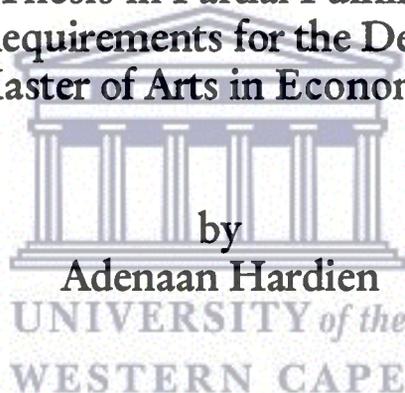


Prescribed Asset Requirements as a Second Best Solution: The South African Experience

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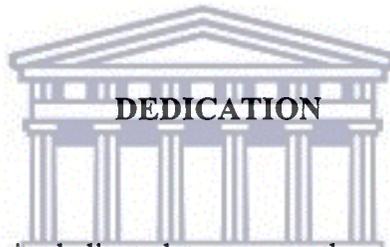
Mini-Thesis in Partial Fulfillment of
the Requirements for the Degree of
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I gratefully acknowledge the support given to me by my advisor, Mr. Ismail Adams. His insights were truly enlightening, his dedication exemplary, his motivation never-ending and his patience endless. I would also like to thank all those who have taken the effort to be of assistance.



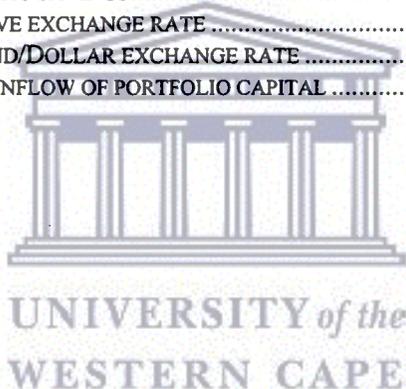
This paper is dedicated to my mother and late father who have always been towers of support. Without them, this would not even have been conceived.

I am solely responsible for any errors that might appear in this paper.

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I INTRODUCTION

1 Overview

This paper explores the feasibility and desirability of the South African Government imposing a policy of prescribed asset requirements on contractual savings. This would serve as a short-term measure to secure finance for investment in high priority development projects. Such a policy would encourage contractual savings institutions to become active participants in the process of development by requiring them to diversify their assets to include claims on either the government or other identified institutions engaged in the above projects.

The first section of this mini-thesis discusses some features of the South African economy focussing broadly on recent political changes and economic challenges facing the country. The second section of the paper reviews current literature on issues related to the thesis, exploring topics in public finance and financial liberalisation. The third section analyses the nature of tax concessions on contractual savings, the effects of tax distortions on the savings behaviour of individuals and problems that have arisen because of tax concessions. The fourth section uses a microeconomic approach to illustrate the bias that individuals have toward contractual savings. The fifth section develops analytical models, which illustrates how prescribed asset requirements could constitute a second best solution. Section six explores possible solutions based on the modelling exercises. Finally, section seven highlights some of the main conclusions reached.

2 Background

Severe inequality and widespread discord have plagued South African society. In the past the ideology and political system that favoured a white minority denied the social, political and economic needs of the rest of the population. Recently, South Africa has undergone quite dramatic and far-reaching political changes. The transition to democracy has been relatively smooth. However the process is still volatile, and hinges on society's ability to effect rapid socio-economic changes. The most effective way

to respond is through a comprehensive and a sustainable development program aimed at reducing past economic and social inequalities and fostering growth.

The success of any development program depends on the government's ability to maintain a sufficient and stable source of revenue to meet its planned expenditures. At present, the government is attempting a gradual program of tax restructuring in an attempt to create a more efficient and equitable tax system. It has thus appointed on June 22, 1994 the Commission of Inquiry Into Certain Aspects of the Tax Structure in South Africa (hereafter referred to as the Katz Commission).

Tax revenue is insufficient to meet government expenditure and it is expected to remain so for the foreseeable future. The Katz Commission (through its various Reports) proposed a series of gradual changes to the present tax system. While the Commission's reports affirm the need for a comprehensive change to the present system its recommendations are too gradual and not sufficient to adequately raise the revenue which the government receives from taxation.

Some of the reasons that the Commission cites for not proposing more drastic measures is that South Africa at present has an already high perceived tax burden and that raising the burden even further would negatively affect "tax morality" by increasing the evasion and avoidance of paying taxes. The Katz Commission thus argues that the tax level should be maintained at under 25% of expected GDP. Given such sentiments as expressed by the Commission and others the government would continue to depend on deficit financing because of the limited scope in raising additional revenue in the short term through increasing the levels of taxation (Loots: 1991 and Moll: 1991).

The present government set itself the objective of reducing the budget deficit to 3% of GDP by 2000/01 (Medium Term Budget Policy Statement: 1998). At present, an increasing share of current expenditure is spent on the servicing of government debt. The drastic reduction in the fiscal deficit would entail a sizeable decrease of other non-interest expenditure relative to interest-expenditure. Given the enormous expectations that the government faces as well as its commitment to meeting basic needs, this suggests severe constraints on social spending.

3 *Historical Overview*

The mid-1970's ushered in a period of prolonged recession for South Africa, with low growth in real GDP and abysmally low growth in GDP per capita (see *Table 1: 35; and Graphs 1 to 4: p41-42*).

The level of growth in the economy is grossly inadequate to satisfactorily raise the living standards of the majority of the South African population. Between 1990 and 1997 real GDP growth has averaged a mere 1.2% while GDP per capita contracted on average by 1.1%.

Restrictive monetary during the 1990's has driven inflation to the lows last seen during the beginning of the 1970's (see *Graph 4: 42*). Consumer price index inflation averaged 8.6% year-on-year during 1997 and 5.5% during January to September of 1998. The current account of the balance of payments has been in deficit since 1994 with an annual deficit of 1.5% in 1998 (see *Graphs 5 and 6: p43-44*). The deficit has been financed mainly through a net inflow of short-term and volatile portfolio capital (see *Graph .14: 48*).

During the recessionary period of the last two decades, the trend in savings has remained relatively stable (Kantor: 1992) (see *Table 4: 38; and Graphs 10 and 11: 46*). However, there has been quite a substantial change in the composition of savings. Private firms have increasingly become net savers while households and the government have become net borrowers. This trend has motivated some to argue that the level of savings in South Africa is not the main problem, but rather the problem is the way in which it is utilised (Loots: 1992). When one looks at the composition of household savings, one finds that these savings are increasingly of a contractual nature (see *Table 6: 39*). This shift is so dramatic that even though overall household savings have been declining, contractual savings have been increasing in absolute terms.

Contractual savings in South Africa takes two main forms, that of pension schemes (assurance) and life insurance. Pension schemes include the "old age assistance" schemes provided by the government, occupational pension plans and retirement annuities, and additional voluntary savings. This paper focuses on a narrower definition of contractual savings which exclude the "old age assistance schemes" which the government pays for out of current revenue and publicly managed pension schemes of civil servants.

South Africa until the mid-1970's was characterised by quite high levels of investment compared to other middle income countries with a peak of 26% during the 1971-76 period [according to Fallon. and De Silva (1994)]. Since the end of the 1970's however, investment has been steadily declining. Private investment in South Africa was to a large extent determined by domestic demand, especially public demand and investment. Investment by general government and parastatals which focussed on infrastructure that mainly benefited the white minority, public utilities and "strategic" investments geared towards self-sufficiency in areas to be affected by sanctions started declining after 1976 and reached negative levels at the end of the 1970's. This negative trend in public investment has continued ever since, averaging -3.3% during the period 1981-85 and -6.5% during the period 1986-91.

The fiscal deficit (measured as the difference between government revenues and expenditure) has been remarkably stable in South Africa during the decades of the 1970's and 1980's (see Table 3: 37, and Graph 8: 45). During the beginning of the 1990's the fiscal deficit initially exhibited an upward trend and reached a high of 8.5% of GDP at the end of the 1992/93 fiscal year. The deficit has since gradually declined and at the end of the 1997/98 fiscal year it stood at 4.4% of GDP.

The fiscal deficit during the beginning of the 1990's tended to be higher than the levels reached during the 1980's, not by an increase in government consumption or investment but rather an increase in the cost of debt servicing which followed the abolition of prescribed asset requirements at the end of the 1980's. The recent "success" of the government in terms of reducing the deficit before borrowing is being achieved at the expense of other expenditure items as well as through the sale of "strategic" stockpiles that were built up during the preceding apartheid decades. Thus, the recent reduction in the fiscal deficit is artificial. Total government debt during the 1997/98 fiscal year stood at 55.4 percent of GDP (see Table 3: 37). Government debt at present is still almost exclusively domestically held.

II LITERATURE REVIEW

1 *The Role of the Public Sector*

The 1980's ushered in a period of renewed scrutiny on the role of government in the economy. This renewed interest was largely motivated by the disappointing economic performance of many developing countries (Newberry & Stern: 1987). Much of the focus was on increasing the efficiency of the public sector, reducing public expenditure, encouraging structural adjustment and "getting prices right." Tax policy and public debt thus came under renewed scrutiny.

2 *Tax Theory*

Tax theory provides insights into the two important issues of efficiency and equity. Efficiency refers to the effects of taxation on the allocative function of markets through its effects on prices. Taxes are said to be efficient if they do not distort relative prices and thus do not lead to changes in individuals' relative allocation of resources from what it would be in the absence of tax. Equity refers to the distribution of the relative burden or incidence of taxes.

There are generally two principles used to measure equity. The first principle is that taxes should be levied based on the ability to pay. The second principle is that taxes should be levied based on the benefits derived from government activities. A trade off exists between efficiency and equity. The challenge that is faced by the government is to find an optimal balance between these two objectives such that it conforms to what society deems desirable.

The modern approach to taxation has both a positive and normative component. The positive component focuses on the analysis of the effects of taxation and the normative component focuses on the evaluation of the desirability of a particular tax structure using some form of social welfare criterion. Recent literature on taxation in developing countries focuses on the relationship between taxation and growth (Newberry & Stern: 1987; Bird & Oldman : 1990; and Ahmed & Stern: 1991). Some authors argue that higher taxation impedes growth by lowering the levels of savings, investment and the incentive to work. Others argue that the relationship between taxation and growth is complex and is influenced by

a whole range of other factors such as the nature of taxation, the nature of public expenditure, the efficiency and depth of markets, and the prevailing expectations in the economy.

3 *The Theory of Second Best*

The theory of the second best has proved very useful in viewing the effects of distortions in an economy. This theory is based on the notion that in practice, the assumptions that allow the attainment of a Pareto optimal allocation of resources rarely hold. Lipsey and Lancaster (1956-57) in their seminal contribution showed that if one or more Pareto conditions are not met then it will not necessarily be desirable for other conditions to be met. They show that unless all the Pareto conditions are met, a reduction in the number of distortions that prevent a Pareto optimal allocation will not necessarily be welfare improving. The above has come to be known as the “theory of the second best”.

Lipsey and Lancaster (1956-57: 12) says that “it is not true that a situation in which more, but not all, of the optimum conditions are fulfilled is necessary, or even likely to be, superior to a situation in which fewer are fulfilled”. The implication of the theory of second best is that if certain institutional barriers, be they economic, political or social, hinders the attainment of a Pareto optimal or first best solution then the fulfilment of the other efficiency criteria may not be welfare improving. The theory of second best thus can be used to support the notion that in cases where the distortions cannot be removed, additional distortions can be created to offset the effects of the original distortions since allowing other conditions to be met is not necessarily welfare improving.

4 *Financial Liberalisation*

It was not until the beginning of the 1970's that financial liberalisation began to be hailed by its proponents as a necessary aspect of sustainable development. The two seminal contributions in this area were made by McKinnon (1973) and Shaw (1973) who developed a model showing that the reduction of financial repression would increase growth. Their model has been dubbed the McKinnon-Shaw model of financial liberalisation. The debate on the feasibility of financial liberalisation has continued ever since.

Financial liberalisation can be described broadly as a move away from financial “repression.” McKinnon (1973) defines financial repression as intervention by government in the form of taxation and other distortions of the domestic capital markets. The policy prescription of domestic financial liberalisation generally has two main components (Gibson & Tsakalotos: 1994). The first is an attempt to allow interest rates to be more freely determined by market forces. The second component is a move toward lessening quantitative controls or restrictions and maintaining only those controls deemed prudent.

