offset, however, by the favourable effect of relative price changes(column 6) and a favourable balance of payments response. The combined effect of relative price changes and balance of payments response permitted an actual growth of 9.57 percent per annum.

Table 6.4

Results of the Basic and Extended Models[5]

Period	Actual Growth of income (1)	Harrod Trade Multiplier (2)	Extended Model Result (3)	Actual less Basic (4)	Extended less Basic (5)	Implied Price Effect (6)	Pure Real Terms of Trade (7)	Residual Price Effect (8)
1975-1993	9.57	9.33	7.88	0.24	-1.45	1.69	0.06	1.63

Up to now we have assumed that the income elasticity of demand for imports is the same for both periods when there were inflows and outflows of capital. To test

[5] The pure terms of trade effect is calculated as the average annual percentage change in the terms of trade divided by the income elasticity of demand for imports.

the validity of this assumption(and the extent to which the multiplier was either over predicted or under predicted) equation 6.19 was re-estimated, including a slope dummy to reflect differences in the current account during the estimation period. The dummy variable takes the value of unity, (D_i =1), for observations in the period 1975-1982 when the current account was in deficit, and zero, (D_i = 0), in the period 1983-1993, when the current account was in surplus. We obtained the following result:

$$\underset{\substack{(-1.62)\\ \bar{R}^2=0.94}}{logM = -4.827} \underset{(-0.303)}{-0.099\log\left(\frac{P_f E}{P_d}\right)} + \underset{(3.382)}{0.864logY} \underset{(2.26)}{+0.049D_iY} + \underset{(1.87)}{0.334\log M_{-1}} \quad (6.20)$$
$$D.W=2.32$$

Diagnostic tests:

Serial correlation χ^2 (1) = 0.991[.319];Functional form χ^2 (1) =3.142[.076];

Normality χ^2 (2) = 0.329[.848] ; Heteroscedasticity χ^2 (1) = 0.311[.577].

The equation seems to be well specified with no evidence of first order serial correlation(Durbin h's Statistic = -1.193). The price coefficient is negative although insignificant. The income coefficient is positive and significant. The coefficient for the dummy is positive and significant, but the difference in the slope between the two periods is only 0.049. The calculated long run income elasticity of demand for imports for the period 1975-1982 is 1.37, which differs from the earlier elasticity by 0.04 percentage points only. The elasticity for the period 1983-1993 is estimated as 1.29, which gives a difference of 0.12 percentage points. In view of this, we have not recalculated Table 6.4.

Conclusion

This chapter estimated the balance of payments constrained growth rate model for the Botswana economy. This sought to establish the extent to which the long run

growth rate of the economy was constrained by the need to preserve equilibrium in the current account of the balance of payments. We estimated both the basic and extended dynamic Harrod trade multiplier model.

We conclude that the growth rate of the Botswana economy over the sample period can be predicted by the ratio of the growth rate of exports to the income elasticity of demand for imports. The basic model gives a closer approximation of the actual growth of income over time than the extended model. The absolute average deviation is only 0.46 percentage points. This is low compared to the average deviation of 1.68 percentage points given by the extended model. Finally, we observe that there are significant price effects that affected the growth performance of the economy. The direct effect of prices on imports was found to be insignificant; income is the important determinant of the volume of imports.

Table 6.6

Annual Estimates of the Dynamic and Extended Models

Year	% Change in Exports	% Change in Income	Dynamic Harrod Result	Extended Model Result
1975	0.144	-0.012	0.102	0.195
1976	0.305	0.188	0.217	0.143
1977	-0.010	0.036	-0.068	-0.038
1978	0.128	0.191	0.091	0.177
1979	0.706	0.100	0.501	0.352
1980	-0.064	0.143	-0.046	-0.310
1981	-0.243	0.093	-0.173	0.429
1982	0.224	0.074	0.159	0.120
1983	0.349	0.158	0.248	0.326
1984	0.133	0.112	0.094	0.090
1985	0.494	0.074	0.351	-2.055
1986	0.063	0.076	0.044	0.033
1987	0.499	0.088	0.354	28.37
1988	-0.072	0.157	-0.051	-0.333
1989	0.252	0.129	0.179	0.241
1990	-0.204	0.059	-0.145	-0.141
1991	0.0079	0.089	0.006	0.004
1992	-0.154	0.066	-0.109	0.175
1993	0.026	-0.002	0.019	-0.021

