TAXING AGRICULTURE: AN ANALYSIS OF A POSSIBLE LAND AND CAPITAL GAINS TAX

by

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FOREWORD

The absence of quantitative research regarding the impact of a land tax on the agricultural sector held up the Land Tax Subcommittee's investigation process. This limitation lead thereto that the Department of Finance, upon a call from the Land Tax Subcommittee in 1997, contracted agricultural economic researchers from the University of the Orange Free State and the University of Stellenbosch to determine the possible effects of a South African land tax on the agricultural sector. The author of this study, at the time, was employed as researcher by the Department of Agricultural Economics at the University of the Orange Free State and was assigned to this project. Consequently the author was actively involved in the project planning, data gathering, analysis and report writing. Eventually a research report evolved with the title: "Research Report on the Introduction of a Land tax in South Africa". This document was subsequently used as reference for constructing Chapter 2 and parts of Chapter 4 of the Eighth Interim Report of the Katz Commission with the title: "The Implications of Introducing a Land Tax in South Africa".

Given the above, it is clear that the author of this study strongly relates to the research commissioned by the Land tax Subcommittee. Therefore, although various additional research have been done, certain parts of this study lean on the research done for the Land tax Subcommittee. The author, however, was directly involved in this research process.

Nevertheless, during 1999 the author accepted an occupation at the Standard Bank of South Africa and commenced with a training programme in the bank. This shift in employment introduced various external factors and hampered the progress of this study. Consequently the reader will note that the some of the land tax research actually dates back to 1998 when the research report was finished, whilst the largest part of the research on CGT was actually done during 2000 and 2001.

ACKNOWLEDGEMENTS

A number of people made valuable contributions in completing this study. It is therefore appropriate to express my gratitude to them here:

First of all I wish to thank my study leader, Prof. Herman van Schalkwyk, for all his inputs, time, friendship and contributions in the process of finishing this study.

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My parents deserve a special word of thanks. Without their ongoing encouragement, interest and love, this study might never have seen the light. A large share of my success is attributable to both of you.

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ABSTRACT

The South African agricultural sector has experienced a lot of deregulations over the past decade. This process marked the end of state subsidies, favourable commercial agricultural policy and border control measures that, in the past, provided a safety net for commercial farmers. Together with the transformation process, various policy changes occurred and included the transformation of agricultural policy to the benefit of emerging, small and subsistence farmers. Commercial farmers lost their once held favourable position and had to adapt in a globally exposed sector with very little state support.

Today, the agricultural sector is challenged with the possible introduction of two new taxes. Since 1992, a South African land tax has been under intensive investigation. This prospect gave rise to divergent opinions and arguments regarding the effect of a land tax on farm operating costs, farmland values, productivity, financing of local governments and other possible effects.

During February 2000, the 30-year old possibility of a South African capital gains tax (CGT) gained momentum with the announcement by Minister Trevor Manuel that such a tax will be imposed on April 1st 2001. The past incapacity of the tax administration to handle CGT was supposedly overcome with the introduction of the New Income Tax System (NITS). SARS is confident that they can now handle the administration behind a capital gains tax.

With the aim of obtaining some information with regard to the possible effects that a land tax may have, it was necessary to simulate the agricultural sector. Satisfying this need involved the use of static and dynamic linear programming techniques. Different agricultural regions in South Africa were identified for data gathering and subsequent inclusion in the analysis. Specific case studies were chosen and are situated in the Mpumalanga area, the Great Karoo area, the Olifants River irrigation scheme, Potchefstroom area, Bloemfontein area and the Kwazulu-Natal area. Various scenarios were constructed and the effect of the land tax at different rates, different land tax bases and different deductibility rates from income tax were tested. With these results at hand it was possible to provide some guidelines in terms of the effect of a land tax regarding different implementation strategies.

In terms of capital gains tax, a thorough literature study indicated that CGT reduces the amount of savings and investments. It furthermore discourages investment in risk-bearing investments such as agriculture. In the CGT analyses, a case study is used to determine the effect of land and capital gains tax on the repayment ability of a farm.

If a land tax is introduced on South African agricultural land, market values for farmland would decrease, which implies lower solvency ratios. A land tax will furthermore increase overhead costs, lead to higher financial risk, and result in the production of high-income products (but also higher risk products). The demand for short-term credit will also increase. Levying a land tax simultaneously with a capital gains tax, will lead to a decline in the repayment ability of farms as well as decreases in the security value of the concerned land. The combination of these taxes will increase the risk involved in agriculture.

BELASTINGS OP LANDBOU: 'N ANALISE VAN DIE MOONLTIKE GRONDBELASTING EN KAPITAALWINSBELASTING

deur

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UITTREKSEL

Gedurende die afgelope dekade, het die Suid-Afrikaanse landbousektor verskeie dereguleringsprosesse ondergaan. Hierdie proses het die einde van staatsubsidies, voordelige kommersiële landboubeleid en grensbeheermaatreëls wat in die verlede, 'n vangnet vir die kommersiële boer gebied het, ingelui. Tesame met die transformasieproses het verskeie beleidsveranderinge plaasgevind waaronder die transformasie van landboubeleid ten bate van opkomende-, klein- en bestaansboere ingesluit is. Die kommersiële boere het hul gunstige posisie verloor en moes vinnig aanpas in 'n globaal blootgestelde sektor met min staatsbeskerming.

Vandag word die landbousektor uitgedaag met die moontlikheid van twee nuwe belastings. Sedert 1992 word die moontlikheid van 'n Suid-Afrikaanse grondbelasting intensief ondersoek. Hierdie moontlikheid het aanleiding gegee tot uiteenlopende opinies en argumente betreffende die impak van grondbelasting ten opsigte van boerderye se operasionale kostes, landbougrondwaardes, produktiwiteit, finansiering van plaaslike owerhede en ander.

In Februarie 2000 het die 30-jaar oue moontlikheid van 'n Suid-Afrikaanse kapitaalwinsbelasting momentum gekry met die aankondiging van Minister Trevor Manuel dat 'n sodanige belasting op die 1ste April 2001, ingestel gaan word. Die historiese onvermoë van die belastingadministrasie om 'n kapitaalwinsbelasting te administreer is klaarblyklik oorkom met die instelling van die Nuwe Inkomstebelasting Stelsel (NITS).

Die Suid-Afrikaanse Inkomstediens is vol vertroue dat hul stelsel die administrasie onderliggend aan 'n kapitaalwinsbelasting sal kan hanteer.

Met die doelwit om inligting oor die effek van 'n grondbelasting te bekom was dit nodig om die boerderysektor te simuleer. Om in hierdie behoefte te voorsien is statiese en dinamiese linieêre programmeringstegnieke gebruik. Verskillende gebiede is vir data-insameling en analise geïdentifiseer. Gevallestudies is gekies wat verteenwoordigend is van die Mpumalanga-area, die Groot Karoo-area, die Olifantsrivier-besproeiingskema, Potchefstroom-area, Bloemfontien-area en die Kwa-Zulu Natal-area. Verskeie scenarios is ontwikkel en die effek van grondbelasting teen verskillende koerse, verskillende belasting-basisse en verskillende aftrekbaarhiedskoerse van inkomstebelasting, kon gevolglik getoets word. Met hierdie resultate ter tafel was dit moontlik om sekere riglyne te verskaf in terme van die effek van 'n grondbelasting rakende verskillende implimentering-strategieë.

In terme van die kapitaalwinsbelasting is 'n omvattende literatuurstudie gedoen wat aangedui het dat kapitaalwinsbelasting spare en investering nadelig beïnvloed. Verder ontmoedig kapitaalwinsbelasting investering in risiko-draende beleggings soos wat in landbou die geval is. In die kapitaalwinsbelasting-analise word 'n gevallestudie ontleed ten einde die impak van grond- en kapitaalwinsbelasting ten opsigte van die terugbetaalvermoë uit te wys.

Indien 'n Suid-Afrikaanse grondbelasting ingestel sou word, sal dit lei tot 'n daling in die markwaardes van landbougrond en 'n gevolglike daling in solvabiliteit. 'n Grondbelasting sal ook lei tot 'n styging in oorhoofse kostes, hoër finansiële risiko, en die produksie van hoëropbrengs-gewasse (maar ook hoër risiko-gewasse). Die vraag na korttermyn-lenings sal ook toeneem. Die heffing van 'n kapitaalwinsbelasting tesame met grondbelasting sal lei tot 'n afname in die terugbetaalvermoë van 'n boerdery sowel as 'n daling in die sekuriteitswaarde van die grond onder bespreking. Die kombinasie van hierdie twee belastings sal die risiko van boerdery-ondernemings verhoog.

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CHAPTER 1

INTRODUCTION

Agriculture is not only one of man's oldest activities, it is also one of the most complexed and variegated, reflecting both the variety of soil and climatic conditions found throughout the world and the results of centuries of institutionalisation of basic life patterns. It is not surprising that agricultural tax systems mirror this complexity...

- Bird (1974)

1.1 Introduction

World-wide, taxes have always been a source of heated political debate (Mankiw, 1998). In 1776 the anger of the American colonies over British taxes fuelled the American Revolution. More than two centuries later Ronald Reagan was elected president on a platform of large cuts in personal income taxes, and during his eight years in the White House, the top tax rate on income fell from 70% to 28% (Mankiw, 1998). In 1992, Bill Clinton was elected in part because incumbent George Bush had broken his 1988 campaign promise, "Read my lips: no new taxes" (Mankiw, 1998). The controversy and emotional outcries in terms of a possible South African land tax and capital gains tax is therefore nothing unique. No citizen in any country likes a new tax, although acceptance has proofed to be better when additional tangible benefits arise from the imposition of the concerned tax.

Logically, taxes are necessary since no state can function properly without the required funds. Funding must be obtained to perform collective functions including various products and services that are provided to the advantage of the nation as a whole. Adam Smith argued that taxes are the payment to the state for providing the necessary protection and opportunities to generate income. Taxes are therefore levied and are justified through the goods and services provided by government. State revenue is, however, not

exclusively used for collective goods, but policy objectives represent an integral part of the majority government's functions and objectives (Theron, 1994). Take for instance the Land Reform Programme or the Redistribution and Development Programme (RDP) of South Africa. This kind of policy programmes usually entails changes associated with shifts in political and economic policies that necessitate increased state expenditure. According to Theron (1994), such increases are usually in accordance to a development plan which central government sets as a fiscal objective. Common maths dictates that increased state expenditure must be equal to increased government revenue or alternately, a reallocation of current funds. If the reallocation of funds is not sufficient, the financing of government revenue can occur primarily in four ways (Theron, 1994):

- The printing of more money;
- An increase in the price of collective services;
- An increase in foreign liabilities; and
- Tax increases or the imposition of new taxes.

Each of these options, however, has its own implications. Printing new money has a pressure effect on the inflation rate, whilst an increase in the price for collective services and products is problematic in the sense that it is not always easy to attach a value to services like national defence and the enforcement of law and order (Theron, 1994). A huge outflow of domestic funds, due to interest payments on large foreign loans slows down economic growth, influencing the exchange rate negatively and thereby limiting the extent to which this source can be utilised. Consequently, all boils down to taxation. Taxation serves as the local and main source of state revenue and usually comprises the largest part of government income.

Toye (1978) regards a country's tax system as one of the most powerful levers available to governments to move their economies from their present, by definition unwanted states, to the distinctly happier positions that invariably characterises the final year of a development plan. The link between taxation and economic development is therefore the link between a universally desired end and a form of government action which is widely believed to be a means to the end (Toye, 1978). South Africa is no different and since 1984, the tax system has been under intensive investigation with the aim of

possibly transforming it. It became clear that government exploited different scenario's in terms of taxation, fiscal policy and state expenditures. This tax transformation process, however, gained speed after the ANC became the majority government. Many new policies and financial instruments were implemented, whilst various instruments are being considered for implementation. Counting under these new instruments is the proposed land tax as well as the capital gains tax. It is clear that the government of the day aims at changing the social, institutional and agricultural systems to eventually move away from the former regime's approach. The possibility of these monetary instruments and their possible impact on the agricultural sector, elicited extensive debate in the press, in Parliament, at conferences and in academic research (Franzsen and Heyns, 1992; Theron, 1994; Van Schalkwyk *et al*, 1994; Franzsen, 1995; Van Schalkwyk, 1995; Dannhauser *et al*, 1997).

Depending on the type of tax and the commodity or service being taxed, taxes always have a certain effect on prices, quantities produced, quantities sold, profit margins, investments, savings, and so forth (Mankiw, 1998). The demand and supply elasticities on its turn determine whether the producer or the consumer bears the largest part of the tax burden. Taxes, however, has a negative effect on the growth and performance of the economy due to their social costs. These effects are usually referred to as the welfare effects of the tax. It is therefore essential to determine the welfare effects of a tax prior to introduction, since the tax incidence usually presents some indication of the economic effects of the tax as well as an indication of which part of the economy will bear the largest economic burden or distortion.

Land taxation has enjoyed a distinguished history in the theoretical literature since Ricardo, especially in terms of developing countries. Newberry and Stern (1987), have no "doubt" regarding the efficiency of land tax, and according to Lewis (1984) it is the likely impact of the land tax in increasing the marketing of farmland that explains its appeal to many economists. It is therefore paradoxical that the use of land tax has eroded so rapidly during the past several decades. In 1940 the percentage contribution of agricultural land taxation to central government tax revenue constituted 23% in Egypt, 19% in India and 5% in Chile (Bird, 1974). In 1987 no country in this group collected more than 1% of central government revenue (Strasma, *et al*, 1987). When governments have a choice they have been inclined to favour strengthening of income

tax or an extension of indirect taxes over an increase in land taxes (Skinner, 1991). According to Skinner (1991), the best potential application of land tax is its use at a local government level as a source of income for development within the specific region.