There are generally three motivations to liberalise the financial sector (Gibson & Tsakalotos: 1994): 1) an overall attempt at reducing government intervention, 2) it is in response to growing international integration of financial markets, and 3) dissatisfaction with the regulation of financial markets.



III CONTRACTUAL SAVINGS IN SOUTH AFRICA

1 *Overview*

Contractual savings have recently come under renewed scrutiny in South Africa (see Katz Commission reports). Much of the discussion has centered on the performance of contractual savings in light of the generous tax concessions they enjoy relative to other forms of savings. At present, considerable concern is being expressed about the macroeconomic implications of such a large pool of contractual savings and its impact on total savings and economic growth.

Some authors allege that contractual savings institutions are merely involved in a "paper chase" that bids up stock prices without any beneficial effects for the broader economy, and that these institutions have an institutional bias against types of investment deemed to be socially desirable (Vittas: 1994). This section of the paper analyses the nature of tax concessions on contractual savings, the effects of tax distortions on the behaviour of individuals and problems that have arisen as a result of tax concessions.

2 *The Nature of Tax Concessions*

Private savers view contractual savings as a substitute to discretionary savings held at banking institutions. The substitutability of these two types of savings has been reinforced by legislation which provided for greater freedom to life assurers in terms of the savings options which they provide to policy-holders (Fourie: 1994). At present, contributions to contractual savings plans are to a large extent tax deductible whereas contributions to discretionary savings are not. Contractual savings funds invested on the stock market are exempt from paying taxes on dividends. Household funds that are directly invested in shares are taxed on dividends. The greater freedom to invest enjoyed by contractual savings fund managers compared to banks allowed these fund managers to insulate the returns paid to policy-holders from high inflation whereas the interest paid to holders of discretionary savings could not be insulated to the same extent.

At present, employee contributions to pension funds are tax deductible up to 7.5% of pensionable income (see Table 5: 39). While employee contributions to provident funds are not tax deductible, the

accrued balance at retirement is not taxed. Employee contributions to both types of funds are tax deductible up to 20% of an employee's annual remuneration. Contributions to retirement annuities are also tax deductible up to 15% of net non-pensionable income. At retirement, one third of pension and provident funds can be received in a tax-free lump sum while the rest are paid out as pensions that are taxable. Because pensions are usually less than monthly salaries which individuals received while working, the tax burden on pensions are less than that on income because of the progressivity of the income tax structure. Investment income and capital gains are also free from taxation.

3 *Effects of Tax Concessions*

It is generally assumed that levels of savings are positively related to the real after tax interest rate. This was indeed one of the main objectives initially raised in favour of tax concessions on contractual savings. Recently, however, this notion has increasingly been challenged and the results thus far remain ambiguous. The effect of the real interest rate on private savings depends on whether the income effect or the substitution effect dominates household behaviour. The income effect leads people to consume more of their current income as they would have to save less to maintain an expected future level of income. The substitution effect leads people to consume less now and save more because a higher real interest rate raises the opportunity cost of present consumption. While the net effect of an increase in the real after tax interest rate on private savings is ambiguous, there is general consensus that the composition of private savings would change in favour of the savings option that is associated with the concessions, all other things remaining constant.

In South Africa, personal savings have declined since the mid-1970's (*see Table 4: 38*). This corresponds to the imposition of tax concessions on contractual savings that were implemented during the mid-1970's. One could thus argue that this provides at least cursory evidence that the income effect dominated private savings behaviour after the 1970's. As Table 6: 39 indicates, the composition of private savings after the 1970's are increasingly of a contractual nature. Over the whole period there has been a steady decline in the proportion of household lending to discretionary savings institutions (banks and building societies) in favour of contractual savings institutions (pension funds and life insurance). During

the period 1985 to 1989, 80.7% of the increase in household financial assets accrued to contractual savings institutions whereas only 17.1% accrued to discretionary savings institutions. Section four of this paper uses microeconomic modelling to show how individuals respond to tax concessions.

Presently, contractual savings institutions in the form of pension funds and insurance companies have assets which corresponds to well over 80% of GDP, a ratio which is higher than many developed countries including the USA, Sweden and Britain (Vittas: 1994) (*see Table 7: 40*). In the late 1980's contractual savings institutions absorbed over 80% of the increase in household financial assets. Vittas (1994) further argues that South Africa has the highest level of insurance premiums in the world, amounting to 11% of GDP. Thus, tax concessions have led to contractual savings institutions substantially increasing their market share in the economy.

4 *Problems with Tax Concessions on Contractual Savings*

Currently, more than 50% of the privately managed contractual savings (through private pension funds and life assurance companies) are invested in equities on the secondaries markets of the Johannesburg Stock Exchange (JSE). Approximately 20% are invested in medium- to longer term government debt as a result of previous capital controls and prescribed asset requirements which were abolished in 1989, and the rest are invested in property and other low risk investment options (Kantor: 1992).

In the past, publicly managed contractual savings, through the Public Investment Commissioners (PIC), have been invested solely in government securities. This was as a result of legislation that prohibited these funds from being invested in non-public forms of investment. Toward the end of the 1980's these PIC's have been allowed to diversify a proportion of their assets. It has been the trend of the private contractual savings institutions to avoid risks associated with real investments and to concentrate their investment efforts on trading of existing shares. This has led to a substantial conglomeration of capital and increased market power for a few institutions.

It should be clear that each of the contractual savings options provides a means for individuals and companies to reduce their overall tax burden. Various calculations have been done on the net loss

to the fiscus in terms of revenue forgone. Vittas (1994) in a World Bank study estimates that in 1990 the loss to the fiscus was approximately R15 billion or close to 6% of GDP. Using a cash flow calculation technique, Vittas found that on average the loss to the fiscus in terms of forgone revenue as a result of the special tax concessions on contractual savings range from 4% to 6% of GDP, a heavy loss given the financing constraint faced by the present government. Vittas further argues that while tax concessions for contractual savings are prevalent in many countries, the losses to the fiscus are much lower than in South Africa. The USA for example loses about 1% of GDP while Britain loses about 3% of GDP.

The process described above is a source of policy failure because of a distortion of the relative payoffs of these two types of savings. The market is thus unable to allocate resources efficiently. Another problem with the above is that tax concessions on contractual savings have negative equity implications because it allows those who fall into higher income brackets a means of lowering their overall tax burden whereas those who fall into lower income brackets do not have access to this form of savings. It also deprives the government of much needed resources.

Perhaps one of the biggest problems presently associated with contractual savings is the way that it is applied. The initial rationale for the bias in favour of contractual savings was that it would be more effective in terms of promoting investment and growth. History shows that this has not happened. Instead, it has merely lead to more distortions in capital markets.

Contractual savings funds were mostly invested in existing shares on the JSE which tended to bid up share prices without resulting in significant increases in productive capacity. This has lead to a conglomeration of capital, an inflation of share prices and a dramatic increase in the monopoly power of a few financial institutions. These funds were also used to invest in property in large cities and other low risk investments. Contractual savings thus bypassed the more dynamic unincorporated or small business sectors. These are sectors that have traditionally depended on access to discretionary savings.

IV INDIVIDUALS' BIAS TOWARDS CONTRACTUAL SAVINGS

1 Overview

This section develops algebraic expressions of the present values to households in depositing savings into a discretionary bank account or a contractual savings investment. The modelling exercise shows that the existence of tax concessions associated with contractual savings ensures that this form of savings would be preferred to discretionary savings. The present value calculations are based on Barr & Kantor (1994).

Assume that contributions to contractual savings schemes are tax deductible and that the income tax system is progressive. Consider that an individual at the beginning of some hypothetical savings period is in possession of a one-time income flow of Y . The individual saves a portion S of Y . At the end of the savings period the individual receives a return r . Let r also equal the discount rate over the hypothetical period.

2 Contractual savings scheme

Since contributions to contractual savings schemes are tax deductible, the initial tax paid is

$$(Y - S)T_{1,0} \quad (1)$$

where $T_{1,0}$ is the appropriate original tax rate on income. Thus,

$$(Y - S)(1 - T_{1,0}) \quad (2)$$

is the present value of after tax income (excluding the contribution to the contractual savings scheme).

At the end of the period the gross value of the contractual savings scheme will be

$$S(1 + r). \quad (3)$$

This will have an after-tax present value of

$$S(1 + T_{1,E} - A) \quad (4)$$

where $T_{1,E}$ is the end of period average tax rate (which is normally lower than $T_{1,0}$) and A is the administration levy paid at the end of the period (expressed as a percentage/100).

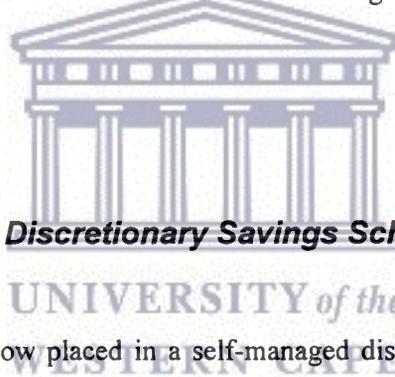
The present value of current income and savings invested over the period is therefore

$$(Y - S)(1 - T_{1,0}) + S(1 - T_{1,E} - A). \quad (5)$$

Rearranging this gives

$$Y(1 - T_{1,0}) + S(T_{1,0} - T_{1,E} - A) \quad (6)$$

which is equivalent to the original income being taxed at a rate applicable to $Y - S$, plus an amount dependent on S and the difference between the tax rate applied to current income and the tax rate applied to withdrawals from the contractual savings scheme at the end of the period plus administrative costs. Were these two tax rates the same there would be no relative gain in this form of savings except through a lower tax rate.



3 *A Self-managed Discretionary Savings Scheme*

Assume that S is now placed in a self-managed discretionary savings scheme with no tax concessions. Thus, total tax paid is

$$YT_{2,0} \quad (7)$$

where the appropriate tax rate is $T_{2,0} > T_{1,0}$ because of increasing marginal tax rates (since income tax is progressive). Income after savings is

$$Y(1 - T_{2,0}) - S. \quad (8)$$

Assume that income on savings is taxed at $T_{2,E}$ which is a lower tax rate than $T_{2,0}$ given that part of the income will be tax exempt. Then, the income from savings at the end of the period will be

$$Sr(1 - T_{2,E}). \quad (9)$$

The present value of the original outlays S and the net income is thus

$$\frac{S(1+r(1-T_{2,E}))}{1+r} \quad (10)$$

Adding in income from savings gives this a present value of

$$Y(1-T_{2,0}) - \frac{SrT_{2,E}}{1+r} \quad (11)$$

4 Analysis

When the above is compared with the present value of the contractual savings scheme we can conclude that

◆ $Y(1-T_{1,0})$ will always exceed $Y(1-T_{2,0})$ because of the progressivity of the income tax system and

◆ $S(T_{1,0} - T_{1,E} - A)$ will almost always be positive and that $\frac{-SrT_{2,E}}{1+R}$ will always be negative if any tax is applied to the income from self-managed discretionary savings schemes.

Therefore, contractual savings schemes will always be a superior form of savings to the individual up to the contribution limits allowed because

- ◆ contributions to contractual savings funds are tax deductible whereas contributions to discretionary savings are not, and
- ◆ the income stream from savings accounts will attract a higher average rate of tax than the ultimate receipts from contractual savings funds.

This bias towards contractual savings can be removed by eliminating tax concessions on this form of savings or by reducing the return to this form of savings. The other factor that would then influence an individual's preference between these two forms of savings is the relevant administrative costs.

V PRESCRIBED ASSET REQUIREMENTS AS A SECOND BEST SOLUTION

1 Introduction

As the modelling exercise above shows, tax concessions associated with contractual savings lead to a bias in the composition of household savings towards contractual savings as they raise the after tax returns associated with contractual savings. This bias towards contractual savings also implies that contractual savings institutions would have more access to new loanable funds than would discretionary savings institutions. As has been argued, this is undesirable for two reasons: 1) it leads to a misallocation of resources both in terms of the supply of and demand for loanable funds and is thus not Pareto optimal and 2) it has negative equity implications in the sense that holders of contractual savings schemes are able to benefit while those who do not have access to such schemes do not. In terms of the portfolio mix of contractual savings institutions, there is also an institutional bias toward shares and property. A small number of contractual savings institutions also dominate the market for contractual savings.