Table 6.7

Imports, Exports, Capital Inflows and Total Reciepts(Pm)

Year	Imports	Exports	Capital Inflows	Total Reciepts
1973	4,570	2,352		
1974	4,980	3,257	1,070	4,327
1975	5,650	3,730	1,850	5,580
1976	5,760	4,860	0,560	5,420
1977	6,720	4,400	0,680	5,080
1978	7,900	4,900	0,970	5,930
1979	10,091	8,460	-0,680	7,780
1980	10,890	7,930	1,240	9,170
1981	12,000	6,060	2,980	9,040
1982	11,030	7,420	0,960	8,380
1983	11,430	9,950	-0,030	9,920
1984	11,740	11,490	0,180	1,131
1985	13,240	16,710	-3,030	13,680
1986	14,620	17,590	-3,540	14,050
1987	15,720	26,720	-1,110	25,610
1988	20,060	24,820	-6,480	18,340
1989	24,970	30,900	-5,470	25,430
1990	26,870	24,800	-0,160	24,640
1991	26,090	25,130	-0,200	24,930
1992	22,700	21,040	-2,150	18,890
1993	21,360	20,870	-0,190	20,680

Source: Central Statistics Office Statistical Bulletins.

Chapter Seven

Conclusions

This thesis has attempted to study the various means by which resources have been mobilised to finance economic growth and development in Botswana. Specifically, it has investigated the extent to which alternative resources(other than minerals resources) could be relied upon to promote a sustainable growth rate of income. The availability of non mining resources will ensure a more diversified economic structure, which would be less prone to external factors.

As reviewed in chapter 1, the Botswana government aimed to promote the development of the private sector through financial market reforms, tax policy reforms, and the liberalisation of exchange controls; the intention being to reduce the reliance of the economy on diamond mining. The policy of government in the next National Development Plan(1998-2003) continues to be the achievement of economic diversification, as the following statement indicates[1]:

> It is critical that NDP 8 build a solid foundation for **sustainable economic diversification** and that the Botswana economy become progressively more diversified with successive NDPs. The economy must be diversified while, at the same time, the government expenditures are financed increasingly from income sources that are renewable(p.31).

In evaluating the extent to which the goals of the government as stated could be realised our study was divided into four main areas. Firstly, the McKinnon and Shaw model(chapter 3) was estimated in order to determine whether the current financial

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[1] Ministry of Finance and Development Planning, (1996) *Macroeconomic Outline for National Development Plan 8*, (Gaborone: Botswana Government Printers).

policy of high real interest rates could effectively encourage savings for the promotion of investment, and high income growth. The financial system continues to be important for future growth in the Botswana economy, as the statement indicates "The financial sector is expected to be one of the new engines of growth in the economy. The monetary policy of maintaining positive real interest rates will be continued as a way of ensuring that private savings are increased and appropriate investment decisions are made"(p.37)[2].

Secondly, we estimated the elasticity and buoyancy of the Botswana tax system with a view to find out the extent to which different types of taxes could be used to finance economic growth and development. The structure of government revenue is dominated by proceeds from the mining sector. The current policy of the government -sustainable government budgeting- aims to adopt stricter controls on government expenditure, and to diversify sources of funding for recurrent and development expenditure(Budget Speech, 1997). This is to be achieved in two ways. Firstly, recurrent government expenditures are to be financed only by non mineral revenues. Secondly, development projects will be financed subject to the availability of recurrent revenues, and whenever possible, in partnership with the private sector.

Thirdly, the effects of foreign resource inflows on saving, investment, and economic growth was the subject of chapter 5. The development of the private sector in Botswana, as emphasised in various National Development Plans, is to be complemented by the inflow of foreign resources, especially foreign direct investment. The Botswana government aimed to attract foreign capital through a combination of liberalised exchange controls, lower rates of taxes(especially company taxation), and the maintenance of positive real interest rates.