The history of capital gains tax, on the other hand, points toward developed economies where a well-developed tax administration already exists. This instrument is usually found in economies with a sophisticated financial system and the main objective is to curb income tax evasion. In response to an OECD questionnaire, the main reason given by countries for adopting a capital gains tax was what was usually described as 'fiscal equity': such gains constituted an accretion of economic spending power and horizontal equity required that it be taken into the tax reckoning (Sandford, 1992). Widening the tax base, limiting income tax avoidance, improving vertical equity were other reasons given, and France saw it as a way of providing additional data on capital ownership to check avoidance and evasion of inheritance tax and gift duties (Sandford, 1992). According to Sandford (1992), the Netherlands rejected a comprehensive CGT because of high administrative costs in relation to revenue, technical complications and bad economic and financial effects. Utt (1992) warns that a too high capital gains tax discourages investments, saving and entrepreneurial risk-taking. With these, no country will be able to retain its competitive advantage internationally. Although the current South African implementation strategy seems to be aiming more on the corporate entities, the agricultural sector will certainly be impacted by a CGT.

To date very little quantitative research has been done regarding the impact that land tax and capital gains tax will have on the agricultural sector. International experience indicates that, where land taxes were introduced, these taxes were introduced at low rates and often integrated with (other) land reform instruments, making it impossible to ascertain to what extent these taxes were indeed successful in attaining the professed non-fiscal goals. In terms of capital gains taxes, Utt (1992) states that the precise design and implementation of CGT remains a controversial issue around the globe. He points to the frequent changes in the USA regarding the CGT rate – implying that an optimum rate could not really be found. Although the experience of other countries provide some guidelines in terms of the introduction of a South African capital gains tax as well as

land tax, only empirical research will ascertain what the impact of these instruments will be.

1.2 The research problem

In the foregoing discussion, it became clear that there are still many uncertainties regarding the impact of land and capital gains taxation on agriculture. Although the contribution of agriculture to the GDP has declined to between 3% and 5%, Faux (1990) mentions that the relative small contribution of agriculture to the GDP tends to conceal the sector's true contribution in terms of factors such as food supply and employment opportunities. This only emphasises the necessity of careful investigation as prerequisite before the employment of new tax instruments. The implementation of additional tax instruments will influence a sector's long-term sustainability, competitiveness and the amount of investment it attracts. This study will therefore focus on the direct and indirect effects of these two tax instruments. It can be seen as an attempt to quantify the effects of land tax and capital gains in terms of the impact it will have on the agricultural sector.

1.3 Motivation

Agricultural policy parameters are complex and interrelated with the characteristics of agriculture as well as the legal, socio-economic, political, social, market and consumer environment. This complexity evidently results in conflicting objectives in agricultural policies and it is apparently easier for policy formulators to follow a partial approach, based on pressure group protection, than attempting a holistic approach to minimize conflict. However, the current economic, social and political climates in South Africa necessitate a realistic and viable holistic approach to agricultural policy. The agricultural industry is an important activity in South Africa and should play a major role in any future economic growth. It is therefore important to take a closer look at the proposed land tax and capital gains especially when the concerns mentioned above are taken into account.

1.5 Research methodology

The first part of this study encompasses the construction of static and dynamic linear programming models. These models portrayed the necessary characteristics in terms of modelling a typical farming situation with rational decision-making as benchmark. Theoretically various tools and techniques were capable of analysing the efficient utilisation and allocation of scarce resources, but linear programming presented the best option. Linear programming is essentially a mathematical technique for solving a problem that has certain characteristics. The procedure is applicable to almost any resource allocation problem faced by the farm manager and the procedure can handle more complex problems than budgeting or marginal analysis.

As mentioned two different types of approaches, namely dynamic and static were followed. The dynamic approach indicates the effect of land tax over a longer term, whilst the static approach indicates the effect of a land tax only over a one-year period. Details regarding the different approaches are comprehensively described in the relevant chapters of this study.

In terms of the impact of land and capital gains taxation on security based lending, a spreadsheet model was used. In essence the methodology encompasses that all cash flows over a 20-year period are discounted to present values and then aggregated to determine the 20-year repaymentability of the concerned farm.

1.6 Data used

Regarding the linear programming models representative data for the different areas had to be obtained. This process involved an approach where different areas had to be identified for inclusion into the models. Selection criteria was constructed with the aim of including all the different farming environments currently pertaining to South Africa. Data relating to the different enterprise budgets in the different areas were obtained from the Directorate of Agricultural Economics (1995) for the different provinces. Where these sources were incomplete farmers' associations and agricultural extension officers were interviewed. Surface areas of each region were obtained from the Central Statistical Service (1988).

1.7 Outline of the study

Chapter 2 presents a literature review on land tax as well as capital gains taxation. The chapter dilates on the history of these two instruments, the economic impact as well as international experience relating to their introduction in other economies. **Chapter 3** contains a description of the static linear programming methodology and continues with the research results in terms of the short-term effects of land taxation. In **Chapter 4** the dynamic linear programming methodology is described after which the research results relating to the longer term effects of land taxation are presented. **Chapter 5** includes a description of the lending criteria which commercial banks are currently following. The chapter continues with the modelling of a case study followed by the research results in terms of the effect land and capital gains tax has on the repaymentability of a typical farm in the Free State. The impact on the security value of farmland is also indicated. **Chapter 6** concludes the study and presents all the conclusions and recommendation evolving from this study.

CHAPTER 2

BACKGROUND AND LITERATURE REVIEW

"...though the land tax should be punitive, its purpose should be to act as a spur to development and not primarily to drive the owner from his holding for there is no sense in substituting underdevelopment by no development at all".

- *Montanaro (1967)*

2.1 Introduction

Tax systems are complicated and different tax instruments are applied to steer an economy in the desired direction. It is therefore essential that the implementation of new instruments be evaluated, not in isolation, but rather by taking account of the different economic effects that might eventually arise after implementation. The interaction between different tax instruments with each other as well as within a sector's economy should also be duly noted. Neglecting to carefully investigate a specific instrument and its interactivity might eventually lead to a situation where the side effects ultimately overshadow the initial objectives. Cognisance should be taken that taxes have a definite impact on the bottom line of a farming operation. It is therefore essential that the impact of the new tax instruments be determined and these results be integrated into the decision process. Only then will it be possible to determine whether the proposed instruments would serve their objectives. Implementing additional taxes could lead to a too large tax burden on a specific sector (i.e. agriculture) thereby effectively nationalising much of the concerned sector's profits. Participants in the sector would then rather cut their losses and move to a sector where an adequate return on investment can still be realised. Incorrect tax policy can thus destroy an economic sector, implying devastating distortive effects.

Given the above, the objective of this chapter is to first provide the reader with a background on the evaluation criteria for taxes as well as the welfare effects of taxes. The deregulation process of South African agriculture will also be discussed. This is followed by a discussion on the tax instruments currently operational in agriculture. The chapter continues with a description and literature review of both land taxation and capital gains tax. However, in keeping this part of the chapter's layout uncomplicated, it was decided to subdivide it into different sections. Each of these sections will handle either the characteristics or impacts of land taxation, or alternatively the same aspects regarding capital gains taxation. The first section focuses on land taxation and commences with a description of the historical origin of land tax in South Africa. The discussion is followed by a brief summary of the deliberations of the Land Tax Subcommittee, after which an in depth literature study on the possible effects of land tax is presented. Determinants such as the land tax rate, the land tax base, administrative issues and the cost of land tax to the landowner receive profound attention. The next section focuses on the origin and history of capital gains tax in South Africa and continues with a description of the proposed implementation strategy. The last part of this section presents a literature review on capital gains tax and focuses on the possible effects in terms of capital expenditures, farmland values and various other effects. International literature and experience receive adequate reference. The last section completes the chapter and gives a short summary of the main arguments.

2.2 Background

Before reporting on the characteristics and possible impacts of land and capital gains tax, it is considered necessary to commence with a brief discussion of the deregulation of South African agriculture, a background on the international evaluation criteria for tax instruments, as well as the welfare effects of taxation. These discussions will supply the reader with some background in terms of evaluating taxes and will provide some idea of the currently deregulated agricultural operating arena.

2.2.1 The deregulation of South African Agriculture

South African Agriculture has emerged from decades of state regulation and intervention. Agricultural participants actually operated in an artificially safe

environment and were protected against all onslaughts from international economies, received subsidies or price support when prices decreased or in drought periods, enjoyed preferential tax treatment and numerous other benefits supplied by the state. However, the proclamation of the Marketing of Agricultural Products Act of 1996 introduced the deregulation process and the past safe environment transformed, amongst other, through the removal of all market regulating structures, the elimination of state subsidies, withdrawal of the diesel rebate, major changes in agricultural policy and the opening up of South African borders for subsidised international competitors. Deregulation and state support decreased to such an extent that South African agriculture is today one of the least state supported sectors in the world. Although some farmers/agri-businesses were phased out through the above process, the majority of farmers received the message of "adapt or die" and had to rise to the challenge.

Relative to the history of adaptation in past and international agriculture, the prevailing South African agricultural sector adapted at a commendable speed, since negligence in this regard would imply bankruptcy. Free market structures were erected to take over some of the functions of the past marketing boards with one of the first major successes, the establishment of the Agricultural Markets Division at SAFEX (South African Future Exchange). This structure primarily acts as a price generator for the major grain products and also provides farmers with instruments to hedge the risk of volatile free market prices.

The threat of unfavourable legislation regarding co-ops caused another stir in the market and co-ops started to transform into companies. Although the previous co-op system portrayed high cost structures and inefficiencies, the transformation process caused further deterioration regarding support on the producers' side. This situation is mainly due to the fact that the co-op was actually in a partnership with the farmer, whereas companies are profit driven. In terms of agricultural policy, it soon became apparent that the focus has shifted from the commercial farmer to subsistence and emerging farmers. Although it is a fact that these areas needed support, it seemed as if the commercial farmer was forgotten and had to survive on his own.

Although brief, the above discussion indicates that South African agriculture is currently operating in a free market system where price is determined through demand

and supply factors. To a large degree, state support now belongs to our history and given South Africa's open border policy, producers have to focus on effective farming since they are to compete on an international basis with other subsidised producers. The deregulation process and withdrawal of state support left a path of exposed industries that suddenly lost their guardian. Although several processes through which the sector tried to restructure typified the past few years, the state's withdrawal has shifted various risk-bearing factors back to the farmers. Introducing additional taxes on the agricultural sector will increase the inherent risk even further and can in effect tax away the South African farmer's competitiveness.

2.2.2 The evaluation of taxes

Government can tax virtually anything it chooses. However, the objective should be to develop taxes and tax systems that serve the broad needs of society in an efficient, fair and impartial way (Stallman & Jones 1997). Globally several attributes of taxes are widely accepted as criteria for evaluating the impacts of taxes on society and the economy (Stiglitz, 1986). According to Stiglitz (1986), these attributes include the following:

- **Economic efficiency:** An efficient tax system does not interfere with the efficient allocation of resources and consumer choices. Generally a broad based tax causes fewer inefficiencies than a tax with a narrow base (Stallman & Jones, 1997).
- **Competitiveness:** A competitive tax system does not negatively affect the ability of firms within a country to compete with those outside the country, nor the ability of the country to attract new business.
- **Administrative simplicity:** A simple tax system is easy for the taxpayer to understand and relatively easy and inexpensive for the taxpayer and public sector to administer.
- **Adequacy:** An adequate tax system is able to generate sufficient funds to meet public needs as the economy grows and declines. For example, as population and demand increases the tax base will grow sufficiently for revenue to meet public demands.

- **Fairness and equity:** This attribute asks whether the tax system is fair in its relative treatment of different individuals. That is, the tax system bears equally on people in similar circumstances (horizontal equity) and differentiates between people in dissimilar circumstances (vertical equity). In this regard Stallman & Jones (1997), mentions two ways to compare the circumstances of taxpayers and whether the tax system treats them fairly – by the benefits they receive or ability to pay. Which of the two characteristics of taxpayers – benefits received or ability to pay – is appropriate for evaluating the equity of a given tax is a matter of public opinion and the political process.

Stallman & Jones (1997), however, recognises that no tax can be ideal with respect to all these criteria and consequently, selecting taxes and designing a tax system for state and local revenues remains a process of trade-offs and compromises. In a South African context these attributes are just as applicable as it is on a global level. The reader is therefore urged to keep the above in mind when reading this chapter, since frequent references will be made to these criteria.

2.2.3 The welfare effects of taxes

The effects of a tax on welfare might at first seem obvious. Government enacts taxes to raise revenue, but that revenue must be generated by the taxpayer (Mankiw, 1998). From welfare economics it is known that when a tax is levied, both buyers and producers/sellers are worse off than before the tax. The burden of the tax (so-called tax incidence) is distributed between the buyer and the seller of the commodity, whilst supply and demand elasticities depict the weight of the burden on the two market participants (Mankiw, 1998). If supply is more inelastic, the seller of the commodity will bear the larger part of the tax burden, whilst the contrast is true for an inelastic demand curve. There is however, another cost also associated with taxation namely the deadweight loss or social cost of the tax. Deadweight losses arise when some kind of external economic instrument causes the price of a commodity or service to change from its equilibrium price.