Eliminating the tax concessions associated with contractual savings is not feasible for a variety of reasons outlined above. Were it possible to eliminate the tax concessions it would not lead to an efficient allocation of resources because of various distortions which exist. These distortions include a bias in the portfolio mix of contractual savings institutions. These distortions can only be reduced over time. Thus, the elimination of tax concessions would still fail to lead to a Pareto optimal allocation of resources given that it would not eliminate all distortions.

Prescribed asset requirements¹ would have an effect similar to eliminating tax concessions because it would lower the after tax returns associated with contractual savings. It would also encourage firms to change their asset portfolio and thus reduce the institutional bias against social investment. The imposition of prescribed asset requirements might thus constitute a second best solution. In what follows, we develop two approaches to show how prescribed asset requirements might constitute a second best

¹ Prescribed asset requirements are quantitative restrictions placed on the asset portfolio mix of targeted financial institutions like contractual savings institutions. These institutions are then legally obliged to hold a certain percentage of their assets in certain prescribed assets. These prescribed assets usually provide a lower after-tax investment return than other assets. This reduces the overall after-tax return on the investment portfolio.

solution. The first approach can be described as a general welfare approach whereas the second approach is an output maximisation approach.

2 A General Social Welfare Approach to Prescribed Asset Requirements as a Possible Second Best Solution

i The Model

Society maximises a social welfare function (W) which is assumed to be a function solely of tax revenue (T) and output (Y). Tax revenue and output are both functions of the tax rate on savings (t) and the prescribed asset requirements ratio (γ), where γ is equal to a percentage of savings to be allocated to social investment. For the sake of simplicity, this model ignores all other factors affecting social welfare.

Tax revenue improves welfare (assuming output is constant, of course) because higher tax revenue provides more resources for addressing South Africa's massive backlog of public goods. Higher output improves social welfare (holding tax revenue constant) because it is associated with more public and private goods. We also assume the reduced form representations of the tax revenue (T) and output (Y) functions, indicating that only the tax rate (t) and prescribed asset requirements (γ) are policy variables. These functions assume that all economic agents optimise their behaviour subject to the tax rate and prescribed asset ratio.

Thus, society wants to maximise

$$W = W (T , Y) \tag{12}$$

by choice of t and γ , subject to

$$T = T (t , \gamma) \tag{13}$$

and

$$Y = Y (t , \gamma) . \tag{14}$$

Assume that $W_T = \frac{\partial W}{\partial T} > 0$, $W_Y = \frac{\partial W}{\partial Y} > 0$, $T_t = \frac{\partial T}{\partial t} > 0$ over the efficient range of tax rates $(0, t_{\max})$

where t_{\max} is the tax revenue-maximising tax rate, $T_\gamma = \frac{\partial T}{\partial \gamma} < 0$, $Y_t = \frac{\partial Y}{\partial t} < 0$ and $Y_\gamma = \frac{\partial Y}{\partial \gamma} > 0$ because

prescribed asset requirements channel private capital into productive public investment.

ii The General Solution

Maximising the objective function subject to the constraints yields the following first-order conditions:

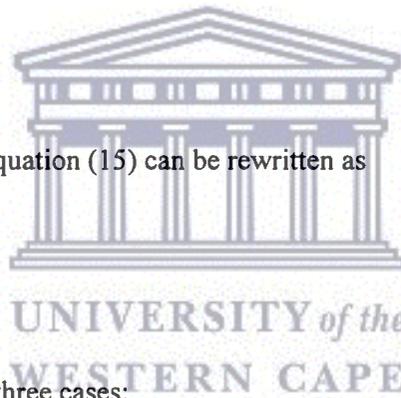
$$W_T T_t + W_Y Y_t = 0 \quad (15)$$

and

$$W_T T_\gamma + W_Y Y_\gamma = 0 \quad (16)$$

The first order condition of equation (15) can be rewritten as

$$-\frac{W_T}{W_Y} = \frac{Y_t}{T_t} \quad (17)$$



It is illuminating to consider three cases:

- ◆ the case where $W_T = 0$ (tax revenue has no effect on welfare), then the first order condition is satisfied if $Y_t = 0$, which means that the tax rate is set to maximise output, presumably by setting the tax rate to zero;
- ◆ the case where $W_Y = 0$ (income has no effect on welfare), then the first order condition is satisfied if $T_t = 0$, which means that the tax rate is set to maximise tax revenue ($t = t_{\max}$);
- ◆ the general case where both tax revenue and output are important, so society would have to balance the impacts of the tax rate on tax revenue and output so that the effects are proportional to the value society places on another unit of tax revenue and output respectively.

The first order condition of equation (16) can be rewritten as

$$-\frac{W_T}{W_Y} = \frac{Y_\gamma}{T_\gamma} \quad (18)$$

Consider also the following three cases:

- ◆ the case where $W_T = 0$ (tax revenue has no effect on welfare), then the first order condition is satisfied if $Y_\gamma = 0$, which means that the prescribed asset ratio is set to maximise output ($\gamma = \gamma_{\max}$);
- ◆ the case where $W_Y = 0$ (output has no effect on welfare), the first order condition is satisfied $T_\gamma = 0$, if which means that the prescribed asset requirements ratio is set to maximise tax revenue, presumably by setting the prescribed asset ratio to zero;
- ◆ the general case where both tax revenue and output are important, so society would have to balance the impacts of the prescribed asset ratio on tax revenue and output so that the effects are proportional to the value society places on another unit of tax revenue and output respectively.

iii First-Best Example

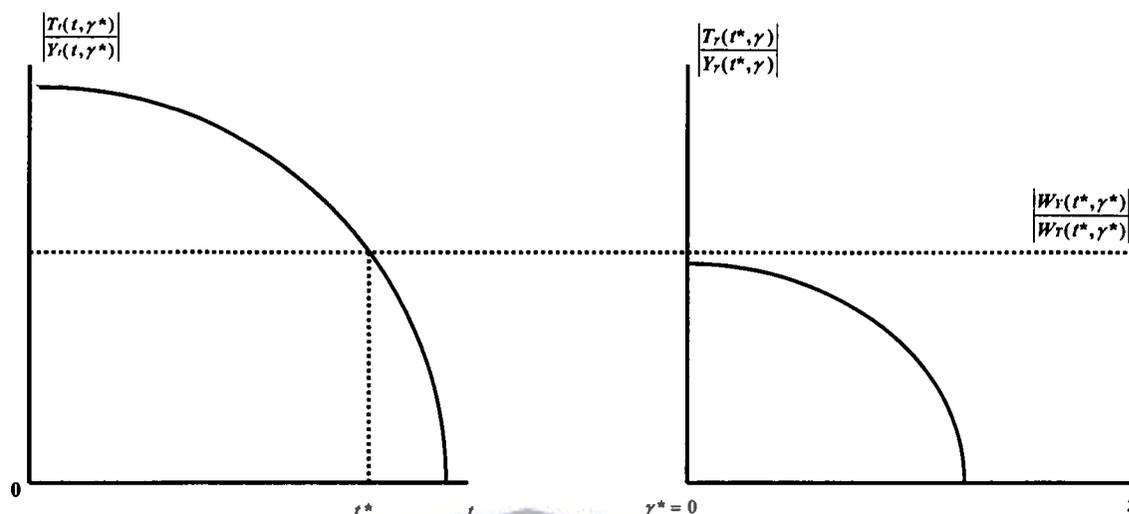
Let us consider a hypothetical economy, which has a solution that is depicted in Figure 1 and described below:

$T_t(t, \gamma^*)$ represents the marginal impact of the tax rate on tax revenue along the locus where the prescribed asset ratio is optimised. $Y_t(t, \gamma^*)$ represents the marginal impact of the tax rate on output along the locus where the prescribed asset ratio is optimised. $T_\gamma(t^*, \gamma)$ represents the marginal impact of the prescribed asset ratio on total tax revenue along the locus where the tax rate is optimised.

$Y_\gamma(t^*, \gamma)$ represents the marginal impact of the prescribed asset ratio on output along the locus where the tax rate is optimised. $W_T(t^*, \gamma^*)$ represents the marginal impact of tax revenue on social welfare along the loci where the tax rate and prescribed asset ratio are maximised. $W_Y(t^*, \gamma^*)$ represents the

marginal impact of output on social welfare along the loci where the tax rate and prescribed asset ratio are maximised.

Figure 1



The example as drawn indicates a corner solution where the optimal prescribed asset ratio is zero ($\gamma^*=0$). Taxes are more effective than financial repression at achieving the desired objectives (implicit in the social welfare function) so that a relatively high tax rate t^* is optimal to the exclusion of prescribed asset requirements. This example is consistent with the preference for taxes over quantitative restrictions (such as prescribed asset requirements) commonly found in neo-classical models.²

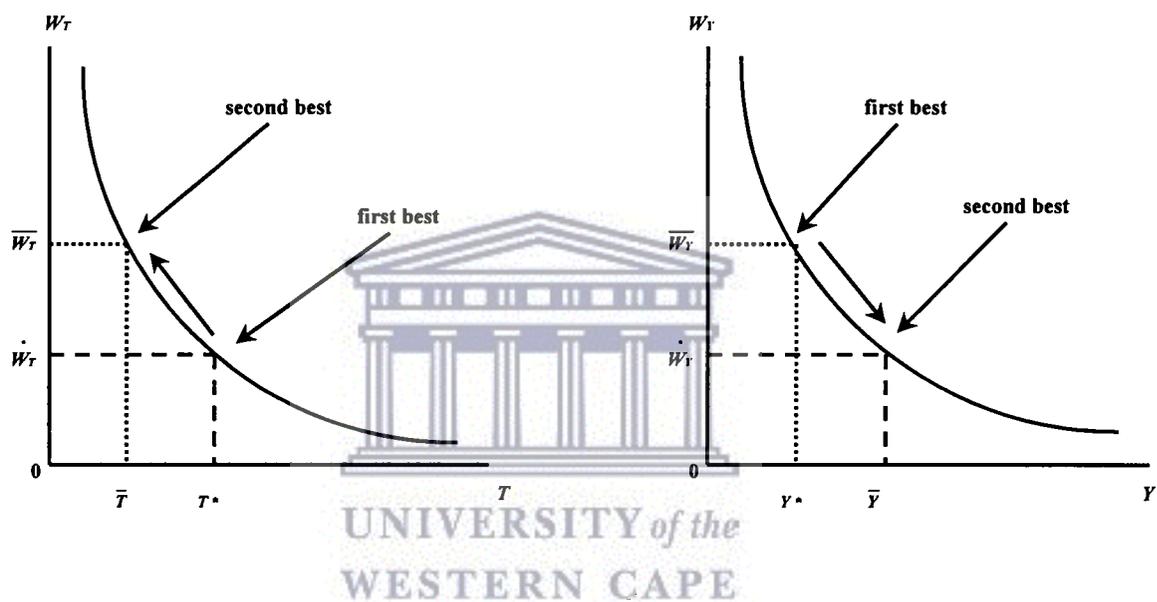
iv A Second-Best Solution

T^* in Figure 2 below is the reduced form of the equation $T_\gamma(t^*, \gamma)$, \dot{W}_T is the reduced form of the equation $W_T(t^*, \gamma^*)$, Y^* is the reduced form of the equation $Y_\gamma(t^*, \gamma)$, and \dot{W}_Y is the reduced form of the equation $W_Y(t^*, \gamma^*)$. When the tax rate is optimised a first best outcome is achieved where both the marginal impact of tax revenue and output on social welfare is optimised.

² Neo-classical models frequently find tariffs preferred to quotas, pollution taxes preferred to outright prohibitions, and so on.

Suppose that t is fixed at $\bar{t} < t^*$. This could for example be the result of tax concessions. What are the implications of this condition? Since $\bar{t} < t^*$, the society is under-taxed from a social welfare point of view. This allows for “excess” incentives for production of private goods. Society thus produces “too many” private goods and taxes “too little”. The low degree of taxation pushes the society up the marginal social welfare schedule for tax revenue. The opposite is true for the marginal social welfare schedule for output (see Figure 2 below).