Fourthly, the study estimated the balance of payments constrained growth model(chapter 6). The model recognises that polices that are designed to promote

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[2] Op cit

investment have implications for imports. And to the extent that countries aim to achieve balance of payments equilibrium in the current account, the growth rate of income may be restricted to less than what it would have been with the available resources.

The McKinnon and Shaw model was estimated in three stages. Firstly, we estimated savings equations; secondly, an investment demand function, and finally, we estimated the virtuous circle model of economic growth. Three measures of saving were used; total domestic saving, private saving, and financial saving.

A positive effect of interest rates on saving was not found for all the measures of saving. For total and private saving a negative effect of interest rates was obtained, whereas no significant effect was found for financial saving. The major determinant of saving, however defined, is income. Similarly, real interest rates were found not to have any significant effect on domestic investment. The level of domestic investment was influenced strongly by the availability of domestic credit. Income growth was found to be dependent on private sector credit and the level of government saving. However, when the saving function was estimated within the McKinnon virtuous circle growth model, saving depended on the growth rate of income.

These results suggest a different approach to financial policy in Botswana. According to our results, it is doubtful that the policy of high interest rates will achieve the desired effects, at least not in the order suggested by the McKinnon and Shaw model. What is required are measures to promote investment. The Bank of Botswana(1996) also reports that credit allocation provided to the business sector by the commercial banking system has declined since the beginning of the financial reforms of 1989. There is, therefore, the need to address the inability of the lending institutions to transform the mobilised resources into real capital in the economy, and the additional non financial constraints; for example, inadequate entrepreneurial skills, that tend to restrict the amount of credit supplied by commercial banks.

The issue here is that lending institutions, especially commercial banks, fail to recognise imperfections in financial markets of less developed countries, notably that the majority of borrowers in the developing countries are small scale and new entrepreneurs with limited access to information, and technical expertise. And because of this, lending institutions tend to prefer entrepreneurs with strong collateral which biases against local and indigenous entrepreneurs with a small net worth(Bhatia and Khatkhate, 1975)[3]. If financial liberalisation does not address these issues, it will not promote investment and growth. This seems to be the case for Botswana because when trying to explain the possible causes of the decline in credit to the business sector, the Bank of Botswana(1996) states that :

> While many aspiring borrowers claim that the banks *have negative attitudes towards lending to them*(own italics), the banks themselves point to a shortage of viable, bankable projects. In particular they note that many business projects are *undercapitalised or lack sufficient managerial capacity*(own italics)(p.31)

The outcome of all this was that lending to the household sector increased, although at a lower rate than before the reforms were started.

We conclude that financial policy that ignores financial market imperfections, as it seems to be the case for Botswana, is not likely to promote investment, and hence complement economic diversification. The Botswana economy, with an excess liquidity problem, is constrained by the insufficient demand for credit, and the lack of a strong entrepreneurial class. These factors have hampered the transformation of saving into real productive investment. Measures to improve real capital formation should be adopted to support the positive interest rate policy because capital formation is not

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3 Bhatia, R. And Khatkhate, D(1975) Financial Intermediation, Savings Mobilisation, and Entrepreneurial Development: The African Experience, *IMF Staff Papers,* Vol XXII, No 1.

constrained by the supply of deposits but by decisions to invest i.e by demand(Thirlwall, 1994). We now turn our attention to the discussion of fiscal policy. The use of fiscal policy as an instrument of resource mobilisation was discussed in chapter 4. The discussion of fiscal policy did not emphasise the incentive aspects of taxation. However, the study recognises that appropriate fiscal policy requires the right balance to be made between the incentive and the resource mobilisation functions of taxation policy. In particular, high rates of taxation may discourage private investment and work effort, whereas lower tax rates may affect development programs adversely through their effects on public finances. But how public revenues are affected depends on the elasticity of the tax base with respect to the rate changes.