For instance, take value-added tax (VAT). When consumers want to buy some kind of commodity or service, they place a certain value on it, which is equal or lower than the utility they receive from it (Mankiw, 1998). If their assessment of how much these goods or services are worth to them exceeds the price asked for the goods or service, they buy it and there are gains from trade (Mankiw, 1998). When the VAT rate causes the required goods or service's price to rise above the value the consumer places on the goods or service, no transaction takes place and there are no gains from trade for either the consumer nor the seller (Mankiw, 1998). Figure 2.1 provides a graphic presentation of deadweight losses.

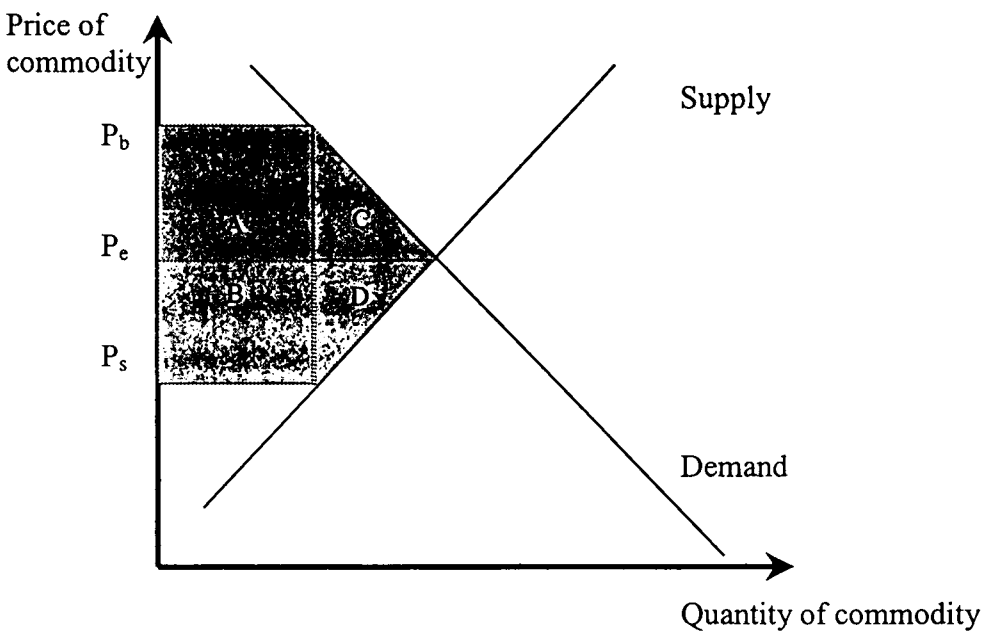


Figure 2.1: The welfare effects of taxes
Source: Adapted from Mankiw (1998).

In Figure 2.1 P_e presents the equilibrium price determined by supply and demand. As soon as the value-added tax is levied P_b presents the price buyers have to pay for the goods or service, whilst P_s presents the price sellers receive. A + B presents the tax revenue government receives. The tax furthermore reduces the consumer surplus (by the area A + C) and producer surplus (by area B + D) (Mankiw, 1998). However, the fall in producer and consumer surplus exceeds the tax revenue (A + B). The social cost of the tax is therefore presented by C + D. As mentioned the supply and demand elasticities of the goods or services determines on which party the burden of the tax

falls more heavily. In the case as presented in Figure 2.1, the supply and demand elasticities are more or less the same. This implies that the buyers and sellers more or less share the tax burden in equal quantities. However, the agricultural and industrial economy does not always portray perfect elasticities implying that the tax burden will not always be equally distributed between the buyers and sellers.

2.2.3.1 Incidence of a land tax

George's proposal to tax land was motivated largely by a concern over the distribution of economic well-being. He deplored the "shocking contrast between monstrous wealth and debasing want" and thought landowners benefited more than they should from the rapid growth in the overall economy (Mankiw, 1998). George's arguments for the land tax can be understood using tools of modern economics. Consider supply and demand in the market for renting land. As immigration and growth causes the population to rise and technological progress causes incomes to grow, the demand for land increases over time (Mankiw, 1998). Yet, since the demand for land is fixed, the supply is perfectly inelastic. Rapid increases in demand together with inelastic supply lead to large increases in the equilibrium rents on land, so that economic rent makes rich landowners even richer (Mankiw, 1998).

Looking at the incidence of a land tax, one finds that the tax burden falls more heavily on the side of the market that is less elastic. Land taxation takes this principle to an extreme. Since the elasticity of supply is zero, the landowners bear the entire burden of the land tax (Mankiw, 1998). Looking at the social costs of land tax, a unique phenomenon arises. In Figure 2.1, area C + D represents the deadweight loss of an output tax (i.e. VAT). What happens if supply is perfectly inelastic? In the case of land tax, as portrayed in Figure 2.2, the supply of land is perfectly inelastic. To elaborate, the amount of land in a specific country is always fixed and cannot be increased. In terms of social costs, land tax therefore portrays a different picture. Figure 2.2 presents graphical evidence that, given perfect inelastic supply of land, there is no social cost when a tax on land is raised.

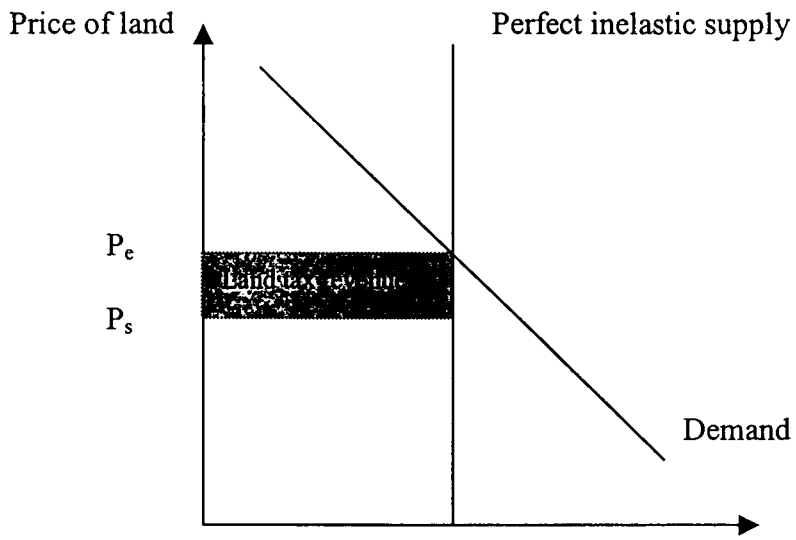


Figure 2.2: The social costs of land tax

In Figure 2.2, P_e presents the equilibrium price of land as determined by supply and demand. Before the introduction of the land tax, P_e presented the equilibrium price of land. However, as soon as the land tax is introduced the price of land decreases to the level P_s. The shaded area in its turn presents the revenue government collects from the land tax and is exactly equal to the tax expense of the landowner. A land tax therefore has no deadweight loss. Theoretically, this argument is correct, but in 1995, Van Schalkwyk indicated that the market value of the land actually decreases by more than the tax amount. Furthermore, although Mankiw (1998), states that the supply of agricultural land is perfectly inelastic, one should bear in mind that the function of land can change (Renne, 1947). Take for instance land adjacent to large cities or land vending itself for nature conservation and tourism. In these cases land tax, depending on the severity of the tax, might force farmers to utilise their land for higher income purposes thereby moving away from agricultural production. In these scenarios the supply of land for agricultural purposes is thus not perfectly inelastic and will the amount of land for agricultural purposes decline due to the imposition of land tax. However, the amount of land vending itself for other purposes than agricultural production is limited, implying a small influence on the elasticity. On the other hand, the intensity of land taxation might force the farmer to exploit agricultural enterprises where larger profits can be realised. This situation might then lead thereto that the

concerned land use patterns change, implying distortive effects in a free market environment.

Nevertheless, in the above cases, land tax will have a social cost since the perfect inelasticity will be influenced, although to a limited degree. Furthermore, one should bear in mind that social costs is not the only determinant of the efficiency of a tax, but factors such as administrative ease and equity have a definite effect as well.

2.2.3.2 Incidence of a capital gains tax

According to Bracewell-Milnes (1992), the incidence of capital gains tax on gains that merely keep track with the fall in the value of money is a tax on the combination of ownership, realisation and inflation. He states that it is widely perceived that the tax base is both inequitable and economic nonsense. According to Moore & Silvia (1995), every new analysis in the United States seems to provide a different answer in terms of the tax incidence of capital gains taxes. Given the fact that a large share of consumers is excluded from the tax base of a CGT, the burden of the tax is usually on the financially stronger part of the economy and it is not easily shifted (Moore & Silvia, 1995). Another interesting point is the so-called "bunching problem". This refers to the situation where, for instance, a farmer sells his farm due to financial hardship. Suddenly his taxable income for the concerned year is much higher than average and a significant part of the capital income must then be paid to the Receiver. In effect, the capital gains tax therefore does not keep track of the farmer's actual ability to pay since the taxable income during the year of disposing of the asset, is much higher than his/her long-term average taxable income. Gird (1995), argues that in certain cases the incidence of capital gains tax, actually falls more heavily on the poorer side of economy, since the wealthier taxpayer can avoid capital transactions and just let the gains accrue without realising it.

2.3 Current taxes on agriculture in South Africa

This section provides the reader with a review of the different taxes currently being applied in agriculture. Except for income tax there are many other taxes applicable to

agriculture. The South African agricultural sector is currently mainly characterised by the following taxes:

- Value added tax
- Donations tax and Estate duty
- Regional Services Council levies
- Customs and excise duty
- Fuel levies
- Water levies
- Income tax

Each of the different taxes has its own effects and will be discussed in detail.

- **Value added tax**

On 30 September 1991, general sales tax (GST) was replaced with value added tax (VAT) (Theron, 1994). In terms of a VAT system, every registered vendor in the full production and distribution chain levies VAT on taxable supplies of goods and services made to the enterprise. Vendors can claim back the input taxes they paid (Value Added Tax Act 89 of 1991). At present, the VAT rate amounts to 14%. There are however certain products that are exempted from the tax base whilst others are taxed at a zero rate. Many agricultural products i.e. grains, milk, etc. are taxed at a zero rate. Livestock however, was exempted for a while, but VAT is today again levied on livestock transactions. In effect for non-livestock farmers, VAT does not have a significant effect. The reason is that due to the zero-rate applicable to most farming outputs and the fact that VAT paid on inputs can be claimed back, this instrument no longer has a significant impact on most of the agricultural activities, except for livestock farming.

- **Donations tax and estate duty**

Donations are taxed in an attempt to curb avoidance of income tax and estate duty (Theron, 1994). Donations tax is levied on the transfer of capital during the donor's lifetime (Income Tax Act 59 of 1962) and amounts to 25% of the value of the donation

(Divaris & Stein, 1998). Estate duty on the other hand is levied on the taxable amount of the estate of each person who dies. However, only estates with a net value of more than R1 million are liable to estate duty at a uniform rate of 25% (Divaris & Stein, 1998). An interesting point worth mentioning here is that the proposed CGT legislation provides that all the assets of a deceased person will be deemed as if disposed of and CGT will then be calculated on the assessed capital gains. Therefore, even when the deceased's estate is not worth more than R1 million, CGT remains applicable.

- **Regional Services Council levies**

The Regional Services Councils Act 109 of 1985 introduced two levies payable to the Regional Services Councils (Katz, 1995). In broad terms one of the levies, the Regional Services Levy, was introduced as a levy on remuneration paid or payable by an employer to his employees and in the case of the self-employed, on his or her drawings from the enterprise or partnership (Katz, 1995). The other levy, a Regional Establishment levy, was imposed on the turnover of the enterprise. In terms of the Income Tax Act these levies are deductible from income tax.

- **Customs and excise duties**

Customs duties are levied at an ad valorem rate or as a fixed amount per item. The function of these duties is mainly to protect local producers from foreign competition. Excise duties on the other hand is mainly used as a revenue source for the fiscus. In terms of this study these instruments have its effect in terms of the levies on diesel fuel (excise duties) and on imported capital goods (i.e. customs payable on imported tractors or parts thereof, certain intermediary chemicals, etc.).

- **Fuel levies**

Fuel levies constitutes a significant amount of the total fuel price. Table 2.1 presents evidence of the numerous fuel price hikes since May 1999.

Table 2.1: History of price changes – May 1999 till January 2001 (SA c/litre)

Effective date:	Petrol		Diesel		Paraffin	
	Gauteng	Coast	Gauteng	Coast	Gauteng	Coast
5 May 1999	256,00	245,00	209,10	197,90	129,23	114,63
2 June 1999	268,00	257,00	214,10	202,90	136,23	121,63
7 July 1999	268,00	257,00	213,10	201,90	135,23	120,63
4 Aug 1999	269,00	258,00	215,25	204,05	139,23	124,63
1 Sept 1999	282,00	271,00	226,25	215,05	153,23	138,63
6 Oct 1999	290,00	279,00	233,25	222,05	160,23	145,63
3 Nov 1999	291,00	280,00	239,75	228,55	163,73	149,13
1 Dec 1999	290,00	279,00	241,75	230,55	165,73	151,13
5 Jan 2000	292,00	281,00	246,75	235,55	171,73	157,13
2 Feb 2000	286,00	275,00	242,75	231,55	177,73	163,13
1 March 2000	295,00	284,00	252,75	241,55	191,73	177,13
5 April 2000	322,00	311,00	277,75	266,55	207,53	191,13
3 May 2000	323,00	312,00	277,75	266,55	204,53	188,13
7 June 2000	331,00	320,00	271,75	260,55	200,53	184,13
5 July 2000	351,00	340,00	279,75	268,55	204,53	188,13
2 Aug 2000	360,00	349,00	292,75	281,55	217,53	201,13
6 Sept 2000	366,00	355,00	307,75	296,55	231,53	215,13
4 Oct 2000	372,00	361,00	344,75	333,55	266,53	250,13
1 Nov 2000	374,00	363,00	356,75	345,55	290,53	274,13
6 Dec 2000	372,00	361,00	347,95	336,75	289,73	273,33
3 Jan 2001	362,00	351,00	328,95	317,75	267,73	251,33

Source: Caltex, 2001

Going back to 1995, a liter of diesel amounted to R1,57 per liter. Today, a liter of diesel amounts to R3,29 per liter (wholesale price) – an increase of almost 48%.