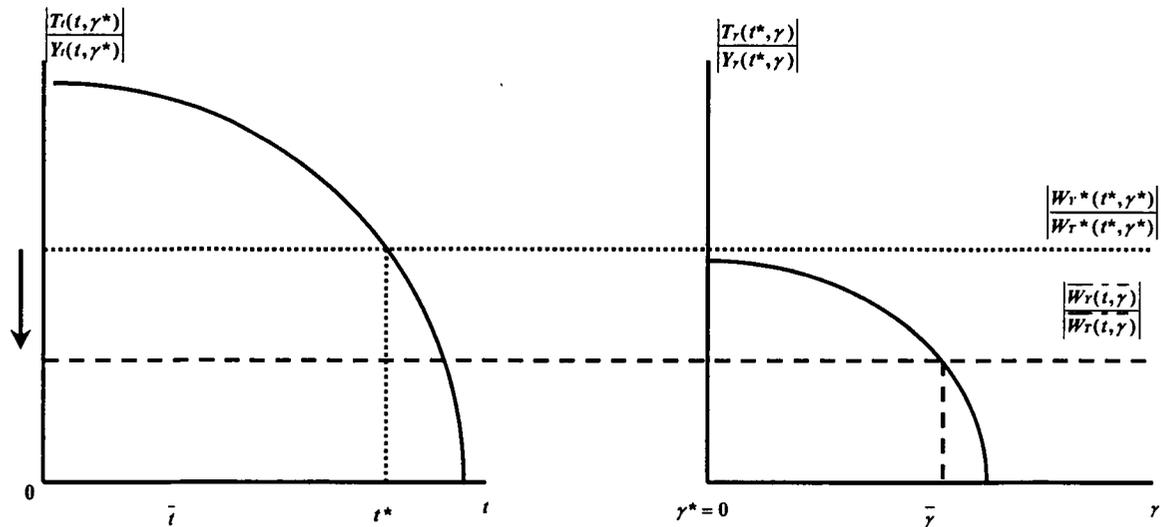
Figure 2



Why might tax revenue (T) be important for social welfare? For one, it provides funds for public goods. Why does the tax rate (t) affect output (Y) negatively? If it is a tax on savings it could reduce the amount of investable funds.

Given the above, it is then possible that we observe the following:

Figure 3



In Figure 3 above indicates a second best solution where $\bar{\gamma} > \gamma^* = 0$. The low tax rate decreases the marginal impact of output on welfare and increases the marginal impact of tax revenue on welfare.

This happens because at the lower tax rate society produces too much private goods relative to public goods. Prescribed asset requirements thus become a viable alternative as a means to reallocate resources towards public goods. This would maximise society's welfare indicated by the new equilibrium

$$\left| \frac{W_{\bar{\gamma}}(\bar{t}, \bar{\gamma})}{W_{T(\bar{t}, \bar{\gamma})}} \right|$$

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3 An Output Maximisation Approach to Prescribed Asset Requirements as a Possible Second Best Solution

i The Model

Assume that society maximises output (Y) that is a function of private investable funds (P) and social investable funds (G). Suppose that both P and G are functions of the tax rate (t) on savings and prescribed asset requirements (γ), where γ is equal to a percentage of savings to be allocated to social investments. For simplicity this model ignores all other factors affecting output. Private investable funds increases output (assuming that public investable funds remain constant) because it is associated with

more investment in private goods. Likewise, public investable funds increases output (assuming that private investable funds remain constant) because it is associated with more investment in public goods that are enormously backlogged. We assume the reduced form representations of private investable funds (P) and public investable funds (G) functions, indicating that only the tax rate (t) and prescribed asset ratio (γ) are policy variables.

Thus, society wants to maximise

$$Y = Y(P, G) \quad (19)$$

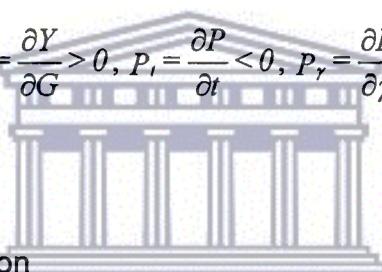
by choice of t and γ , subject to

$$P = P(t, \gamma) \quad (20)$$

and

$$G = G(t, \gamma) . \quad (21)$$

Assume that $Y_P = \frac{\partial Y}{\partial P} > 0$, $Y_G = \frac{\partial Y}{\partial G} > 0$, $P_t = \frac{\partial P}{\partial t} < 0$, $P_\gamma = \frac{\partial P}{\partial \gamma} < 0$, $G_t = \frac{\partial G}{\partial t} > 0$ and $G_\gamma = \frac{\partial G}{\partial \gamma} > 0$.



ii The General Solution

Maximising the objective function subject to the constraints yields the following first order conditions:

$$Y_P P_t + Y_G G_t = 0 \quad (22)$$

and

$$Y_P P_\gamma + Y_G G_\gamma = 0 . \quad (23)$$

The first order conditions can be rewritten as

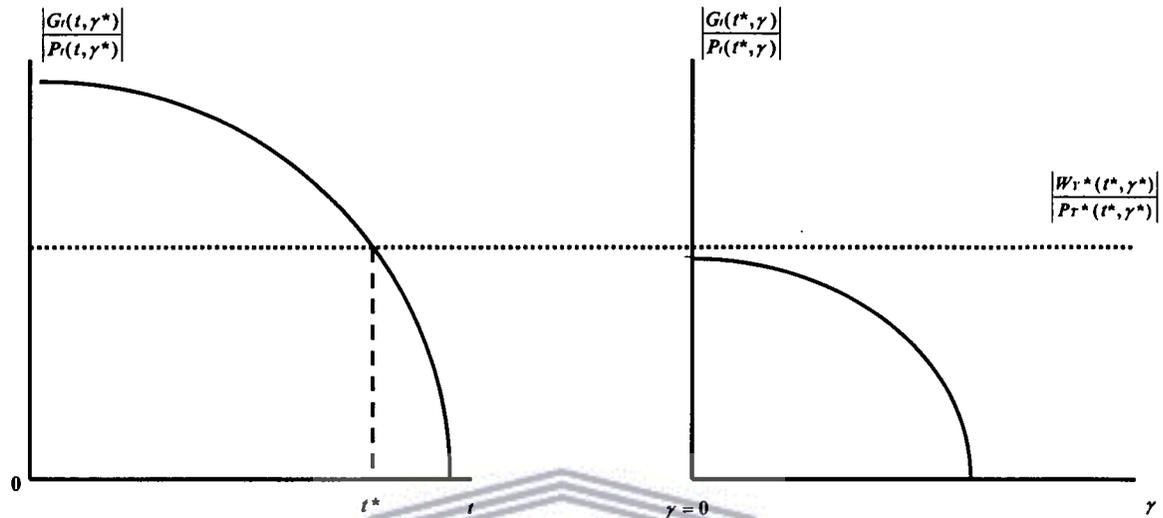
$$\frac{Y_P}{Y_G} = \frac{G_t}{P_t} = \frac{G_\gamma}{P_\gamma} . \quad (24)$$

From equation (24) above we can deduce that tax rates and prescribed asset ratios should be adjusted such that at the margin, the incremental impacts of taxes and prescribed asset requirements on social and private investable funds are proportional to the marginal productivities of private and social investable funds.

iii First-Best Example

Consider a hypothetical economy, which has a solution that is graphically described below:

Figure 4



In Figure 4 above, $G_t(t, \gamma^*)$ represents the marginal impact of tax revenue on public investable funds along the locus where the prescribed asset ratio is optimised. $P_t(t, \gamma^*)$ represents the marginal impact of the tax rate on private investable funds along the locus where the prescribed asset ratio is optimised. $G_\gamma(t^*, \gamma)$ represents the marginal impact of the prescribed asset ratio on public investable funds along the locus where the tax rate is optimised. $P_\gamma(t^*, \gamma)$ represents the marginal impact of the prescribed asset ratio on private investable funds along the locus where the tax rate is optimised. $Y_P(t^*, \gamma^*)$ represents the marginal product of private investable funds along the loci where the tax rate and prescribed asset ratio are optimised. $Y_G(t^*, \gamma^*)$ represents the marginal product of public investable funds along the loci where the tax rate and prescribed ratio are optimised.

The example as drawn indicates a corner solution where the optimal prescribed asset ratio is zero ($\gamma^*=0$). Taxes are more effective than financial repression at achieving the desired objectives (implicit in the production function) so that a relatively high tax rate t^* is optimal to the exclusion of prescribed asset requirements. This could be because taxes are a more efficient means of channelling resources

towards social investment. Thus, if the assumptions hold then in a first best solution there would be no prescribed asset requirements.

iv A Second-Best Solution

Suppose, however that t is fixed at $\bar{t} < t^*$. At $\bar{t} < t^*$, society is producing “too many” private goods relative to public goods since private goods are “under-taxed” from an output maximising point of view. The low degree of taxation on private goods pushes the society up the marginal product schedule for public goods (see Figure 5) and down the marginal product schedule for private goods (see Figure 6).

The provision of public goods depends on the government’s ability to generate sufficient revenue. If revenue is less than what it would be under a first best solution because of taxes being fixed, society is pushed up the marginal productivity schedule for public goods since the provision of public goods is less than under a first best outcome.

Figure 5

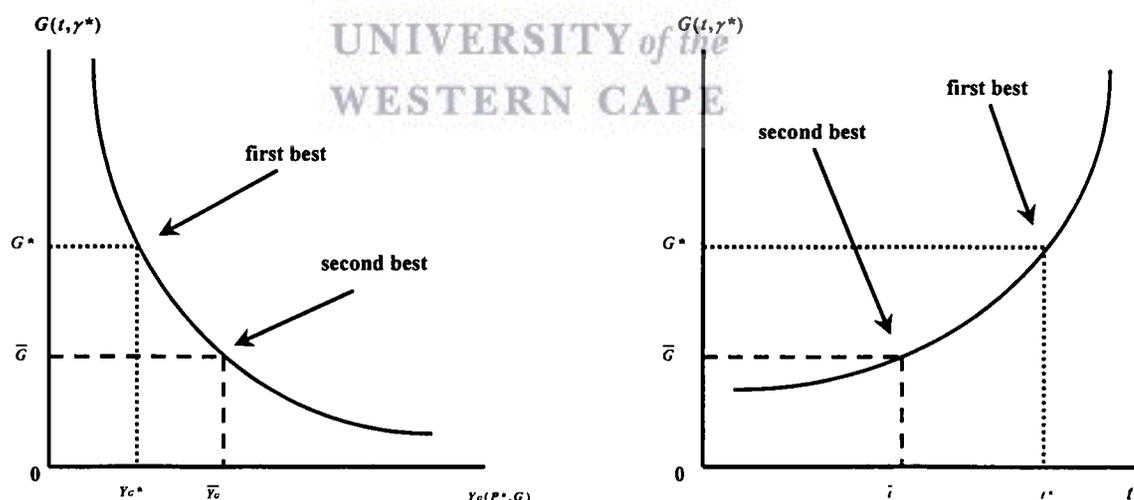
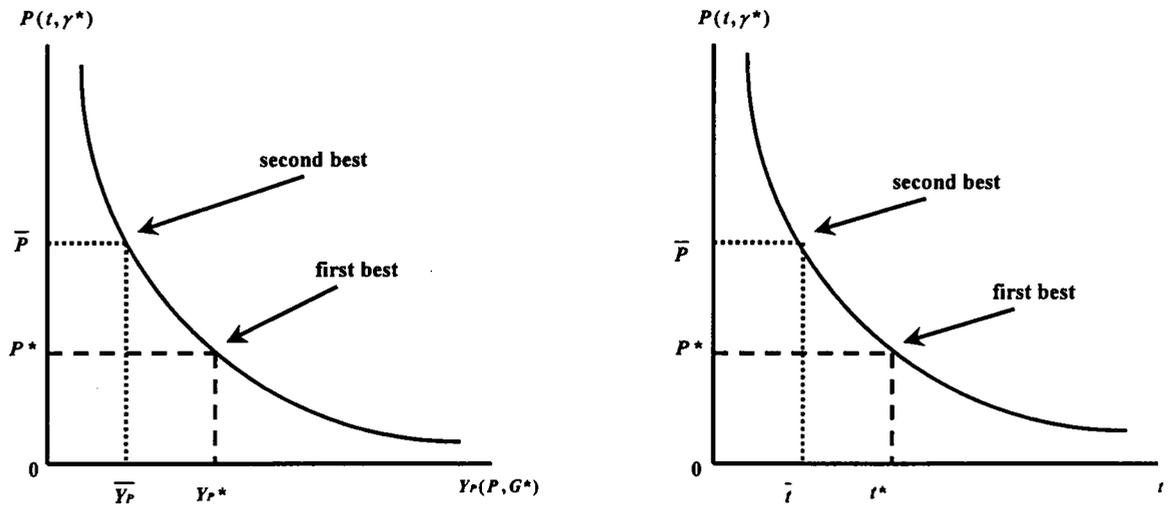
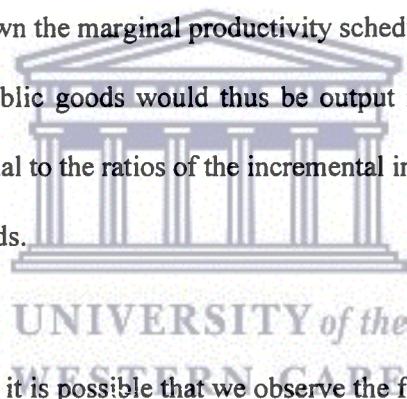