The study estimated buoyancies and elasticities of the Botswana tax system. The elasticities were estimated using the Divisia Index Method. This was done for the individual taxes, and for the whole tax system.

Fiscal policy in Botswana has aimed to complement economic diversification. This was done by lowering rates of tax on businesses to promote private investment, and by broadening the coverage of the general sales tax. The changes that were effected to the general sales tax were intended, in part, to compensate for the loss in revenue from lower company taxes, and also to diversify the structure of government revenue. The structure of government revenue was shown to be dominated by mineral and Custom Union revenues. It was also mentioned that these revenue sources were tied to negotiated agreements, and not subject to government discretion which therefore restricts the government's ability to raise revenue from these sources.

However, our estimates indicated the Botswana tax system is buoyant and elastic. This would mean that the tax system is able to support a rising level of government expenditure without the need to frequently adjust tax rates. In addition, a comparison of the estimated buoyancies and elasticities supported the observation that the effect of fiscal changes has been to reduce government revenues.

Although the tax system is buoyant and elastic, the structure of government revenues remains dominated by mineral revenues. It is likely that this will not be reversed in the medium term.

It seems, therefore, that the current government policy of sustainable budgeting is appropriate because elasticity estimates indicate that an above average tax effort is being made already. What is required is control over government expenditures.

The study of the effects of foreign capital inflows on saving, investment, and the growth rate of income was undertaken within the framework of dual gap analysis (chapter 5). This model identifies two basic constraints on the growth rate of income: the savings constraint; and/or the foreign exchange constraint. The model argues that inflows of capital from abroad raise the growth of income when they are used to finance domestic investment, and also when they result in the improvement in the productivity of capital.

The alternative view argues that the growth rate of income may not increase because of a negative effect of capital inflows on the willingness to save, particularly by government.

Empirical tests of the effect of capital inflows on the growth of income in Botswana were done by estimating three separate equations that regressed domestic savings, domestic investment, and the growth rate of income on the aggregate measure of capital inflows, and on the disaggregated components of capital inflows. Foreign capital inflows were divided into debt creating flows, external aid, migrant workers remittances, and direct foreign investment.

The study made a number of findings. Firstly, it was found that foreign capital inflows had no significant effect on domestic saving and on the growth rate of income. Secondly, foreign capital inflows were found to be an important determinant of domestic investment. Thirdly, when the inflows of external resources were

disaggregated into the different types of capital, it was found that external aid and foreign direct investment were important in the financing of economic growth and development in Botswana. These inflows of capital affected domestic investment positively, but had no effect on domestic saving. Domestic saving was determined by total income. As observed in chapter 5, inflows of aid were used to finance government development programs, whereas most of the foreign direct investment was invested into the development of the mining industry. Only a small part of the direct foreign investment went into the manufacturing sector.

Our results would seem to suggest that the current efforts to liberalising exchange controls, and the maintenance of low rates of taxation, should be continued as they may encourage further direct foreign investment into the economy.

The final empirical chapter tested a post Keynesian model of balance of payments constrained growth. This model identifies the balance of payments as the binding constraint on the growth rate of an open economy. This may occur in two ways. Firstly, if the balance of payments deteriorates as aggregate demand is expanded the productive capacity of the economy is never fully utilised because demand is reduced to preserve equilibrium on the current account. Secondly, if when aggregate demand is expanded the growth rate of imports remains less than the growth of exports, a high rate of economic growth is attainable without any balance of payments difficulties.

The chapter estimated the basic and the extended versions of the model using data for Botswana for the period 1975-1993.

The model was found to provide accurate predictions of the growth rate of income in Botswana. This would suggest that the relationship between the growth rate of exports and the income elasticity of demand for imports is important in explaining income growth in Botswana. The predictions of the extended model were also

consistent in that the estimates accurately reflected the effect of capital flows over the whole period, and in the two sub periods.

Finally, although the Botswana government has pursued policies that promote the development of the private sector, further measures need to be taken. For example, further liberalisation of exchange controls is needed to encourage the free movement of capital. But whilst these measures are underway, it is important that the government develop measures to address the apparent inability of lending institutions to transform financial savings into real investment.

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