Except for the effect of the exchange rate on the price of raw oil, government is levying various taxes on fuel. Referring to Table 2.2, the current fuel levies amount to 95,6 cents per liter of leaded petrol (26% of total cost per liter), 89,4 cents per liter of unleaded petrol (24,7% of total cost per liter) and 79,1 cents per liter of diesel (24% of total wholesale cost per liter) (Caltex, 2001). Three other levies on the same tax base include:

- The Road Accident Fund contribution (14,5 cents per liter for petrol and 10,3 cents per liter for diesel);
- The Equalisation Fund contribution (currently only levied on unleaded petrol – 3 cents per liter)
- The customs and excise charge of 4 cents per liter for both petrol and diesel.

Consolidated, the total levies amount to 114,1 cents per liter for leaded petrol (31,5% of total cost per liter), 110,9 cents for unleaded petrol (30,6% of total cost per liter) and 93,4 cents for diesel (28,4% of total wholesale cost per liter).

Table 2.2: Gauteng Composition of fuel prices for the period 3 Jan 2001 till 6 Feb 2001 (SA cents/litre)

	Petrol 93 Unleaded	Petrol 93 Leaded	Diesel	Paraffin
Wholesale Margin	18,788	18,788	18,780	18,992
Storage, handling & delivery costs	5,100	5,100	5,100	5,100
Distribution costs	-	-	-	8,000
Dealers Margin	26,500	26,500	-	-
Zone Differential in Gauteng	11,300	11,300	11,300	16,600
Slate Levy	8,000	8,000	8,000	8,000
Equalisation Fund Levy	3,000	-	-	-
IP Marker Levy	-	-	0,150	-
Fuel Levy	89,400	95,600	79,100	-
Customs & Excise Duty	4,000	4,000	4,000	-
Road Accident Fund Levy	14,500	14,500	10,300	-
Subtotal	180,588	183,788	136,730	56,692
Contribution to the basic fuel price (IBLC)	181,412	178,212	192,220	211,038
Retail Price	362,000	362,000		
Wholesale Price			328,950	267,730

Source: Caltex SA (2001)

For any agriculturist, the above levies present a significant tax burden on an already high fuel price. Cognisance should be taken that farmers, similar to other consumers, also have petrol expenses for private travelling. The fuel prices and levies therefore impact on both their production expenses as well as their household expenses. During 2000, the diesel rebate (93,4 cents per liter) was re-instituted for the fishery enterprises. Government responded to their outcry regarding the fact that they do not use roads. However, the same situation applies in agriculture and consequently more pressure is put on government to re-institute the agricultural rebate as well. According to Standard Bank (2000a), only 8% of a farmer's total diesel account are used on public roads. 92% is therefore consumed within the boundaries of the farm, but a consolidated levy of 93,4 cents must still be paid without any benefits. The benefit principle therefore does not seem to be effectively applied in this situation.

- **New Water Act**

The new Water Act (Act no 36 of 1998) identified the problems of its predecessor and involves an approach where sustainability, efficiency and equality feature prominently. The act distinguishes on the one hand between water for basic human needs together with water needed for ecological sustainability (the so-called Reserve), and on the other hand, water used commercially i.e. irrigation, electricity supply, industrial uses, waste, etc. While the reserve provides a guaranteed resource for basic human needs, all other users are subject to licensing, in order to effectively control who uses what. The intention is not to decrease water rights or to deprive users of water rights, but to ensure optimal control for purposes of effective resource utilisation. However, the new water management system will probably be more expensive than its predecessor in terms of administrative costs. Furthermore, the priority allocation of water to the "Reserve" together with preferential treatment of historically disadvantaged cictizens, will probably have an increasing effect on the price of water for the commercial farmer.

- **Income tax**

As the name indicates, income tax is levied on the income of the liable person. A major disadvantage however, is that income tax is in effect a contra-productive tax. The reason is that the more productive the taxpayer becomes, the more tax is payable. According to Strasma *et al* (1987) an income tax is in effect also an indirect land tax. The explanation being that the income is directly sourced from the productive use of the land and thus in effect constitutes an indirect land tax.

Thus far the South African agricultural sector has been politically very sensitive to taxation policy and, in the case of income tax, is often advantaged over other sectors (Theron, 1994). To report on the way the agricultural sector is taxed, the Income Tax Act 58 of 1962 will be briefly discussed. According to Theron (1994), the most important benefits that agriculture enjoys over the non-agricultural sector are the following:

➢ **Assessment of livestock**

According to the Income Tax Act 58 of 1962, taxpayers must make an assessment of trading stock held and not disposed of at the end of the year of assessment, the so-called closing stock. The value hereby determined is included in the income received or accrued during the year under question. In the subsequent financial year, the same value is allowed as deduction for the determination of the value of opening stock. In terms of farmers, trading stock is usually composed of livestock and products. In contrast to the non-agricultural sector, traded stock is valued at predetermined standard values that does not reflect the true value or cost of the traded stock being valued. To provide the reader with some understanding of the standard value concept, examples of the standard values for cattle are presented below.

- ✓ Bulls R50
- ✓ Oxen R40
- ✓ Cows R40

➢ **Farm capital expenditure**

In principle capital expenditures are left out of the account when a person's taxable income is calculated. Farmers, however, are allowed to deduct certain capital costs incurred in the development of farming activities. Before 1 July 1988, farmers were permitted to fully deduct the capital cost of machinery, tools, implements, or articles used for farming in one year. According to Lamont (1990), the treasury lost R117 million in the 1983/84 tax year due to the immediate write-off of capital expenditure. However, in some cases this tax break had a negative effect - farmers purchased too many capital goods and ended up with cashflow problems. Since 1 July 1988 the write-off period was extended to three years with a 50%, 30%, and 20% write-off for year one, two, and three respectively.

- **Income distribution and equalisation**

  Given the fact that farming income is directly related to the weather and market conditions, income varies from year to year. In view of this, farmers are allowed to spread their tax liability over a number of years if exceptional income is obtained or taxed according to average rates, so-called general equalisation (Margo Report, 1987). Provision for general equalisation was made for the first time in 1968 (Lamont, 1990). In terms hereof a farmer can choose to pay tax according to the rate based on the average income for the preceding four years (Cronje & Stack, 1993). In 1980, the Income Tax Act was amended and since then tax payable is calculated according to the ordinary tax rates or on the basis of equalisation, whichever rate is the lowest.

The Income Tax Act provides for a few other measures specifically designed to aid farmers during harsh farming conditions or to assist them in managing their tax payments and cash flows. These include exemptions from taxing the disposal of livestock on account of drought, special treatment in the event of fires with regard to sugarcane farmers, special treatment for plantation farmers, averaging of taxable income, etc. Given the case specific application of these measures, a detailed description thereof falls beyond the boundaries of this study. The reader is referred to the Income Tax Act 58 of 1962 for a comprehensive description of these tax measures.

2.4 A South African land tax

The taxation of land is probably the oldest form of taxation. Censuses recording the names of property owners and conducting surveys of landholdings were carried out in Babylonia in 3800 B.C., and in Egypt and China around 3000 B.C., largely in order to establish a base for taxation (Bird, 1974). The collection of the economic rent of land for public purposes is therefore by no means new. In the economic field of study it emerged in the doctrines of the Physiocrats in France in the 18th century, and was taken into classical economics by Adam Smith, David Ricardo, and Mill (Land Value Taxation Campaign Committee (LVTCC), 1999). In fact, Ricardo expounded the (economic) law of rent. In the 19th century Henry George made his appearance. George was a nineteenth-century American economist and social philosopher. In his book

Progress and Poverty, George argued that the government should raise all its revenue from a tax on land (George, 1879). This "single tax" was, he claimed, both equitable and efficient. George's arguments won him a sizeable political following, and in 1886 he lost a close race for mayor of New York. Ricardo and George argued that land (unlike goods and services) has no cost of production. They pointed out that it is impossible for any human to produce land. If ample supply of land of equal desirability were available everywhere, there would be nothing to pay for its use. However, in reality, through economic and population growth, land acquired a scarcity value owing to the competing needs of the community for farming, living, working, and leisure space (LVTCC, 1999). This scarcity value eventually ended in the formation of farmland prices, which lead to a tax base for land taxation. In due time land taxation arose and became an important revenue source for both developed and developing countries. Some proponents therefore argue that land taxation represents the reward a landowner pays to the state or community in return for their economic participation in the formation of a value for land (LVTCC, 1999).

The satisfactory imposition of land tax is, however, complex due to the side effects, policy objectives, and important requirements that have to be evaluated prior to introduction. Referring to the evaluation criteria of taxes (section 2.2), many trade-offs have to be made in terms of equity versus administrative ease, income goals versus non-fiscal goals, international experience versus South African circumstances, and so forth.

Given the above, the objective of this section will be to provide the reader with an in-depth study on the history and origin of a South African land tax, a summary of the deliberations of the Land tax Subcommittee, as well as a thorough literature study of the arguments for and against a land tax. International experience will be integrated into the discussions.

2.4.1 Land related taxes in South Africa

Land has been an object for purposes of taxation from a very early stage in South Africa's history. An agricultural income tax payable in kind was levied by the Vereenigde Oost-Indische Compagnie (VOC) at the Cape of Good Hope as early as

1677 (Franzsen, 1990). According to Theron (1994), the economy of the former Republic of Natalia (established in 1839) was mainly dependent on agriculture and land taxation was therefore an important source of income. The first tax on agricultural land in the Republic of Natalia, was introduced in 1839 and a parliament decision on 14 April 1841 made provision for a progressive land tax. In the Orange Free State, taxes on the ownership and transfer of land constituted the largest portion of state income (Theron, 1994). According to Franzsen (1990), stamp duty on transfer deeds, a hut tax, land taxes and property taxes were levied in Transvaal. Landlords residing outside the Transvaal, whose properties were uninhabited, had to pay a double tax (Franzsen, 1990). After 1910, when the Union of South Africa was established, many of the taxes on agricultural land disappeared (Franzsen, 1990; Theron, 1994). Until recently, rural land in the Cape Province was included in the base of a Divisional Council levy, but when the Regional Services Councils became operative the Divisional Councils were abolished and with them the only recent form of land tax in South Africa (Franzsen, 1992).

2.4.2 The deliberations of the Land tax Subcommittee

Given the wide-spread and divergent views and arguments regarding land taxation, the Commission of Inquiry into Certain Aspects of the Tax Structure of South Africa (Katz Commission) decided to appoint a Subcommittee with the sole objective of investigating the possibility of land tax in South Africa. The Land tax Subcommittee's first meeting, chaired by Prof. Dennis Davis, was held on 24 May 1995 and an interim report was released at the end of 1995. In this report the Subcommittee stated that it believed further investigation was required to ascertain the merits of a local-level land tax, and that it was essential to ensure that, if implementation does take place, it takes place with a minimal set of distortionary effects (Katz, 1995). The Subcommittee stated that it believed that there was no reason in principle why a rural land tax should not be given serious consideration and reached two conclusions:

- A national level land tax that has as its primary target the taxation of agricultural land is not a viable option for South Africa.

- The weight of the evidence from South Africa and abroad is that a land tax has at best a negligible effect on a land reform programme.

However, they did state that sufficient evidence was gathered to suggest that a rural land tax, levied at local government level, might have merit in South Africa for the following reasons:

- Such a tax has the potential to raise much needed revenue for rural local authorities.

- A rural land tax levied at local government level will give greater fiscal autonomy to rural local authorities.

- A rural land tax will improve equity, as urban dwellers currently pay a tax on land. Urban dwellers see the benefits of rates, and therefore pay the tax and can the tax be described as a benefit tax.

The Subcommittee (1995) although supporting the above arguments, believed that further investigation was required to ascertain the merits of a local-level land tax. The following reasons were given for a further investigation.

- The issue of a rural land tax has entered the public debate in an emotive and often uninformed manner, and many of the main parties involved in rural areas have had limited opportunity to contribute to this debate. The Subcommittee believed that groups should be given a greater opportunity to express their views, as public acceptance of the tax was vital to its successful implementation.

- It is difficult to do justice to arguments for and against a rural land tax without due consideration of other taxes such as the existing Regional Services Councils (Joint Services Boards) levies and agricultural taxation in general.

- A number of policy initiatives are being planned at present whose outcome could materially affect the implementation of land tax. Uncertainty exists, for example, among rural dwellers concerning the level and types of physical and social

infrastructure services that will be provided to rural dwellers. This uncertainty will affect their willingness to accept new forms of taxation. The introduction of tradable water rights will also materially affect the valuation of land. It is not certain that a tax on rural land can be successfully introduced until more clarity has been gained on issues such as these.

The Subcommittee (1995) recommended that the following issues be investigated further:

- ✓ Whether the benefits of a local-level rural land tax will actually materialise.
- ✓ The proper role of the national and provincial governments.
- ✓ The contents of the framework within which the tax should be implemented.
- ✓ The optimal administration of a local-level rural land tax.
- ✓ The relationship between the tax and other revenues.
- ✓ The ways in which such a tax can be linked to urban local tax systems.