Figure 6

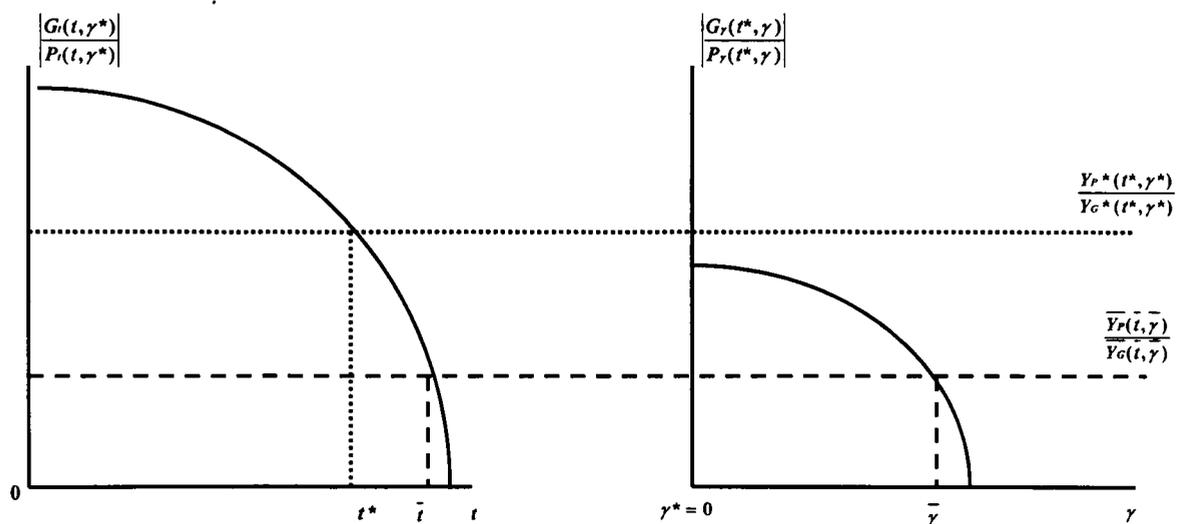


Because the relative provision of private goods is more than what it would be under a first best solution society is pushed down the marginal productivity schedule for private goods. A reallocation of resources from private to public goods would thus be output maximising up to the point where the marginal output ratios are equal to the ratios of the incremental impact of taxes and prescribed asset ratio on the ratio of investable funds.



Given that t is fixed at $\bar{t} < t^*$, it is possible that we observe the following:

Figure 7



Thus, a second best solution would be $\bar{\gamma} > \gamma^* = 0$. The low tax rate leads to a decrease in public investment, which increases the relative marginal output from social investment. This makes prescribed

asset requirements a viable alternative as indicated by $\left| \frac{Y_P(\bar{t}, \bar{\gamma})}{Y_G(\bar{t}, \bar{\gamma})} \right|$.

In the preceding exercise it was shown that a fixed tax rate through for example the provision of tax concessions could lead to a sub-optimal allocation of resources from an output maximisation point of view. If the tax rate could be increased it would lead to an improvement of welfare, assuming no other institutional constraints exists. If other constraints were present, changing the tax rate might still not be welfare improving. If taxes are fixed then prescribed asset requirements is a viable alternative even if it is assumed that under a first best outcome it is not preferred. The following section explores the implications of the above models to the problem of tax concessions on contractual savings.



VI PRESCRIBED ASSET REQUIREMENTS AS A POSSIBLE SOLUTION TO THE PROBLEM OF TAX CONCESSIONS

One way of correcting the imbalance associated with the relative tax burdens associated with contractual savings and discretionary savings is to impose higher taxes on - to eliminate tax concessions for - contractual savings. Assuming that taxes are more efficient than other measures this would be the preferred strategy in the absence of other institutional constraints, as it would lead to enhanced efficiency of the allocation of savings as well as an improvement in equity because of the elimination of the windfall gains presently associated with contractual savings. With the distortionary bias against discretionary savings eliminated it is likely to lead to an increase in the proportion of total household savings that are allocated toward discretionary savings.

Given that discretionary savings institutions are more likely to lend to smaller unincorporated businesses and to households for investment in such goods as housing and education, the overall effect of this strategy would be an improvement of the overall welfare in the relatively less privileged. The government would also have, as we have shown, a considerable increase in its revenue from taxation. This additional revenue could be used to finance transitional development projects.

While the elimination of tax distortions would be the preferred strategy in the absence of other institutional constraints, it is not necessarily feasible politically. Recent initiatives by the government reflect this sentiment. In his 1996/97 budget (Budget 1996) the minister of finance proposed legislation that was aimed at reducing the relative distortions in the tax burden associated with different forms of contractual savings but which would only marginally increase the total tax burden associated with contractual savings as a whole. However, the levels of taxation proposed by the minister were less than that advocated by the Katz Commission (1995).

The minister argued that the incentive in favour of contractual savings should be maintained (Budget Review, 1996). Some of the reasons postulated for this commitment are that the government has committed itself to not increase the overall level of taxation because of the perception among economic agents that taxes are at present too high and that the economy is still characterised by a high level of

uncertainty, that the state has to undergo significant restructuring in the system of tax collection and that it first has to upgrade its administrative capacity. One could argue that economic agents would see the elimination of tax advantages associated with asset such as contractual savings as akin to expropriation of wealth. This sentiment would have adverse political and economic consequences such as trade union dissatisfaction and capital flight.

Given the above, prescribed asset requirements are a viable alternative. Prescribed asset requirements would act as an indirect tax on contractual savings. Prescribed asset requirements have been used extensively since the late 1970's and have only been eliminated in 1989. Their reimposition would not violate the implicit contract under which contractual savings were accumulated.

Prescribed asset requirements would put resources at the disposal of the government or other specialised institutions that can be used for investment that generate a high social return such as in education, the provision of housing, the provision of health services and other capital and human capital investments. These types of investment are complementary to private investment and would thus encourage growth.



VII CONCLUSION

The present government is facing a constraint in terms of financing its expenditure. Recently, an increasing share of its expenditure is being allocated towards debt servicing. Given its commitment to a much needed program geared towards the enhancement of the country's socio-economic infrastructure, and given the limitations which it faces in raising much needed revenue through tax restructuring, alternative means and sources of finance have to be found.

In the past, contractual savings have benefited from generous tax concessions. Part of the rationale for this bias was the notion that tax concessions on contractual savings would lead to an increase in the level of household savings because of the increase in the after tax returns associated with contractual savings. Household savings have not increased. Indeed one could speculate that a higher after tax return on contractual savings could actually lead to a decrease in household savings if the income effect of this concession outweighed the substitution effect. Using present value analysis we illustrated the bias which individuals have toward contractual savings because of the existence of tax concessions. Further analysis of the effects of tax concessions on individuals' savings behaviour is still necessary.

Another concern expressed in this essay is that the institutions that manage contractual savings have a bias against certain types of investments that are desirable from a social welfare point of view. Given the extent to which contractual savings have replaced discretionary savings and the extent of market power enjoyed by contractual savings institutions, the nature of the application of these funds are of concern.

We argued that a first best solution would be to eliminate tax concessions associated with contractual savings. This would both improve allocative efficiency and it would lead to greater equity since tax concessions implies a welfare gain to some at the expense of others. The welfare costs stems from the fact that the relatively wealthier have access to higher after tax returns associated with their savings while those who are poorer do not have access to this form of savings and because tax concessions divert much needed resources away from high priority social investments.

While eliminating tax concessions would be the preferred solution it is not feasible in the short term both because of adverse political repercussions which it could have as it might be viewed by individuals as a wealth tax, and because of market and institutional limitations such as the concentration of market power and a lack of administrative capacity.

Prescribed asset requirements is a quantitative restriction whereas taxes distort prices. Neo-classical economists frequently prefer price distortions to quantitative restrictions. Many for example see financial liberalisation as the process of eliminating or reducing quantitative restrictions. What we have tried to illustrate using a second best framework is that with the existence of certain impediments, quantitative restrictions in the form of prescribed asset requirements could still constitute a second best alternative. We argue that while upholding its commitment to maintaining the favoured treatment of contractual savings, the government can encourage these funds to be applied in ways that are more socially desirable through the use of prescribed asset requirement on contractual savings in the short term.



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VIII APPENDIX A: TABLES

Table 1: Key Economic Indicators

Year	Real GDP (1990=100)		Real GDP per capita (1990=100)		Consumer price index (1990=100)		Current account of the Balance of payments		Real effective exchange rate (1990=100)	Rand/Dollar exchange rate
	Rbn	Year-on-year % change	Rbn	Year-on-year % change	Level	Year-on-year % change	Rbn	As % of GDP	Weighted annual average	Annual average
1960	97883	3	5717	0.5	7.0	1.3	34	0.7		0.71
1961	101647	3.8	5780	1.1	7.1	1.9	196	3.6		0.71
1962	107926	6.2	5974	3.4	7.2	1.4	308	5.3		0.71
1963	115884	7.4	6245	4.5	7.3	1.4	149	2.3		0.71
1964	125085	7.9	6559	5	7.5	2.5	-102	-1.5		0.72
1965	132744	6.1	6770	3.2	7.8	3.6	-366	-4.8		0.72
1966	138636	4.4	6876	1.6	8.1	3.8	-102	-1.2		0.72
1967	148613	7.2	7171	4.3	8.4	3.3	-266	-2.8		0.72
1968	154785	4.2	7270	1.4	8.5	1.6	-11	-0.1		0.72
1969	162085	4.7	7408	1.9	8.7	3.1	-342	-3		0.72
1970	170592	5.2	7587	2.4	9.2	5.3	-919	-7.4	93.6	0.72
1971	177891	4.3	7704	1.5	9.8	6.1	-1061	-7.7	94.9	0.71
1972	180835	1.7	7625	-1	10.4	6.6	-143	-0.9	89.1	0.77
1973	189103	4.6	7765	1.8	11.4	9.4	-169	-0.9	98.6	0.69
1974	200659	6.1	8033	3.4	12.7	11.7	-979	-4.1	99.5	0.68
1975	204061	1.7	7969	-0.8	14.4	13.4	-1766	-6.6	101.1	0.74
1976	208652	2.2	7946	-0.3	16.0	11.0	-1654	-5.5	99.6	0.87
1977	208456	-0.1	7733	-2.7	17.8	11.4	209	0.6	104.2	0.87
1978	214740	3	7755	0.3	19.8	11.0	949	2.5	101.8	0.87
1979	222880	3.8	7848	1.2	22.4	13.2	2504	5.5	107.3	0.84
1980	237636	6.6	8163	4	25.5	13.6	2554	4.2	118.8	0.78
1981	250375	5.4	8380	2.7	29.4	15.3	-4176	-5.9	120.3	0.88
1982	249415	-0.4	8138	-2.9	33.7	14.6	-3557	-4.4	112.8	1.09
1983	244809	-1.8	7790	-4.3	37.8	12.3	-428	-0.5	124.3	1.11
1984	257292	5.1	7987	2.5	42.2	11.6	-2517	-2.3	105.9	1.48
1985	254175	-1.2	7700	-3.6	49.1	16.3	5208	4.2	82.0	2.23
1986	254221	0	7517	-2.4	58.2	18.6	6328	4.4	85.6	2.28
1987	259561	2.1	7495	-0.3	67.6	16.1	6708	4	99.8	2.04
1988	270463	4.2	7631	1.8	76.2	12.8	3383	1.7	95.8	2.28
1989	276940	2.4	7633	0	87.5	14.7	3467	1.4	95.4	2.63
1990	276060	-0.3	7434	-2.6	100.0	14.3	5324	1.9	100.0	2.60
1991	273249	-1	7192	-3.3	115.3	15.3	6187	2	103.0	2.77
1992	267257	-2.2	6879	-4.4	131.4	13.9	4975	1.5	104.8	2.87
1993	270702	1.3	6816	-0.9	144.1	9.7	6049	1.6	100.2	3.28
1994	278143	2.7	6854	0.6	157.1	9.0	-1207	-0.3	97.2	3.56
1995	287506	3.4	6938	1.2	170.6	8.6	-9925	-2.0	97.4	3.63
1996	296827	3.2	7016	1.1	183.2	7.4	-7292	-1.3	89.3	4.31
1997	301802	1.7	6988	-0.4	198.9	8.6	-8813	-1.5	90.1	4.61
Jan '98- Sep '98					209.9	5.5				

Source: SARB QB

Table 2: Trends in Economic Composition of Consolidated General Government Expenditure (as percentage of GDP)

Fiscal year-end	Current expenditure				Capital expenditure			Total expenditure
	Total	Goods & services	Interest	Subsidies & current transfers	Total capital expenditure	Acquisitions of fixed assets, etc.	Capital transfers	
1973	19.2	14.1	2.0	3.1	8.2	6.2	2.0	29.5
1974	18.4	13.6	2.0	2.7	6.1	5.1	1.0	26.5
1975	19.7	14.8	1.8	3.1	6.2	5.3	0.9	29.0
1976	22.3	16.6	1.8	3.8	7.8	6.1	1.7	31.7
1977	23.8	17.5	2.1	4.2	7.0	6.2	0.8	33.2
1978	23.8	16.6	3.3	3.8	6.9	5.4	1.5	33.7
1979	22.0	15.6	2.4	3.9	6.7	4.9	1.8	32.1
1980	21.6	15.4	2.4	3.8	6.0	4.5	1.4	29.8
1981	20.2	14.7	2.3	3.1	5.7	4.1	1.7	29.0
1982	21.8	15.7	2.6	3.5	6.0	4.3	1.7	29.9
1983	24.1	17.3	2.9	4.0	6.0	4.0	2.0	31.1
1984	24.8	17.3	3.2	4.3	6.4	3.8	2.6	31.1
1985	26.0	18.1	3.6	4.3	5.9	4.1	1.8	33.2
1986	27.7	19.2	3.9	4.7	5.6	3.9	1.7	33.5
1987	28.7	20.1	4.0	4.7	5.2	3.9	1.3	34.0
1988	29.4	20.4	4.3	4.8	4.2	3.4	0.9	34.9
1989	29.4	20.5	4.3	4.6	4.0	3.1	0.8	33.6
1990	29.2	20.3	4.6	4.4	3.8	3.2	0.6	31.8
1991	29.6	20.8	4.4	4.3	4.7	2.8	1.9	34.7
1992	31.2	22.0	4.7	4.5	3.2	2.6	0.7	34.8
1993	34.3	22.8	5.2	6.3	4.4	2.5	2.0	38.9
1994	35.5	23.1	5.8	6.7	5.3	2.6	2.7	40.9
1995	34.2	22.4	5.8	6.1	3.1	2.4	0.6	37.5
1996	33.5	21.8	6.5	5.2	3.1	2.2	1.0	36.7
1997	35.5	24.0	6.4	5.0	2.9	2.2	0.6	38.3
1998	34.8	23.4	6.7	4.8	3.0	2.1	0.9	37.5

Source: SARB QB

Table 3: Selected public finance data (as % of GDP)

Fiscal year-end	Deficit/Surplus	Exchequer receipts	Cash flow adjusted exchequer issues	Cash flow adjusted exchequer deficit/surplus	Government debt
1960	-3.4	12.4	14.3	-1.9	40.6
1961	-3.3	15.4	16.7	-1.3	48.6
1962	-4.3	14.8	17.1	-2.3	48.1
1963	-4.1	15.3	17.2	-1.9	47.4
1964	-3.4	15.9	17.5	-1.7	45
1965	-5	16.4	20	-3.6	44.6
1966	-4.7	16.7	20.3	-3.5	43.7
1967	-5.6	16.7	20.6	-3.9	44
1968	-5.1	17.3	20.6	-3.4	44
1969	-3.3	16.3	19.4	-3.1	47.1
1970	-3.3	17.4	20.2	-2.8	44.6
1971	-2.1	17.5	21	-3.5	42.8
1972	-5.4	18.5	24.3	-5.7	43.7
1973	-3.7	19.1	22.7	-3.7	44.3
1974	-2.1	20	21.7	-1.7	38.1
1975	-3.1	19.8	23.1	-3.4	34.6
1976	-5.1	20.4	25.1	-4.7	37.5
1977	-6.4	20.9	27.6	-6.6	39.3
1978	-5.8	21.2	26.5	-5.3	41.8
1979	-4.7	21.2	25.9	-4.7	40.5
1980	-3.4	20.9	24.9	-4	36.8
1981	-0.3	21.8	22.4	-0.6	31.1
1982	-2.6	20.8	23.6	-2.8	30.3
1983	-2.7	21.8	24.5	-2.7	31.7
1984	-3.6	21.2	24.5	-3.3	31.8
1985	-3.7	22.3	25.8	-3.5	33.4
1986	-3.1	24.9	27.6	-2.8	32.8
1987	-4.9	23.7	28.3	-4.6	33.7
1988	-5.9	23.3	29	-5.7	34.5
1989	-4.1	24.9	28.4	-3.5	38.1
1990	-1.9	26.7	28.2	-1.5	38.6
1991	-2.7	25.5	28.2	-2.7	37.2
1992	-4.5	24.7	28.8	-4.1	39.5
1993	-8.5	24.2	32.1	-7.9	44.5
1994	-6.8	25	31.4	-6.4	48.5
1995	-5.7	25.6	31.2	-5.6	55
1996	-6.1	26.1	31.4	-5.3	56.2
1997	-5.6	27.2	32.8	-5.6	55.8
1998	-4.4	27.3	31.3	-4.0	55.4

Source: SARB QB

Table 4: Growth and savings in South Africa

Period /Year	Growth in GDP (average annual)	Net investment (% of GDP)	Gross domestic savings (% of GDP)	Composition of Gross domestic savings (as % of total)				Personal savings (% of GDP)	Corporate savings (% of GDP)	Government savings (% of GDP)	Depreciation (% of GDP)
				Personal savings	Corporate savings	Government savings	Depreciation				
1960	3	10.6	21.9	17.7	13.3	20.3	48.6	3.9	2.9	4.5	10.7
1961	3.8	9.9	24.2	33.7	8.6	13.4	44.3	8.2	2.1	3.2	10.7
1962	6.2	8.6	24.4	40.1	10.1	6.7	43.1	9.8	2.5	1.6	10.5
1963	7.4	12.5	25.2	30.1	9.2	19.6	41.0	7.6	2.3	4.9	10.3
1964	7.9	14.6	23.4	19.9	16.2	19.9	43.9	4.7	3.8	4.7	10.3
1965	6.1	16.5	22.1	21.8	13.5	17.7	47.0	4.8	3.0	3.9	10.4
1966	4.4	13.2	22.7	27.4	11.9	13.2	47.5	6.2	2.7	3.0	10.8
1967	7.2	16.3	24	26.0	8.0	21.8	44.1	6.3	1.9	5.2	10.6
1968	4.2	14.2	24.7	29.2	8.4	19.4	43.0	7.2	2.1	4.8	10.6
1969	4.7	15.3	22.6	20.3	13.0	21.2	45.5	4.6	2.9	4.8	10.3
1970	5.2	17.3	20.6	19.8	8.8	19.7	51.7	4.1	1.8	4.1	10.7
1971	4.3	19.2	22.7	32.6	7.9	10.4	49.2	7.4	1.8	2.3	11.1
1972	1.7	14.1	24.8	31.7	9.7	11.6	47.0	7.9	2.4	2.9	11.6
1973	4.6	15.0	25.1	16.6	17.4	22.3	43.8	4.2	4.4	5.6	11.0
1974	6.1	18.8	25.5	16.4	18.5	22.5	42.6	4.2	4.7	5.7	10.8
1975	1.7	19.6	25.4	22.4	14.1	14.6	49.0	5.7	3.6	3.7	12.4
1976	2.2	14.7	23	12.2	19.4	8.4	60.0	2.8	4.5	1.9	13.8
1977	-0.1	12.5	27.5	24.2	16.8	6.6	52.4	6.7	4.6	1.8	14.4
1978	3	10.4	27.7	15.2	22.6	8.7	53.5	4.2	6.3	2.4	14.8
1979	3.8	12.0	32.2	20.4	28.0	5.9	45.7	6.6	9.0	1.9	14.7
1980	6.6	17.3	34.5	17.8	33.1	11.2	37.9	6.1	11.4	3.9	13.1
1981	5.4	19.5	27.2	4.1	35.8	10.0	50.0	1.1	9.8	2.7	13.6
1982	-0.4	10.3	20.8	4.6	21.7	2.0	71.7	1.0	4.5	0.4	14.9
1983	-1.8	10.3	25.3	4.0	33.7	1.0	61.3	1.0	8.5	0.3	15.5
1984	5.1	9.9	22.5	11.2	27.1	-4.9	66.7	2.5	6.1	-1.1	15.0
1985	-1.2	4.3	24.5	14.7	23.5	-3.3	65.1	3.6	5.8	-0.8	16.0
1986	0	1.9	23.5	7.7	24.0	-4.9	73.3	1.8	5.7	-1.2	17.2
1987	2.1	1.7	22.5	12.0	22.7	-9.2	74.5	2.7	5.1	-2.1	16.8
1988	4.2	4.8	22.7	10.2	23.3	-4.7	71.3	2.3	5.3	-1.1	16.2
1989	2.4	5.2	22.6	8.8	24.2	-3.7	70.7	2.0	5.5	-0.8	15.9
1990	-0.3	2.1	19.5	3.3	20.5	-3.3	79.6	0.6	4.0	-0.7	15.6
1991	-1	1.8	18.9	6.2	22.2	-8.2	79.8	1.2	4.2	-1.5	15.1
1992	-2.2	0.9	17	16.1	29.4	-31.9	86.4	2.7	5.0	-5.4	14.7
1993	1.3	1.5	17.2	19.8	33.9	-35.9	82.1	3.4	5.9	-6.2	14.2
1994	2.7	3.7	17.1	15.0	32.5	-27.8	80.3	2.6	5.6	-4.8	13.8
1995	3.4	5.3	16.9	6.9	34.1	-21.5	80.5	1.2	5.8	-3.6	13.6
1996	3.2	4.9	16.9	7.6	33.1	-19.4	78.7	1.3	5.6	-3.3	13.3
1997	1.7	3.3	15.2	3.6	32.8	-24.5	88.0	0.5	5.0	-3.7	13.3

Source: SARB QB

Table 5 Taxation Arrangements on Occupational Funds

	Private Occupational Pension funds	Public Sector Occupational Pension Funds	Provident Funds	Retirement Annuity
Maximum employee contributions that is tax free	7.5 percent	No limit	None	15 percent
Maximum employer contributions that is tax free	20 percent	No limit	20 percent	N/A.
Lump-sum allowed	A third	No limit	All	A third
Tax-free lump sum allowance	Varies ³	All	Varies ⁴	All
Income earned taxed	No	No	No	No
Annuity taxed	Yes	Yes	N/A.	Yes
Early withdrawal lump-sum allowed	Yes	Yes	Yes	not before age 55
Early withdrawal amount taxed	Yes	No	Yes	N/A.

Source: Mouton Report (1992) in IMF confidential report (1996).