Eventually, the Subcommittee was allowed to carry on with its investigations and released a media statement in which it expressed its views concerning the implementation of a rural land tax.

Media statement no. 15

On 11 October 1996 the Land Tax Subcommittee released a media statement in Government Gazette No. 17496. Issues on which public response was requested centred mainly on the following:

- ✓ Which local government structure must levy land tax?
- ✓ Should market value or any other value be used?
- ✓ Should land tax be levied on site value or on improved value?
- ✓ Should rates be capped nationally?
- ✓ Should different rate-limits be established for different categories of property?
- ✓ Should a land tax be handled as a rebate, deduction or as a new tax?
- ✓ How should tribal land be valued and taxed?
- ✓ What should the relation be between a land tax and other taxes?

The media statement elicited large reaction from various circles. Conflicting views were expressed and the Subcommittee decided to invite some of the authors to present oral evidence of their views. This exercise only emphasised the divergent opinions.

2.4.3 Summary of submissions received by the Land tax Subcommittee

The Subcommittee received almost 300 submissions in response to their media statement. This section attempts to give a condensed overview of the main arguments raised.

2.4.3.1 Rural local governments

The majority of the respondents were of the opinion that local-level governments must levy and collect the land tax. The notion is that a land tax, if levied locally, should be used locally and should therefore be to the benefit of local taxpayers.

2.4.3.2 Definition of the tax base

The submissions strongly emphasised that the tax base must include all land in the Republic of South Africa. The argument was that if this was not the case it would not be in line with equity principles and the Charter of Human Rights, as included in the constitution. Furthermore, it was frequently pointed out that the agricultural sector was already heavily burdened by taxes and that the taxation of agricultural land would be unfair. Numerous farmers' societies strongly emphasised the fact that farmers do not receive most of the services that urban residents enjoy. Take for instance street lights, tar roads in urban areas, bus services, play parks for children, municipal swimming pools, refuge removal and general keeping clean of urban areas, , etc.

2.4.3.3 The land tax rate

The general opinion was that the land tax rate should be capped nationally and if not nationally, then provincially. Reasons offered are that some municipalities might misuse the land tax rate for other non-income goals. This will negatively influence the agricultural sector and consequently the national economy. Rates must, however, be high enough to defray administrative costs and generate a reasonable income.

2.4.3.4 Methods of the valuation of rural land

Most respondents felt that if a land tax were introduced, market values should not be used as the tax base. It was argued that market values do not reflect the real productive capacity of the land. Farmers stated that if market values were used, they would be taxed on unrealised capital profits and if they wanted to realise the profits, they will have to sell their property. It was furthermore alleged that the most significant problem with market value is that it fails to represent the production potential of the land. Farmers felt this to be unjust and that a land tax, if introduced, should be raised on the productive use value of the land.

2.4.3.5 The economic impact of a land tax

Supporters of a land tax are of the opinion that a land tax will not only generate revenue, but also inspire farmers to be more productive. Furthermore it will combat speculation with land. Regarding the economic impact of land tax, most respondents warned that the potential damaging effects of a land tax on the economy of South Africa must be seriously evaluated. Tax breaks that farmers receive on their income tax are currently investigated with the purpose of reducing it. The introduction of a land tax must consequently not be considered in isolation. The entire agricultural tax structure should rather be investigated. This would lead to a better perspective on a land tax. Many institutions, affected by a land tax, felt that a tax should not contribute to the fixed cost structure, but that it should rather be levied on the profits of an enterprise or mixture of enterprises. In this way the ability-to-pay principle is integrated into the tax system. This issue elicited much reaction and many farmers alleged that a land tax, since it holds no connection with income, could lead to bankruptcy on a large scale.

2.4.3.6 Redistribution potential of land tax

Neethling (1996), indicated to the Subcommittee that a land tax would cause more awareness to the public of the large amounts of under-utilised land. Of more importance, however, is the fact that the introduction of a land tax would cause land prices to drop. According to Neethling, more people would therefore be able to buy land. Neethling recommended that South Africa rather handle the land issue through

specific policy programmes that provides for meaningful redistribution of land. He doubted, however, that land tax would have any meaningful effect.

2.4.3.7 Administrative aspects of land tax

The statement that administration is the "Achilles heel" of land tax was often made. In many submissions the belief was expressed that the same amount of income could be obtained by the existing tax structure, but more effectively and at a lower cost. There was a general negative feeling towards the large amounts of outstanding taxes not yet collected. The opinion was also expressed that a new tax cannot be introduced before the administration of present taxes are improved.

2.4.3.8 Land tax and communal land

Taxing communal land is made difficult by the fact that formal ownership is not easily determined. However, the majority of the submissions were adamant that communal land should be included in the tax base if a land tax is to be introduced. The proposal is made that, where a formal owner of the land is absent, the tribal leader concerned should be held accountable for the land tax. He can then hold the members occupying the land responsible for their share of the tax.

2.4.3.9 Methods of enforcement

It was suggested that enforcement be applied by the same method that is presently used for urban property tax. It comprises by law that the land cannot be sold or transferred before all outstanding taxes are settled.

2.4.3.10 Alleviation measures

The seasonal nature of agriculture and the periodic droughts in South Africa, urge the provision of reductions, exemptions or the deferral of land taxation. The majority of the submissions supported the Subcommittee's opinion that no exemptions should be made. The role nature plays in agriculture and the associated risks are, however,

acknowledged. The view was that the local governments are best positioned to decide on reductions and deferrals.

2.4.3.11 Relation between land tax and income tax

The majority of the respondents were of the opinion that land tax should be deductible from income tax, just as Regional Services Council levies are. The treatment of land tax as a provisional income tax also received significant support.

2.4.3.12 Relation between land tax and other taxes

The most obvious overlap of a land tax is that with the RSC levies. Farmers currently pay RSC levies on their turnover and wages to their farm workers. The majority of the respondents felt that if a land tax were introduced, it should replace the RSC levies, since they already pay for the mentioned services (clinics, rural roads, etc.) through these levies.

2.4.3.13 Summary

Although brief, the above section presented evidence of the widespread and divergent views prominently expressed on the land tax issue. It is clear that activists for and against a land tax exist and strongly differ in opinion. It furthermore crystallised from the submissions that the public audience is still unsure of the definite impact of land tax, causing each lobbying group to fiercely protect its own interests.

2.4.4 Quantitative research commissioned by the Subcommittee

Given the uncertainty regarding the impact of land taxation, the Katz Commission mandated the Subcommittee to conduct a thorough investigation process. This situation lead thereto that the Universities of South Africa (Unisa), Free State and Stellenbosch was contracted to investigate the impact of a land tax on the agricultural sector as well as to investigate the administrative capacity and requirements regarding local governments and their tax systems. The research evolving from this process was integrated into the land tax Subcommittee's final report entitled: "The Implications of Introducing a Land Tax in South Africa". The Subcommittee eventually produced a consensus report to the Katz

Commission in September 1998. The Katz Commission accepted the Subcommittee's final report subject to certain exclusions. These exclusions will be discussed in the next section.

2.4.5 The Eighth Interim Report of the Commission of Enquiry into certain aspects of the Tax Structure of South Africa

On the 25th of September 1998, the Katz Commission submitted their eighth interim report to the President, entitled: "The Implications of Introducing a Land Tax in South Africa". Although the report cover the recommendations regarding the administrative capacity and requirements of a rural land tax, this study only concerns the implementation strategies and the effect thereof. Consequently, only the recommendations regarding the land tax rate, land tax base, the method and frequency of valuation and the relation to income tax will be discussed in this section. The remainder of the recommendations focus on the administrative issues of a land tax and fall outside the boundaries of this study.

✓ **Land tax rate**

The Katz Commission supported the Subcommittee's recommendation that the land tax rate should not be capped in terms of a maximum rate, but that national government put a cap only by stating the requirements of the rural land tax (i.e. that it allow economic activities to continue unhindered as far as possible; that it allows rural municipalities to play the role envisaged for them in the Constitution).

✓ **Land tax base**

The Subcommittee, supported by the Katz Commission, recommended that all land, including state land, privately owned land and land held under other forms of tenure be included in the tax base. However, it is recommended that local government be allowed the discretion to exempt tribal land from the liability to be taxed for a fixed period of, say, five to ten years.

✓ **Method and frequency of valuation**

Although the Subcommittee recommended the use value of agricultural land for valuing the land tax base, the Katz Commission does not support this recommendation. They argued that no international consensus regarding the utilisation of use values rather than market values exists and reasoned that market values present a more certain and equitable approach towards valuing the tax base. The Commission eventually recommended that, in drafting the framework legislation the use value be accepted, but in the case of local authorities which can justify the use of market value, consideration should be given to empower them to proceed on this basis.

In terms of the valuation frequency, the Subcommittee recommended that the valuation cycle to be kept within 5 years. The Katz Commission supported this recommendation, but added that the rural land tax system should not differ from the urban system and that valuation cycles should be more or less the same. It was furthermore stated that land of which the value remains relatively stable should only be valued at periods relating to the discretion of the concerned local authority.

✓ **Relation to income tax**

The Katz Commission supported the Subcommittee's recommendation that the rural land tax amount should be deductible from income tax, as is the case with urban property rates. Nevertheless, the Subcommittee recommended that the land tax be a provisional tax in terms of the Fourth Schedule of the Income tax Act No. 58 of 1962. In this regard the Katz Commission differed and recommended that the land tax be treated as an additional tax.

2.4.6 The Property Rates Bill of 2000

On the 4th of August 2000, the Department of Provincial and Local Government published the " Local Government: Property Rates Bill" for public comments. In essence this Bill aim to regulate the levying of property rates by municipalities as well as to provide for matters in connection therewith. This Bill also contains the regulations and procedures currently proposed for the management and operating procedures to be followed with regard to the implementation of a land tax on local government level. Although this

legislation is currently only conceptual, it is considered appropriate to discuss the main factors presently implied by this Bill.

2.4.6.1 Rateable property

The Bill provides for the levying of property rates on all property in a municipal area, including residential and rural properties. However, Section 3 distinguishes between various categories of property. In this regard Section 3 (f) provides for the levying of rates on all farmland used for:

- agricultural purposes;
- other commercial purposes; or
- non-commercial purposes.

Section 3 (g) provides for the levying of property rates on unused farmland. The Bill does, however, provide for differentiation in terms of the rates levied on different categories of property – nevertheless, no guidelines in this regard are currently provided.

2.4.6.2 Rate and tax base

Local governments will have discretion in terms of the rates being levied in their jurisdiction. Although definite guidelines are not currently provided, the intention of the Bill seem to be that the value of the services provided to the taxpayer, will serve as a proxy in terms of the rates being levied. However, Section 5 (3) of the Bill does provide for the Minister of Provincial and Local Government, with concurrence of the Minister of Finance, to set a limit on the amount of the rate that municipalities may levy on property as well as the percentage by which a rate on property may be increased annually.

According to Section 5 of the Bill, the value of the tax base will be based on the value of the property in accordance with the valuation roll that is currently applicable in the concerned municipality. In circumstances where the property has not been valued, the valuation should be based on the improved value of the concerned property. In this regard the Bill provide therefore that the rate levied on the improved value of the property may

be composed of separate amounts on the site value of the property and the value of the improvements.

2.4.6.3 Phasing in of rates

Section 9 of the Bill provides that a municipality may, over a period not exceeding three years, phase in a rate levied on property that was previously not included in the property rates tax base. In areas where the determination of property values and ownership is problematic (i.e. tribal land, formal and informal settlements) the MEC for local government in the concerned province may extent the phasing in period to a period not exceeding six years.

2.4.6.4 Property valuation criteria

Section 27 of the Bill provides for the general basis of valuation. In this regard the following regulations apply:

- The improved value of the property must be determined as an amount equal to what the property would have realised if sold on the date of valuation in the open market by a willing seller to a willing buyer.
- The site value of the property must be determined as an amount equal to what the property would have realised if sold on the date of valuation in the open market by a willing seller to a willing buyer, but on the assumption that:
  - There are no improvements on the property; and
  - Only the existing improvements may be erected on the property; and
  - The value of the improvements must be determined by subtracting the site value of the property from its improved value.

2.4.6.5 Valuation Appeal Boards

Chapter 5 of the Bill provides for the MEC (Member of the Executive Committee) for local government in a province to establish as many valuation appeal boards in the province as may be necessary. The function of the valuation appeal boards are to hear and

decide appeals against decisions by municipal valuers concerning objections to matters appearing on or omitted from valuation rolls of municipalities for which it was designated.

2.4.6.6 Summary

Although the Property Rates Bill is still conceptual and lacks a lot of detail, it is clear from the above discussion that the legislator intends to levy property taxes on all land in a municipal area – whether it urban or rural properties. Agricultural properties will therefore also fall into this tax net. Furthermore it was stated that the market value of the concerned property would be used to value the tax base. Although certain provisions have been made to tax the site and improved value of the land at different rates, the impact on agricultural sector will still be significant. Furthermore, the phasing in period might at first provide some relief, but on the longer term the full impact of the land tax will become evident.

2.4.7 Literature overview on land taxation

Given the direct involvement of land as production factor, the taxation of agricultural land is closely related to the taxation of agricultural income, since the value of the land is actually a function of the revenue it generates. Since agricultural land is a production factor, as opposed to residential land, which is a consumption item, major differences exist between the two types. This difference therefore explains why the reaction of farmers and agribusinesses are more fierce and economically of more interest than the case of urban property taxes. Since land tax presents a fixed cost for any business, the implementation thereof, presents an additional burden on the overhead costs of a farming industry. The farmer will be challenged in terms of reacting to the new cost on his/her business. Counter strategies and cost-cutting exercises will probably count under these adaptation strategies. The composition of the farmer's enterprise mix will probably be influenced depending on the intensity of the land tax's impact on the farmer's cost structure and capital needs (Dannhauser *et al*, 1997).