Table 6: Household Lending and Borrowing (R billion)

Period	Lending				Borrowing			Ratio L/B	
	Total	Discretionary Institutions	Contractual Institutions	Other	Total	Discretionary Institutions	Trade Credit	Banks	Total
1970-74	2.1	1.1	0.8	0.2	1.4	0.7	0.8	1.69	1.48
	100	52.6	38.4	9	100	46.3	53.7		
1975-79	3.8	1.7	2.0	0.1	2.5	1.1	1.4	1.53	1.52
	100	44.4	52.1	3.5	100	44.2	55.8		
1980-84	11.5	4.6	6.7	0.2	9.9	4.9	5.0	0.94	1.16
	100	40.1	58.5	1.4	100	49.5	50.5		
1985-89	23.3	4.0	18.8	0.5	17.7	7.8	9.9	0.51	1.32
	100	17.1	80.7	2.2	100	55.8	55.8		

Source: Loots, L.J. (1992)

³ Depends on highest maximum salary and number of years of contributions.

⁴ Depends on highest maximum salary and number of years of contributions.

Table 7: Assets of Pension Funds and Life Insurance Companies as a Percentage of GDP, 1990

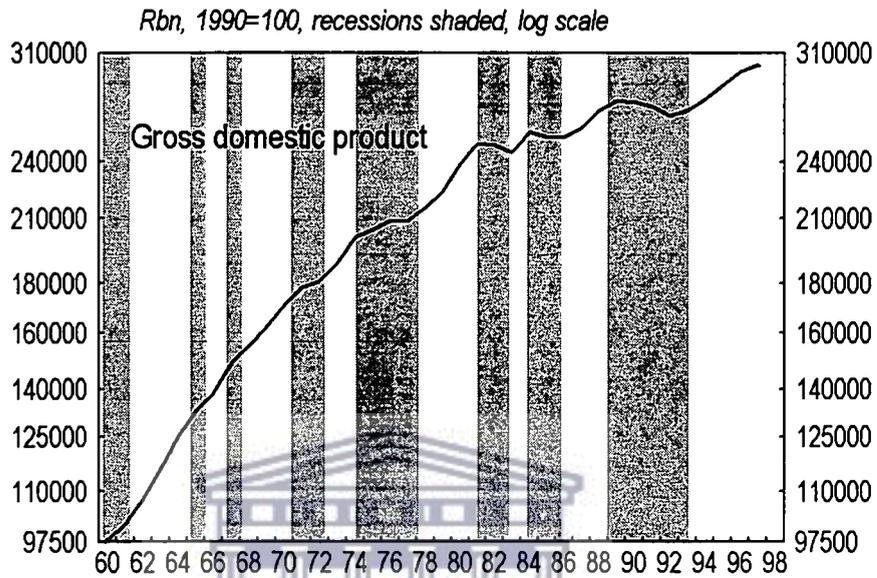
Switzerland	133
Netherlands	107
United Kingdom	97
South Africa	84
Singapore (1987)	78
United States	72
Sweden	63
Malaysia (1987)	48
Canada (1989)	46
Chile	35

Source: Davis (1990), Vittas and Scully (1991)

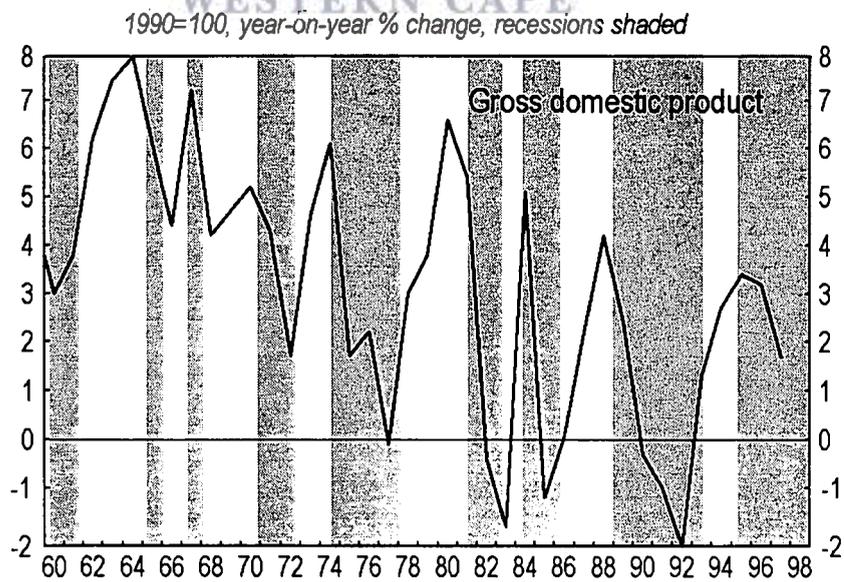


VIII APPENDIX B: GRAPHS

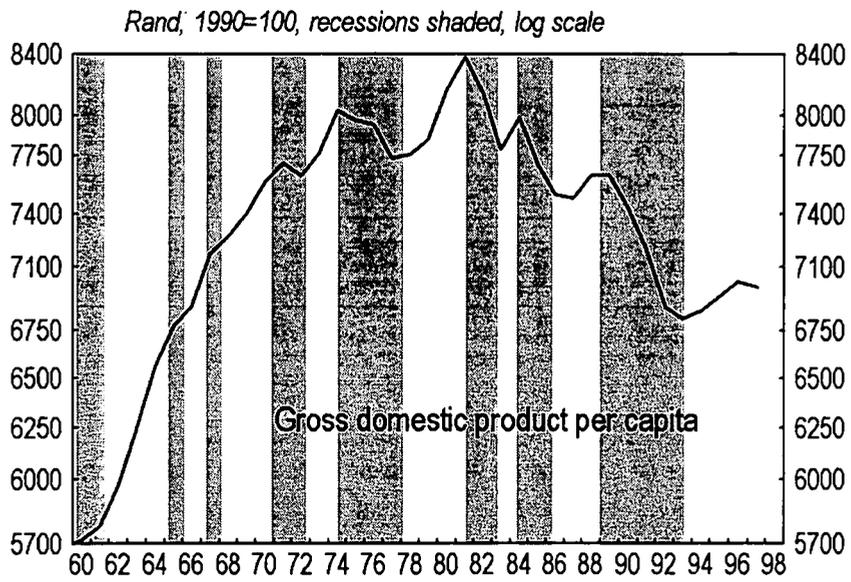
Graph 1: Gross domestic product



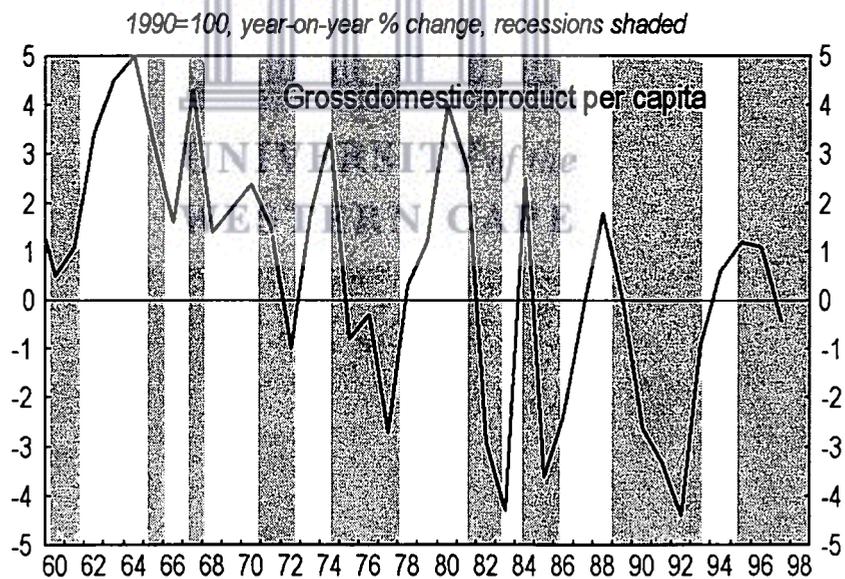
Graph 2: Gross domestic product growth



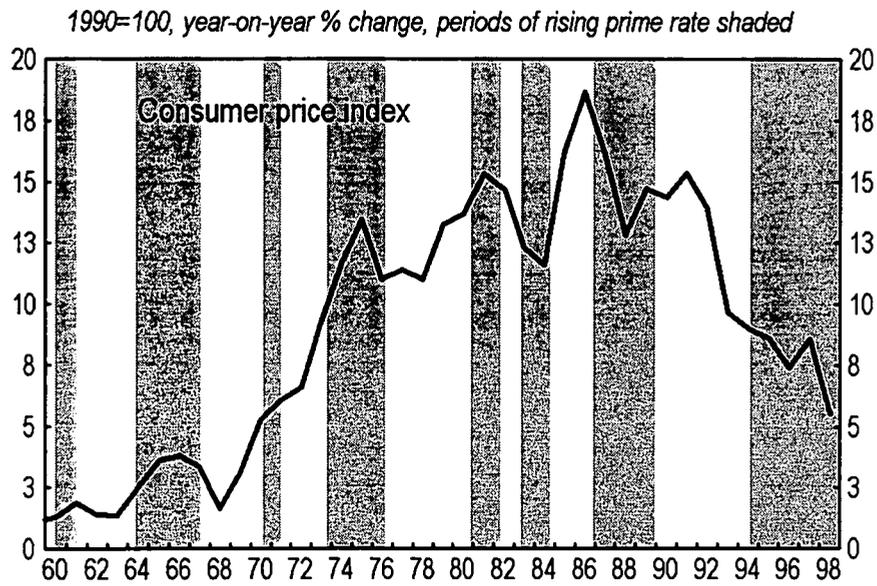
Graph 3: Gross domestic product per capita



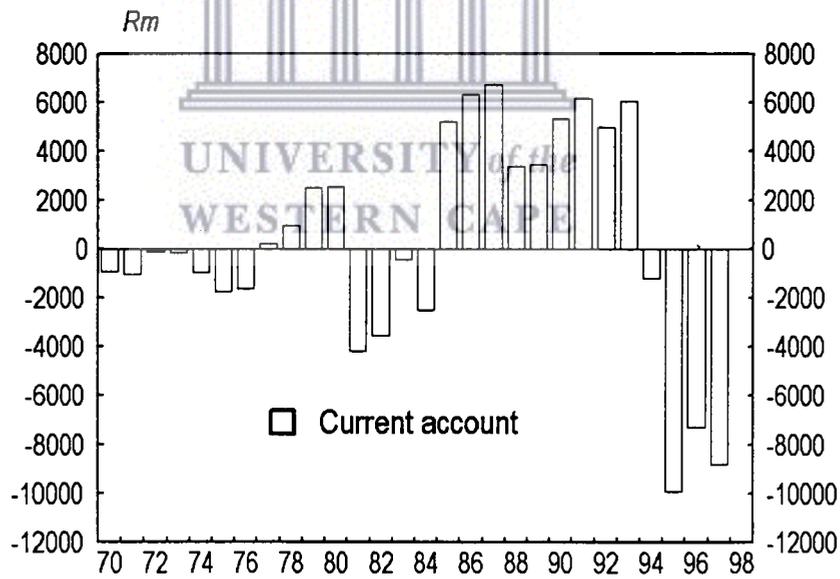
Graph 4: Gross domestic product per capita growth



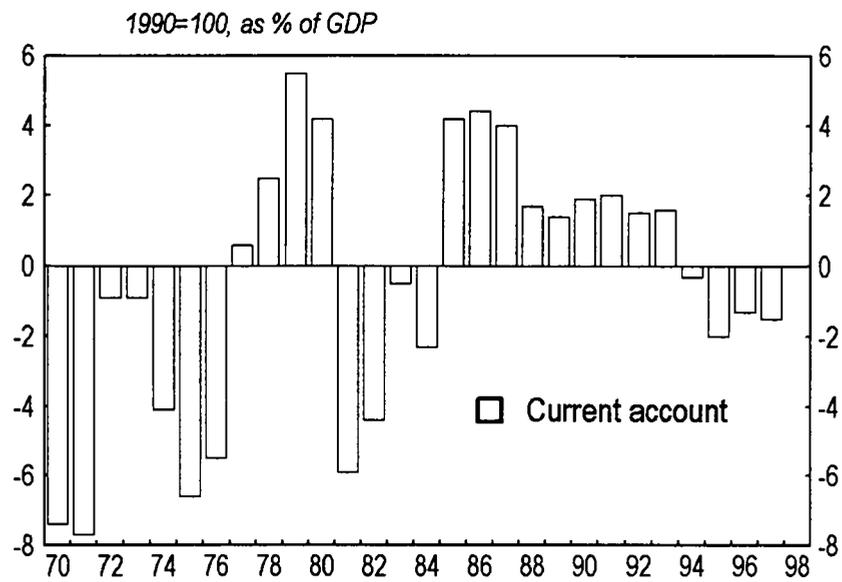
Graph 4: Consumer price index



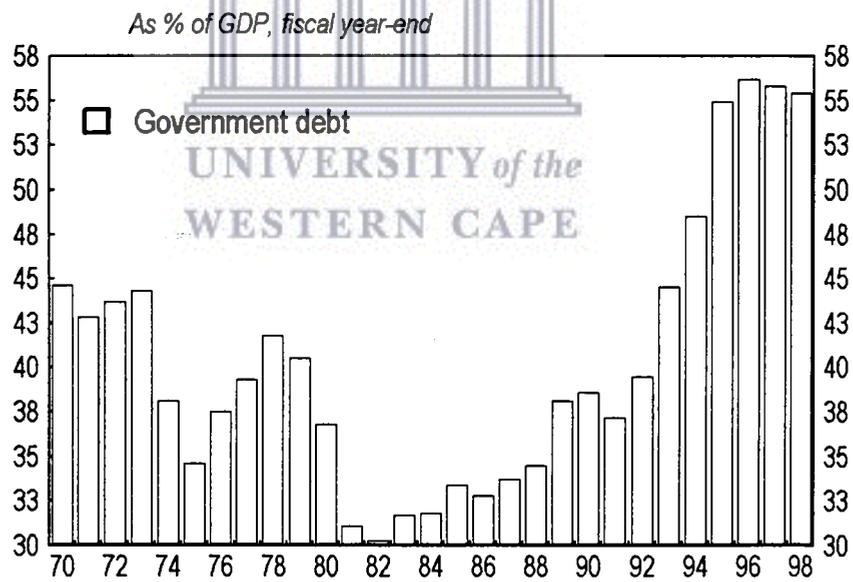
Graph 5: Current account balance



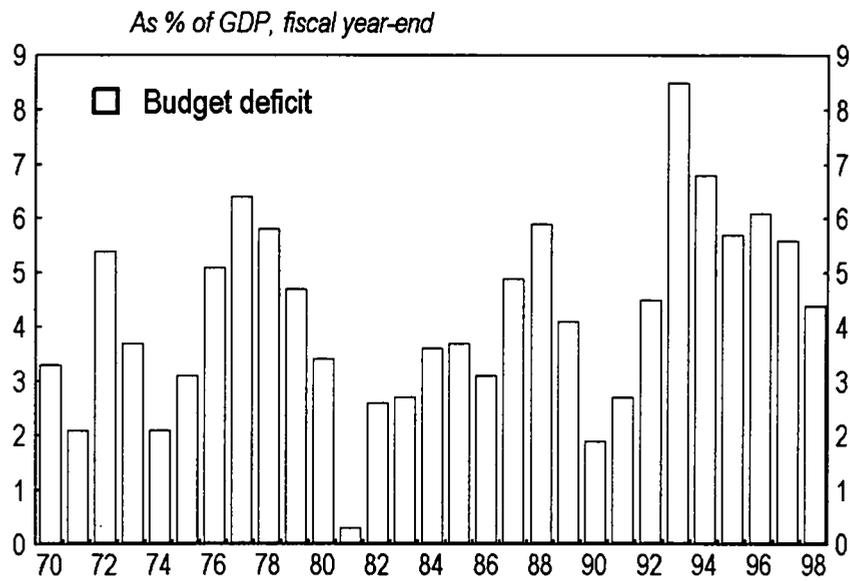
Graph 6: Current account balance



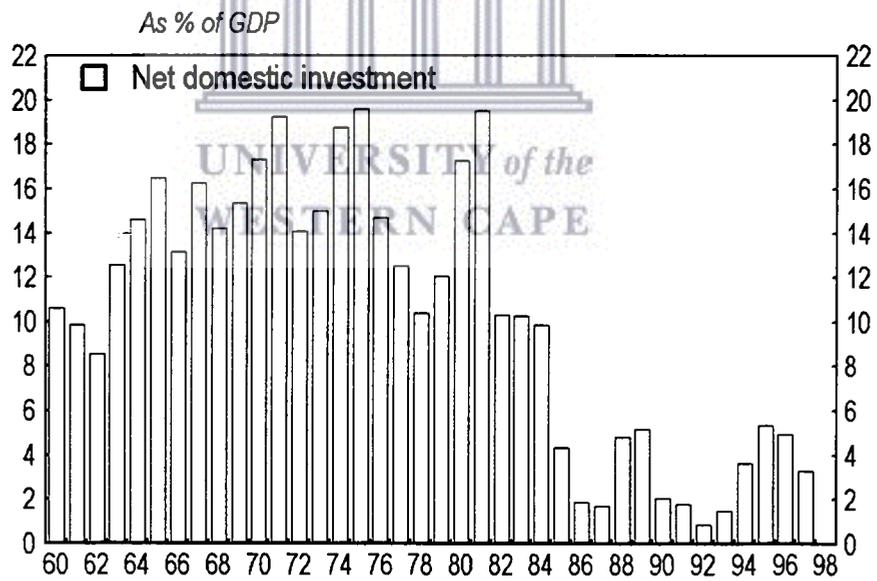
Graph 7: Government debt



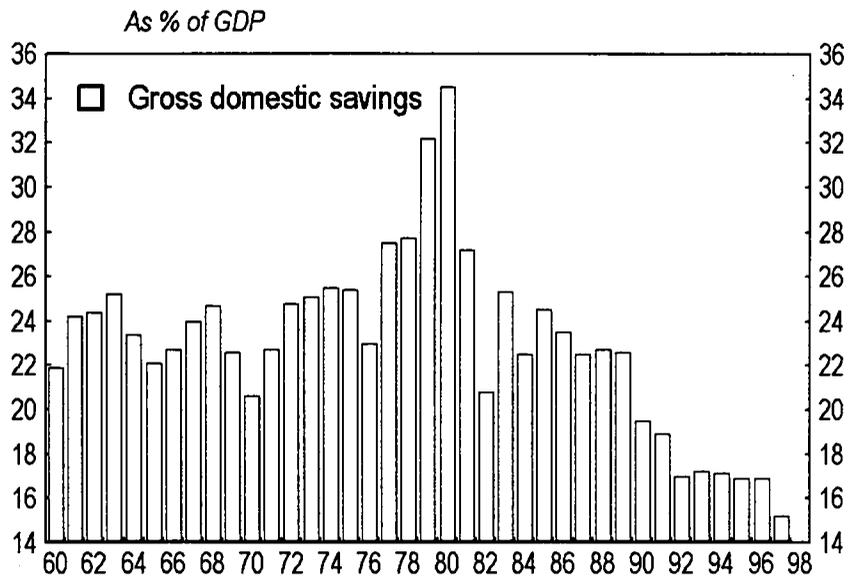
Graph 8: Government budget deficit



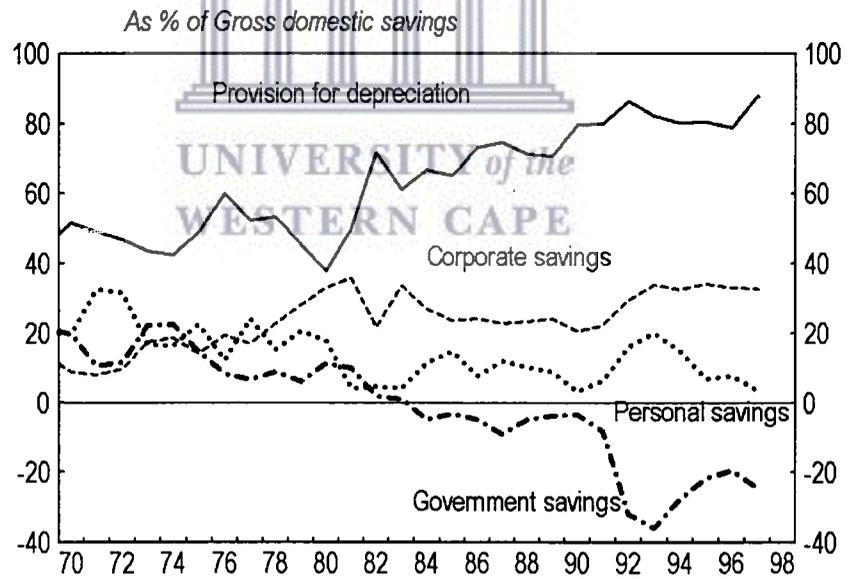
Graph 9: Net domestic investment



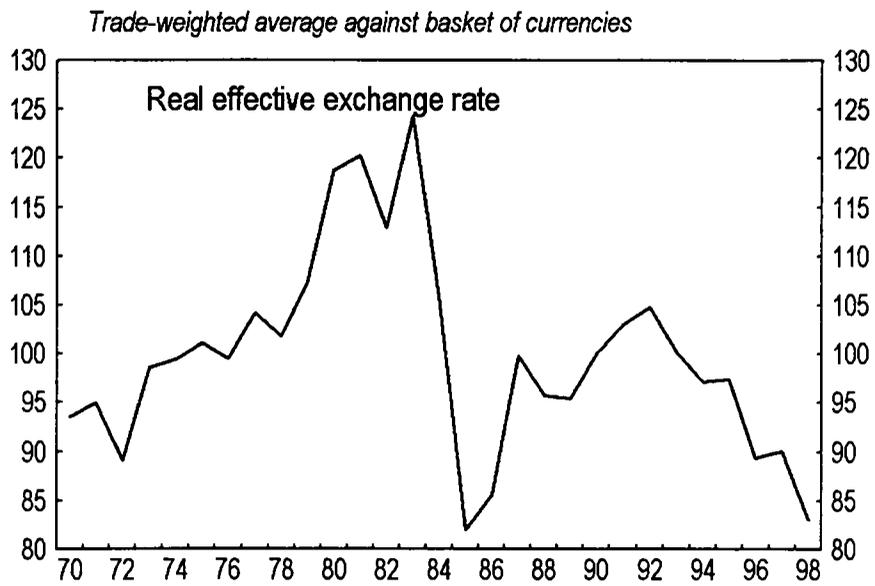
Graph 10: Gross domestic savings



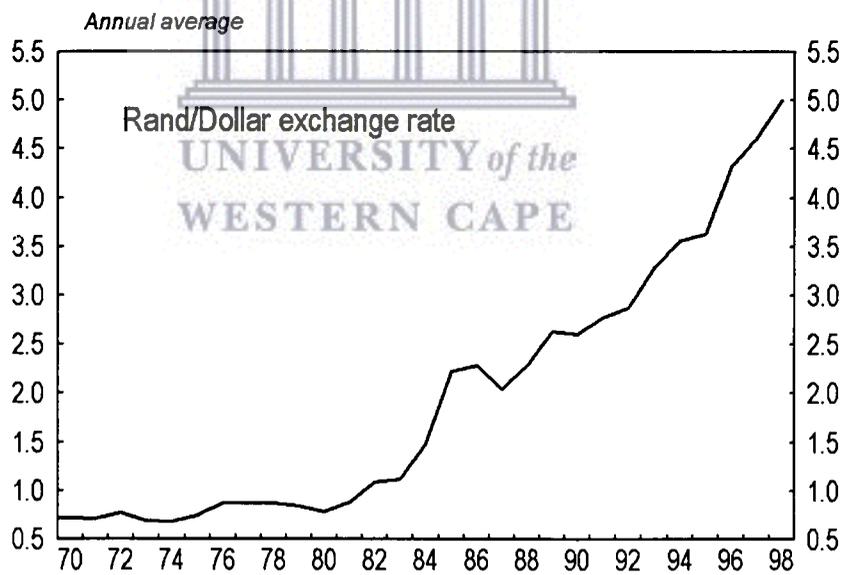
Graph 11: Gross domestic savings



Graph 12: Real effective exchange rate



Graph 13: Nominal Rand/Dollar exchange rate



Graph 14: Net foreign inflow of portfolio capital