Owing to the different fields and controversy around land tax, a number of researchers have published reports and articles on issues surrounding land tax. Therefore, given the widespread and divergent opinions on land taxes, this section will attempt to extract a summary of various sources of literature and parallels will be drawn to point out the

possible effects of a land tax in South Africa. International literature will be discussed and possible guidelines for South Africa is supplied. However, the reader should note that, although international case studies can provide guidelines for South Africa, it is stressed that a comparison first has to be made between that of the concerned country's resource characteristics (land tax base), administrative capacities, already established records and structures, etc., preparatory to accepting the guidance presented by foreign experience. In the course of informing the reader on all the facets of land tax, this section also dilates on some arguments and research of authors in fields of study other than agricultural economics (i.e. mercantile law, accounting, rural governance, etc.).

2.4.7.1 The effect of a land tax on market values

According to a study done by Van Schalkwyk (1995), the effect of land tax will be capitalised in the market values of agricultural land. Van Schalkwyk modelled South African land prices in terms of the different factors that generate market values. With the introduction of a land tax he found that if a land tax of between 1% and 2% is levied on the market value as tax base, a decrease of between 6% and 12% would be experienced in the market values of the land under question. Since land forms an integral part of any farmer's balance sheet, land taxation will therefore influence a farmer's solvency. In terms of security based lending, the farmer's security base will decrease implying that less funds can be obtained from lending institutions.

2.4.7.2 Land tax and future investments

Capital investment decisions must rank as one of the most important forms of decisions made in agriculture. To the individual farmer, the success of these decisions affects his very survival and future prosperity (Van Schalkwyk, 1995). The investment decision is the decision to commit the farm's resources to particular projects with the intention of achieving greater financial and other benefits in future years (Butler *et al*, 1993). Investment in both fixed and operating capital therefore has an effect on the productivity of the farm (i.e. on the quantity outputs produced with a certain quantity of inputs) and therefore on its net income. Because of the importance of investment in determining both the growth rate and buffering capacity for fluctuations in income, governments have increasingly sought to regulate the level of investment demand (Van

Schalkwyk, 1995). Fisher (1930) stated that capital is simply future income discounted to the present. In terms of this definition, investment in farm capital should follow farm incomes closely.

Referring to the above, it is apparent that investment is one of the key elements in the process of getting agriculture to grow and thereby contributing to the economy. This growth in farm income will in due course have an increasing effect on the market as well as use value of the farmland, causing the land tax-base to grow in value. A commonly held view is that a tax on agricultural land may induce farmers to use land more intensively and that it will promote the cultivation of unutilised land (George, 1879). George (1879) stated that land taxation would encourage investment, thereby accelerating economic growth and development. Hyman (1973) agreed and stated that a land tax would encourage landlords to raise their farm investment in order to realize adequate profits to defray the land tax amount. However, Nieuwoudt (1992) warns that, in the long run, a tax on agricultural land will fall on new investment and will be a disincentive to future investment in land improvements; the underlying reason being the fact that a land tax impedes the rate of return on an investment in agricultural land. Rather than being an incentive for new investment, a land tax would therefore constitute a disincentive to new improvements that could have increased productivity. It should be noted that agricultural land, like any other fixed investment, requires initial development and subsequent maintenance in order to function as a production factor (Pasour, 1975). Nieuwoudt (1987) refers to the current average rate of return on agricultural investment on land (national average being approximately 4% to 5%) and states that investment in property improvements have to compete with other investment alternatives for new investment capital. Given the current risk profile of agriculture and adding the introduction of a land tax, the return on investment will definitely decrease and additionally the agricultural risk profile will increase due to higher fixed costs. Now, taking the "risk-return-trade-off-principle", the higher risk will actually demand a higher return. It is, however, clear that when land tax is introduced, the return on investment will decline with no additional compensation for the increased risk.

From the above, the feasibility of a land tax raised on land improvements is questionable in the light of stimulating agricultural growth in South Africa. Berry (1972) supported this, stating that "under the most likely conditions the impact on

private investment in agriculture will be negative". It is clear that the tax object has to be defined in terms of conceiving the effect on farm investment. In other words, if investment is still to be encouraged in agriculture, it is not advisable to include improvements in the land tax base. However, a complicating factor is that it is difficult to assess the market value of land without reference to improvements and equipment (especially intensive enterprises) (Berry, 1972).

Productive use value therefore seems to be a more favourable (less distorting) tax base in terms of the effect of the land tax on investment. The basic question, becomes one of the method of land acquisition that has the highest financial payoff compared to alternative uses of the farmer's funds, and which alternative is financially feasible and within the financial capability of the farm operator (Boehlje and Eidman, 1984).

2.4.7.3 Land tax and production decisions

According to Schultz (1978), it is imperative that the contribution of agriculture to the economy should not be undervalued. Heavy taxes on profits in agriculture would remove capital that would have been reinvested in this sector. The implementation of land tax will be an additional burden on the overhead costs of a farming industry. The farmer will have to act accordingly and decide whether he is willing to endure the additional cost or to change his farming policy and strategy to better absorb the burden. There are various decisions that the farmer can make to alter his situation. The marginal tax rate, that rate at which the last increment of production or income is taxed, will be zero per cent in the case of a fixed land tax rate (Bird, 1974). This will give farmers an incentive to become more productive, since the land tax will be a fixed amount. However, it can be argued that the farmer has already reached the production frontier of his farm and cannot increase production any further without mining his farm. In this case, land tax might cause for example, over-grazing, and erosion (Van Schalkwyk, 1995; Dannhauser *et al*, 1997). If the farmer is still below his production frontier or an absentee landowner, a land tax may induce him to become more productive or to sell his property. Nevertheless, to counter the higher costs the farmer might decide to move to enterprises with higher profit margins. Unfortunately, agricultural enterprises with higher profit margins are also associated with higher risks. If farmers take too much

risk, financial stability in terms of liquidity and eventually solvency may be affected (Van Schalkwyk, 1995; Dannhauser *et al*, 1997).

2.4.7.4 The scope of the tax base

The Subcommittee suggested that, subject to administrative feasibility, all land must be included in the tax base. Franzsen (1995) agrees and states that it makes politically more sense to exempt a taxpayer than to limit the tax base from the outset. He states that should circumstances change for the better, it would be easier (and make politically more sense) to phase out exemptions than to extend the tax base. Any limitation or exemption should, however, be justifiable in terms of the South African Constitution.

2.4.7.4.1 Valuing the tax base

Since a land tax is instituted on the value of land, the first step would be to determine the value of the tax object. A taxable value for any unit of land could be established by any one of a number of methods of valuation. In a South African context, the following four approaches to the valuation of agricultural land for purposes of a rural land tax have been suggested (Van Zyl and Vink, 1992; Theron, 1994; Franzsen, 1995):

(a) Comparable sales method
(b) Productive use value method
(c) Resource quality index method, and
(d) Lease value method

Each of these methods will be briefly discussed.

- **The comparable sales method**

  In terms of this method of valuation the market value of a farming unit must be assessed by comparing it to "similar" units that have recently been sold at arm's length on the open market. This presents a number of problems. As regards communal land held under indigenous forms of tenure, no land market and, therefore, no comparable sales, exist. Even in the commercial farming sub-sector,

this method could be inaccurate due to a scarcity of sales, inadequate sales data (Van Zyl and Vink, 1992) and a lack of homogeneity (Kleynhans and Lombard, 1994). According to Bourhill (1998), registered valuers are trained to international standards in urban valuation, but lack skills in the rural environment, causing subjectivity.

- **Income capitalisation method**

In this method, net farm income is divided by an appropriate capitalisation rate to establish the agricultural use value of the land. To obtain satisfactory results this method presupposes that net farming income be calculated realistically and a reasonable capitalisation rate be used (Theron, 1994). Proponents of this method suggest that its main advantage (in comparison with the comparable sales method) is that it is based on income, not wealth (Van Zyl and Vink, 1992). It is, therefore, better suited to take note of the taxpayer's ability to pay the tax. This method is often used to determine the "agricultural value" of land. Land values calculated according to this method are usually lower than market values due to the exemption of external factors (Theron, 1994, Kleynhans and Lombard, 1994). This could lead to unfairness if the non-agricultural sector is taxed according to market value. However, it can be argued that agricultural land is a production factor used in an economic system, and not used solely for dwelling (dwelling in this sense being a consumption item). Despite the criticism levelled against this method, the Land Bank has been using it for many years, not only for purposes of advancing loans or extending credit, but also for purposes of estate duty and donations tax.

- **Land resource quality index method**

According to this method, the resource quality index of any unit of land can be determined with reference to relevant farm factors and non-farm factors that influence production (Van Zyl and Vink, 1992; Theron, 1994). Information is gathered from farmers by way of agricultural censuses, population censuses and the Weather Bureau (Kleynhans and Lombard, 1994). Although this method entails quite an intricate process which may be unintelligible for many taxpayers, it scores high in terms of

fairness - as landowners are assessed only with reference to the quality of the land they possess (Theron, 1994).

- **Lease value**

  In terms of the lease value (rental value) method, the value of land is assessed with reference to the (potential) market rent that could be obtained for the specific unit of land (Franzsen & Van Schalkwyk, 1996). Approximately 20% of all agricultural land in South Africa is subject to lease. Although the lease value of land should give some indication of income-generating capacity of agricultural land, its applicability with regard to land utilised for long-term crops is suspect. In practice the lease market for this type of land use is extremely thin.

As is the case with the majority of taxes, establishing the taxable value is also the most problematic and technical aspect of a rural land tax. The valuation of land, especially agricultural land, is indeed extremely problematic (Skinner, 1991). Kleynhans and Lombard (1994), states that the successful introduction of a rural land tax will depend primarily on the satisfactory valuation of land. An administratively simple option would be not to tax the land with reference to its intrinsic value, but to determine liability solely on the size of the property (the surface area). According to Franzsen & Van Schalkwyk (1996), all that is needed is the correct farm size and the identity of the taxpayer. Although administratively simple, a land tax levied as a fixed tax per hectare, whatever its quality may be, would be inequitable - climatic conditions and soil quality, amongst other factors, is too diverse in South Africa (Franzsen & Van Schalkwyk, 1996). To elaborate, different quality land will, with the employment of the same capital, yield different quantities of raw produce. According to Ricardo (1817), a tax levied as a fixed monetary amount per hectare would take out of and keep out of the pockets of the people more than what it brought into the treasury of the state. He furthermore argued that a tax on raw produce is free from this objection as it takes from each quality of land a contribution in proportion to its actual produce, and not in proportion to the produce of that which is the least productive.

2.4.7.4.2 International practices in terms of valuing the tax base

With the exception of those Dutch municipalities, that have chosen the area base, all OECD countries base property taxes (which is applicable to rural and urban areas) on the market value. Most commonly the tax is based on the capital market value, which is the amount the property can be sold for. Capital values are used in Australia, Canada, Denmark, Japan, the Netherlands, Sweden, and Switzerland (Müller, 1997). The rental value (the amount the property can be rented for per year) is used for the three different property taxes in France and for the non-domestic (rural) rates in the UK (Müller, 1997).

Market value, either the capital value or the rental value, is also the base for the property tax in most developing countries. Rental values are used in many of the former British colonies (India, Pakistan, Nigeria), and capital values are used in countries like Indonesia, Chile, South Korea, Nepal, Bangladesh, Costa Rica, Brazil, Mexico, Peru, the Philippines, and Liberia (Müller, 1997). It should, however, be kept in mind that the more developed the economy of a country is, the larger will the difference be between the market value and the productive value. To elaborate, in less developed countries, urbanization and the demand for land for purposes other than agricultural use is less – the reason being that in these countries, agriculture is still the major contributor to GDP. South Africa's situation is different since the contribution of agriculture is only between 3% and 5% of the GDP.

According to Müller (1997), the USA, Canada, the Netherlands, the UK, Sweden, Chile and Indonesia have only one property tax on the value of the property including both land and buildings, (applicable to rural and urban areas). Müller (1997) however, neglects to inform that although only one property tax exists, agriculture (at least in the US) does receive preferential treatment in terms of the tax rate and method of valuation. According to Müller (1997), Denmark, France, Japan, and South Korea have a land tax, in addition to one or more other taxes, based on the value of the whole property or on the value of the buildings.

In Australia, the various states levy a land tax on the unimproved land value (excluding the value of any land improvements). Some of the states have progressive rate

structures and in all states, a minimum land value is not taxed at all. Depending on the law of the state territory, local government rates may be based on either:

- unimproved land value;
- rental value of land and buildings;
- capital value of land and buildings or;
- land or site value (land value including off-site land improvements).

In some of the states the local government can choose one base or a combination of bases. In other states the rates are based on the land values (Müller, 1997).

According to Müller (1997), most countries have defined a minimum threshold value or size – meaning that properties under this value or size are not taxed, and usually it is not valued either. This is done because the costs of assessing these properties and collecting the property tax will consume a huge amount of the concerned tax revenue. Buildings under the value of US$15 000, where the owner is not the owner of the land, are for example not valued and not taxed in Denmark. The threshold can also take the form of a minimum value, which is not taxed. This is the case in Indonesia, where application of a minimum value keeps small rural land holdings, most buildings in rural areas and low value urban properties out of the property tax net. Chile applies a similar scheme (Müller, 1997).

Many OECD countries have relief schemes reducing the property tax for low-income taxpayers or the elderly. Sometimes these hardship cases are exempted from the tax base. Such relief schemes exist in Australia, Canada, France, the Netherlands, the UK, and the USA (Müller, 1997).

- **An example from the USA**

The USA uses various valuation methods regarding property tax assessment. The following three methods are used to determine the taxable value:

- Sales comparison method

- Replacement cost less depreciation method
- Income capitalisation method

Agricultural is not treated the same as other property, and has its own set of preferential measures. An in depth discussion of the above methods is therefore not necessary. However, the preferential treatment system might present some guidelines for the South African scenario and will receive adequate attention.

According to DeBoer (1996), market value assessment of land implies that property will be valued at its "highest and best use", meaning the most valuable use to which the property can be put. If the highest and best use of a parcel of land is agriculture, the sale price agreed between buyer and seller will reflect only the farm income the land can generate, but if the farmland has development potential for business or residential use, the seller may demand and the buyer may be willing to pay a higher price. This applies to farmland within or near urban areas in particular. Assessment at highest and best use implies that farmland be assessed at values that reflect its development potential, as well as agricultural productivity.

DeBoer (1996) stated that an alternative to highest and best use assessment is "use value" assessment. Agricultural land is assessed at a value that is based only on its agricultural productivity. The value of the land for other purposes, such as for business or residential development, is ignored in use value assessment.

According to DeBoer (1996), forty-eight of the fifty states utilise the use value assessment of agricultural land, with Wisconsin soon to adopt a use value programme. This leaves only Michigan state using the highest and best use assessment method. However, Michigan and Wisconsin provide other tax breaks for agriculture (DeBoer, 1996). Use value assessment is usually done using an income capitalisation method. In other words, the net income earned from an acre of land with particular characteristics is estimated either from cash rents charged for similar land, or by a complex calculation involving yields, commodity prices, and farm costs. Net income is then divided by a rate of return, which may be fixed by statute or based on current or past interest rates.

This gives the price a buyer would offer for the land based solely on its income potential from agriculture (DeBoer, 1996).

According to DeBoer (1996), thirty-eight states have special requirements for participation in use value programmes. Requirements beyond the simple application by the landowner include minimum acreage, minimum income productivity, and documentation that the land has been used in farming in the past. These "entry" requirements are designed to restrict the programmes to land actually used in farming. Thirty states have penalties or restrictions on changing agricultural land to other uses (DeBoer, 1996). Penalties may include repayment of at least part of the tax breaks received in the past. Restrictions include agreements signed by the landowner not to develop for a period of years. Sometimes use value assessment is only available to land that is zoned agricultural. These "exit" requirements are designed to enhance the preservation of open space. Twenty-five states have both entry and exit restrictions (DeBoer, 1996).

The above example indicates the United States' appreciation for non-farm factors influencing the market value of land. Should the South African land tax be introduced on the market value of land, the above experience can be implemented to combat the effect of non-farm factors. Productive use value, however, still seems to be the simplest and most equal implementation strategy.

2.4.7.5 The cost of introducing, assessing and collecting land tax

According to the draft final Constitution (section 228), provinces are prohibited from levying property tax. Franzsen and Van Schalkwyk (1996), state that in terms of section 229, property tax is a guaranteed source of revenue for local government. Read with section 151, which states that municipalities must be established for the whole of the territory of the country, it is implied that if a land tax is introduced, it will have to be at local government level (Franzsen and Van Schalkwyk, 1996). However, it is doubtful whether local government structures will have the administrative capabilities to administer the tax assessment or collection in the foreseeable future (Franzsen & Van Schalkwyk, 1996).

In terms of costs and public acceptance, Ahene (1997), states that when examining any tax policy instrument the four maxims of taxation have to be kept in mind – equality, certainty, convenience of payment and economy in collection. Often, the most politically supportable and most economically justifiable taxes are the ones most responsive to these maxims. International experience has indicated that in almost all cases administrative costs are lower on, for instance, income or export taxes than on land taxes. The income or export tax is administered at a central co-operation, shipping area, or airport, and typically entails lower costs of administration. Once administration costs are included, the land tax may be less efficient than other tax systems (Franzsen and Van Schalkwyk, 1996).

According to Binswanger *et al,* (1992), administering a tax on land effectively and equitably requires having an official record, or *cadastre*, of the size, value and ownership status of each tract of land, its productive capacity and information on the costs of outputs and inputs. According to Bird (1974), land tax administration also requires a property tax law that assigns property rights and tax obligations and an administrative organisation that keeps the register up to date and assesses, collects and enforces the tax. According to Binswanger *et al* (1992), even in the few developing countries able to meet these conditions, land taxes are relatively unimportant, suggesting that the administrative or political costs may be higher than the incentive advantages associated with a land tax.

In acquiring an official record of each tract of land, one first has to decide upon the process that will be followed in terms of constructing such a record. The process has to be defined with regard to the proper valuation method, frequency of valuation and the areas to be included in the *cadastre* or record. Until these procedures and processes are finalized, it is not possible to accurately assess the administrative burden that a land tax will have.

In terms of collection, banks are successfully used with the collection of property tax in Indonesia and apparently also in Chile (Kelly, 1995). Non-payment due to hardship could be countered by deferral of liability (postponing payment of due taxes) at reasonable interest rates until (at the latest) the property is transferred (Strasma, 1994). If the taxpayer dies or sells the land, no transfer is recorded before the relevant local authority issues a tax

clearance certificate. Seizure of property and selling it at a public auction also provides an effective measure against evasion (Kelly, 1995).

In their 1995 Interim Report, the Subcommittee stated that, with regard to land in the commercial farming sector as well as other land outside the former homelands, the administrative and technical skills and capacity currently exist to assess and collect a rural land tax (Katz, 1995). With regard to communal land, however, not all land has been surveyed, uncertainty of title exists and various systems of land tenure are in operation. These are problems that need to be recognised. In the light hereof, some authors have argued that the administration of a rural land tax on communal land will be very complex and will not yield much income (Franzsen and Van Schalkwyk, 1996). Apart from administrative feasibility, the legitimacy crisis of some tribal authorities is also a problem to keep in mind. The future constitutional role of traditional leaders is still unclear. A further complicating factor is that many subsistence farmers are illiterate and may struggle to grasp the nature, technicalities and goals of a rural land tax. Educating the tax-paying public will present a major challenge (Franzsen and Van Schalkwyk, 1996).

Probably the biggest challenge to be faced will be the initial assessment of all taxable parcels of land. It is imperative that such an assessment be perceived by the majority of taxpayers as fair and the process of valuation as transparent, inclusive and equitable (Franzsen and Van Schalkwyk, 1996). Such a process would obviously limit objections and appeals. The Chilean example of the 1960's is a striking example of a successful introduction of a land tax (Franzsen and Van Schalkwyk, 1996). An interesting point is that as recent as 1959-1960, agricultural direct taxes on land in Bangladesh (East Pakistan) made up 66,2% of all direct taxes and 19,8% of total central tax revenue (Skinner, 1991). However, following independence, the government implemented a new tax, called the land development tax (LDT), which was based on land area and not land quality. It consisted of a flat rate on commercial and residential areas, with a two-tier rate system for agricultural land. Different rates applied for areas under 8,25 acres than for areas over 8,25 acres. In 1982, progressive rates were introduced on agricultural land with the highest marginal tax rate applicable to areas larger than 25 acres (Skinner, 1991). In the 1985/86-tax year, administrative costs of the LDT consumed 66% of the total LDT tax income. A mere 34% was available for government spending. Although local tax offices provided valuable services such as

maintaining land records, average administrative costs per Taka (Taka being the Pakistan currency unit) of tax revenue from LDT exceeded the comparable ratio for other taxes in Bangladesh by a factor of seven.

There is also a possibility of market-based self-assessment as a means to lower administrative costs. Here individuals set their own values. The so-called Kaldor proposal states that if the person liable for the tax gives a sworn statement of value, they would have to sell at that value. While this proposal does not have a good practical track record, it could be used as an appeal mechanism, or for example for calculating the value of drought subsidies, and as collateral for loans, etc. However, self-assessment is not favoured by the Subcommittee (Katz, 1995). Maintaining a credible valuation roll is critical. An easily accessible system of objection and appeal must be maintained. According to Franzsen and Van Schalkwyk (1996), regular reassessments or a credible form of indexation must be kept up to ensure validity of the survey data.

In some countries land taxes are implemented as a 'presumptive' tax. However, a sound *cadastre* is needed for such a tax. In Chile, for example, the presumption was that farmers make an 8 per cent return on capital. The farmer had to provide proof if he actually earned less. If a farmer accepted the presumption, the tax authorities could not question what the farmer actually made. Such a tax is however problematic in a high-inflation economy (Katz, 1995).

Tax evasion is parallel to any tax levied. Nevertheless, a number of options exist to effectively counter the evasion of land taxes. Franzsen & Van Schalkwyk (1996) suggests five options. First, heavy penalties and interest could counter it and a second option is an automatic first lien against the property that takes precedence over a first mortgage. It is reasoned that creditors, in protecting there own collateral, will then see to it that taxes are paid. A third option could be to seize the property and to sell it at a public auction. This option provides an effective and very visible measure against tax evasion. Fourthly, the tax could be defined as an *in rem* tax, i.e. to tax the farm and not the 'owner'. If taxes are not paid, the authorities can foreclose on the farm. Fifthly, the tax collection function could be privatised (Franzsen and Van Schalkwyk, 1996).

2.4.7.6 The equity versus ease dilemma

Woolery (1989) quotes a phrase by Jean-Baptist Colbert (1619 – 1683) who stated that the sole aim of taxation seems to be "plucking the goose so as to obtain the largest amount of feathers with the least amount of hissing". Adam Smith (1937 reprint), states that "The subjects of every state ought to contribute towards the support of the government, as nearly as possible, in proportion to their abilities; that is, in proportion to the revenue which they respectively enjoy under the protection of the state...In the observation or neglect of this maxim consists what is called the equality or inequality of taxation". Buehler (1940), argued that equity implies that the levying of taxes is not simply a matter of collecting taxes with the least expense, but tax payments should also be distributed equitably among individuals, classes, industries, and other groups, so that the social costs of taxation will be spread justly and with a minimum of side effects.

According to Toye (1978), one of the choices that confronts designers of direct taxes is that of the precise combination of equity and administrative ease. Both equity and administrative ease are normally accepted as desirable objectives in the design and evaluation of taxes (Stallman & Jones, 1997). However, the objectives conflict with each other. Equity requires a tax sufficiently flexible to adjust the size of the tax payment to the individual taxpayer's ability to pay. Administrative simplicity, by contrast, requires a tax where the due payment can be quickly and simply calculated, and promptly and conveniently collected (Toye, 1978). Tax designers thus face the painful dilemma of being able to achieve improvements in equity only by increasing the difficulty of tax administration, or, alternatively, of being able to reduce these difficulties only by accepting additional inequities. Bird (1974), pointed out that the underdevelopment of administrative capacity in developing countries is easily overlooked. He argued that in so far as a land tax is concerned, it should be implemented for the sole purpose of producing revenue. It should be as simple as possible, and, by implication as crude from the equity principle as it is politically tolerable. He furthermore states that attempts to personalise the land tax are to be discouraged because governments usually only succeed in making it more complex, which in turn both makes the administrative task more difficult and also affords more opportunity for opponents to block and weaken its revenue impact (Bird, 1974).

Taking a look at the South African environment, an effective state administrative system is still absent. Take for instance the local governments who are not even able to collect payments for services like water and electricity.

2.4.7.7 The capacity at local-level to charge, assess and collect the land tax

The method of valuation will be the main determinant when confronted with the question whether the local-level governments have the capacity to charge, assess and collect the land tax. It has to be borne in mind that the use of professional on-farm assessors is not the only way in which land can be assessed. The use of mass valuation, computer-modelling techniques, resource-quality indices, and other methods are among the methods applicable to these purposes. It is therefore clear that the capacity at local-level cannot be determined before the assessment method has been finalised (Franzsen and Van Schalkwyk, 1996). Strasma *et al* (1987), however, points out another problem being that the administrative capability of the government gets overwhelmed if 5% of landowners appeal against their tax assessments. According to Franzsen and Van Schalkwyk (1996), a detailed analysis of all the local government structures currently operative in rural areas, their powers and functions as well as their revenue sources are essential. With this information at hand, a decision can be made regarding a valuation method that incorporates the limited capacities.

In Nepal land revenue is collected in both rural and urban areas. The land revenue is based on the value of the land. Instead, the tax is expressed as a certain amount per area unit for different types of land in different locations. This used to be an important tax, but for political reasons the tax amounts per area unit have only been revised at very long intervals (Müller, 1997). In fact revenue amounts per area unit in rural areas have not been changed since 1967 and in urban areas since 1980. As a result, the revenue from the land tax has decreased from 11% of total taxes in 1975 to a mere 0,6% of total taxes in 1992 (Müller, 1997). This case provides sufficient evidence in terms of the importance of frequent revaluations on the tax base of a land tax.

According to Holland (in Bird, 1974) the experience in Jamaica indicates strongly that "the wisdom of choosing procedures that may be 'second best' in theory but 'first best' in practice" cannot be overemphasized. Basically Jamaica was not able to get off the

ground because, at a number of steps in the process where there was a choice between an unalterably correct or completely thorough procedure and one that fell short of perfection but could be basically satisfactory, Jamaica opted for the latter, and consequently experienced major problems in their land tax system. Bird (1974) states that if land taxes were to play a more important role in the future than in the past, it is clear that the inherent human tendency to let the perfect be the enemy of the good must be overcome.

2.4.7.8 The effect of land tax on land reform

Bird (1974) suggests three approaches to land reform: Total revolution, direct non-revolutionary reform, and vigorous and progressive taxation of land. Because of the high direct social, political and economic cost, the first and even second methods are seldom favoured. Land and other taxes is therefore often the preferred method for altering land-use patterns in the rural areas, and to bring about a redistribution of land ownership.

Skinner (1991), regarded encouragement of land reform as a legitimate non-revenue objective of land taxation. Taxing large farm holdings at progressive rates (i.e. larger farms taxed at higher rates) could force their breakup into several smaller farms, although efforts to encourage land reform through this channel have generally been unsuccessful in a large number of countries (Skinner, 1991). Skinner (1991) suggests two reasons. First, tax rates have not been high or progressive enough to substantially affect land use and, second, land taxation is politically unpopular. Parallel to Skinner (1991), Franzsen (1992) reports that in spite of the frequency of references of this nature, meaningful redistribution of land primarily through a land tax has not been very successful anywhere, with the possible exception of Taiwan.

Given Van Schalkwyk's findings that a land tax of between 1 % and 2% could cause land prices to drop by between 6% and 12%, land tax can also be seen as an instrument in the quest of land reform in South Africa (Van Schalkwyk, 1995). Van Schalkwyk (1995), however, furthermore indicated that the new entrant who buys the concerned land would actually need a larger portion of land to defray the additional costs associated with land taxation. Mifsud (1967) states that "... though the land tax should

be punitive, its purpose should be to act as a spur to development and not primarily to drive the owner off his holding. For there is no sense in substituting underdevelopment for no development at all...". According to Bird (1974), there appears to be no country in Latin America in which agriculture has been taxed heavily enough either to provide substantial resources for public development purposes or to affect significantly the allocation and distribution of resources within the agricultural sector. The most effective taxation of agricultural land has perhaps been in Chile. Even there, however, no government has yet presented an explicit policy as to the appropriate size and nature of agriculture's contribution to the development effort (Bird, 1974). Some interesting experiments in land taxation have been carried out in other countries, notably in Jamaica, or have been studied, as in Bolivia, but in general the record has been rather discouraging to reflect advocates of bigger and better land taxes, with some Latin American countries, notably Venezuela and Peru, levying no tax on rural land at all, and some – Paraguay, Guatemala, Panama, Brazil and others – doing so only very unsuccessfully (Bird, 1974). According to Bird (1974), the major lesson which Latin American experience suggests, is that the most rewarding path to follow, if an agricultural land tax is to contribute much to development, is to concentrate on establishing a simple property tax with significant rates on the basis of solid valuations, rather than, through graduated rates of taxes, special taxes on idle lands, and similar devices attempting to achieve primary non-fiscal goals. However, it is true that any tax will have non-fiscal effects, and the heavier the tax, the larger these non-fiscal effects will be. These side effects must certainly be considered in any fiscal instrument, but there would be good reason to focus on the primary revenue purpose of the tax.

Furthermore, it has to be borne in mind that a land tax also increases the overhead costs of the farm, the actual reason for the drop in land prices, which, with adequate reference to farming risk, makes it more difficult for the new farm owner to meet his expenses in the long run. This risk increases if loans are used to acquire the property.

2.4.7.9 Effect on risk considerations

A land tax must be paid each year regardless of the success or price of the crop, while commodity and income taxes pool risk by taxing only marketed output (Van Schalkwyk, 1995). Given the transformation of the agricultural sector since 1994, farmers find themselves in an already challenging situation where free market price systems present

much higher price risk without a safety net. The imposition of another tax instrument that influences cash flow and overhead costs is increasing the risk profile of an agricultural business. Skinner (1991) made some calculations of welfare under a land tax and output tax. These calculations show that a land tax generally dominates an output tax when the output tax is high, even in the presence of substantial consumption uncertainty. Hoff (1991) demonstrates a combination of both taxes to be more Pareto efficient than either tax alone. In Uruguay, for example, the government uses a land tax to raise revenue from cattle ranchers, but it still retains the export tax to stabilise the domestic price for producers and especially for urban consumers (Jarvis and Medero, 1988). It therefore seems as if other countries have realised the risk impact of a too high land tax and softened the burden by using rather a combination of taxes than land taxation alone.

2.4.7.10 Raising a land tax in communal areas

The introduction of a land tax demands a number of vital requisitions of which a tax base and a land tax rate form a substantial part. Computing the tax amount due and identifying the liable person encompasses that the land be assessed. The taxation of tribal land is therefore problematic since no deeds are on record with regard to the owners of these areas. The whole process of identifying the tax object as well as the taxpayer must therefore start *ab initio*. Secondly, in terms of the South African indigenous law, land is not a negotiable commodity. Enforcement of the tax by means of sale in execution and prohibition on transfer before all land taxes have been paid is therefore impracticable (Franzsen & Van Schalkwyk, 1996).

However, the Subcommittee is of the opinion that all property, i.e. private land, government land, tribal land; and any other land used for any purpose, be it residential, industrial, agricultural; within the jurisdiction of Local Transitional Councils and Representative Councils, must be included in the tax base (Katz, 1995). With regard to this recommendation, it is important to discuss the land tax matter with reference to a communal area.

As mentioned, there has to be an identifiable tax object if a land tax is to be raised. However, in most of the communal areas in South Africa, there are no active land markets. This implies that no market values can be attached to these areas, making it difficult, if not impossible, to determine the amount of tax due in the case of a market

value related land tax. On the other hand the absence of property rights make it very difficult to identify the owner of the land.

It can be argued that the land tax should be raised on the agricultural use value of the land. However, to determine the use value of land, production data is needed. Unfortunately these areas are characterised by poor record keeping, and due to the subsistence nature of the farming units, the households consume many of the products with no records of these activities (Balyamujura, 1995). Proposals have been made that, once a land tax base is agreed upon and a formal owner of the land is absent, the concerned tribal chief will be held liable for the tax due. He can then hold members of his tribe responsible for their share of the tax (Katz, 1995).

Referring to the above, the taxation of tribal land in South Africa seems to be problematic. Communal areas are known for their lack of the essential elements needed for the successful implementation of land tax. These areas do not have any records of deeds and transfers making it difficult to identify the landowner, whilst the absence of a landowner complicates the enforcement of land tax payments. Furthermore, if the person cultivating or using the land for whatever purpose can be identified, it will still be difficult to enforce the tax because the land does not belong to the specific individual and can therefore not be sold to defray the outstanding taxes. To tax the tribal chief might be an option, but in the absence of a formal land market, selling the land will be difficult.

2.4.7.11 Land tax's relation to income tax

When considering a land tax, it is important to determine the relationship of such a tax in terms of deductibility from income tax. Müller (1997), states that in most countries, the property tax is deductible from income tax for businesses including agriculture, but land or property taxes related to dwellings are usually not deductible from income taxes. In South Africa proponents argue that the land tax deduction is justified, since the land tax expense is part of the operating expenses to generate income from the resource. According to Müller (1997), this raises the question of whether the taxable value of a farm should be divided into the portion related to agricultural land and production buildings, and the portion related to the dwelling. Denmark poses an

example of this nature. However, South Africa's administrative capacity and the equity versus ease dilemma should be duly noted.

An important consideration is the fact that the collection of income taxes from small-scale agriculture is notoriously inefficient or they fall under the minimum taxable income. Requirements for bookkeeping are difficult to enforce and in the case of subsistence farmers, household consumption and unreported sales are difficult to determine, causing the auditing of small farmers' income tax returns to be inefficient.

2.5 A South African capital gains tax

In addition to the proposed land tax, the budget speech delivered by finance minister (Trevor Manual) on February 23, 2000 holds additional implications for the South African agricultural sector. The Minister announced that a capital gains tax (CGT) would be introduced in South Africa with effect from April 2001. He indicated that this new tax will make the income tax system more equitable, will lead to less tax avoidance from persons declaring normal income as capital gains, and will bring South Africa's tax dispensation in line with the systems of our major trading partners (SA Banker, 2000; SARS Guide to CGT, 2000).

The purpose of this section is to provide some clarity regarding the impact of the proposed capital gains tax from an agricultural economic perspective, and in particular to comment on some of the potential consequences of the proposed tax as regards its impact on the South African agricultural sector. Unlike the case with land taxation where the tax base consists mainly of agriculturally owned assets, the capital gains tax seems to have its focus on corporate profits rather than smaller businesses like farmers. A definite distinction is made between legal entities and natural persons with the intensity of the tax significantly higher in the case of legal entities. The focus of this section will, however, be more on the primary agricultural producer, being the farmer, and not necessarily on agribusiness companies and other legal entities.

Prior to December 12th 2000, the only official documentation regarding a South African capital gains tax was the SARS Guide to Capital Gains Tax. This situation triggered widespread reaction in the financial press and, given the short timespan until the

effective date, many proponents expressed their opposition and stated that South African industries is provided with a too short time period to present their arguments and inputs regarding a South African CGT. Since the Department of Finance did not publish the draft legislation in September as promised, many press articles then questioned whether the initial CGT effective date might be postponed. However on December 12th 2000, the Department of Finance published the draft legislation signifying that Mr. Manual is determined to implement CGT as initially scheduled.

This section commences with a historical background on the possible imposition of a capital gains tax in South Africa after which the proposed CGT system is briefly described. In this regard, the draft legislation as released on 12 December will act as the main literature source. The reader should therefore bear in mind that the draft legislation is subject to change and might eventually influence the arguments contained in this chapter. Following this discussion, a thorough literature review comments on the possible effects of CGT.

2.5.1 History of CGT-investigations in South Africa

The question of introducing a CGT is not new in a South African context, as various Tax Commissions have considered its possible implementation. The Franzsen Commission in 1969 proposed a limited form of CGT on immovable property and marketable securities (Franzsen Commission, 1969). The majority recommendation of the Margo Commission in 1986 was that capital gains should not be subjected to tax (Margo Commission, 1986). The Katz Commission on the other hand, acknowledged the case for a tax on capital gains, while recommending that it should not be implemented due to the complexity of the tax as well as the capacity of the tax administration at that time (Katz, 1995). SARS is, however, now convinced that their enhanced administrative capacity is capable of handling the additional impact of CGT. Although the effective date for taxpayers is April 2001, SARS has a period of approximately 18 months to get ready to process the first tax returns affected by CGT.

2.5.2 Description of the proposed CGT system[1]

Until the implementation date of CGT on April 1st 2000, citizens will still be taxed on the income they earn from owning assets, but will not generally be taxed on profits arising from the disposal of such assets. For instance, tax will only be payable on income such as rent and interest but not on the profits from selling shares, property or other investments, unless such transactions form part of the day to day operations of the business. After the effective date, all capital gains or losses made on the disposal of capital assets will fall into the CGT regime, unless excluded by specific provisions. Notion should be taken that where an asset was acquired before the effective date and disposed of thereafter, tax will only be payable on the capital gain which accrued after the effective date, the so-called time-based apportionment. Nevertheless, the draft legislation warns that anti-avoidance legislation is considered with the aim of countering avoidance actions of CGT during the transitional period (being 23 February 2000 until and including the day before valuation).

2.5.2.1 Capital gains and losses

According to the draft legislation, net capital gains are calculated by subtracting all base costs (of all assets disposed of), from all capital proceeds realised through such disposals. Amounts not taken into account in previous years will be added to the calculation of capital gains of the current year.

Similar to capital gains, the draft legislation defines capital losses per annum as the amount by which the base cost of all assets disposed of, exceeds the proceeds regarding the concerned capital assets. All amounts not taken into account in previous years will be added to the current year's calculation of capital losses of the current year.

[1] This section draws from the SARS Guide to capital gains tax, as well as the published draft legislation.

2.5.2.2 Base cost

Capital gains are calculated by subtracting the base cost of the disposed property from the selling price. Base cost includes those costs actually incurred in acquiring, enhancing or disposing of a capital asset and may include:

- ✓ **Acquisition costs** are those costs actually incurred in acquiring the asset. For example, the SARS Guide to CGT states that if the asset was acquired by way of a gift, the base cost in the hands of the donor is carried forward. If the asset is one created by the taxpayer himself/herself, for example, any capital expenditure actually incurred in creating the asset may form part of the base cost, to the extent that the expenditure has not been claimed for normal tax purposes.

- ✓ **Incidental costs of acquisition and disposal** are any costs actually incurred and directly connected to the acquisition or disposal of an asset. For example, legal fees, agent's commission, stamp duty, transfer duty, costs of conveyance, brokers fees and valuation costs. Costs incurred in resolving any disagreement regarding a valuation may not be included.

- ✓ **Capital costs of maintaining title or rights to the asset** include for instance, legal costs actually incurred in respect of a court dispute relating to maintaining your right or title to an asset you own.

- ✓ **Improvement/Enhancement costs** include those costs actually incurred for the purpose of improving or enhancing the value of the asset, as long as the improvement or enhancement is still reflected in the state or nature of the asset at the date of disposal.

- ✓ **VAT** paid and not claimed or refunded may form part of the base cost.

Current costs such as interest, repairs, insurance premiums and rates and taxes, may not form part of the base cost. These costs would normally be on the operating account, rather than being capitalised.

2.5.2.3 Discussion of the basic framework of CGT

With the aim of acquiring some understanding of the characteristics of the proposed CGT system, it is appropriate to commence with a diagram reflecting the basic framework of CGT. Figure 3.1 exhibits this framework.

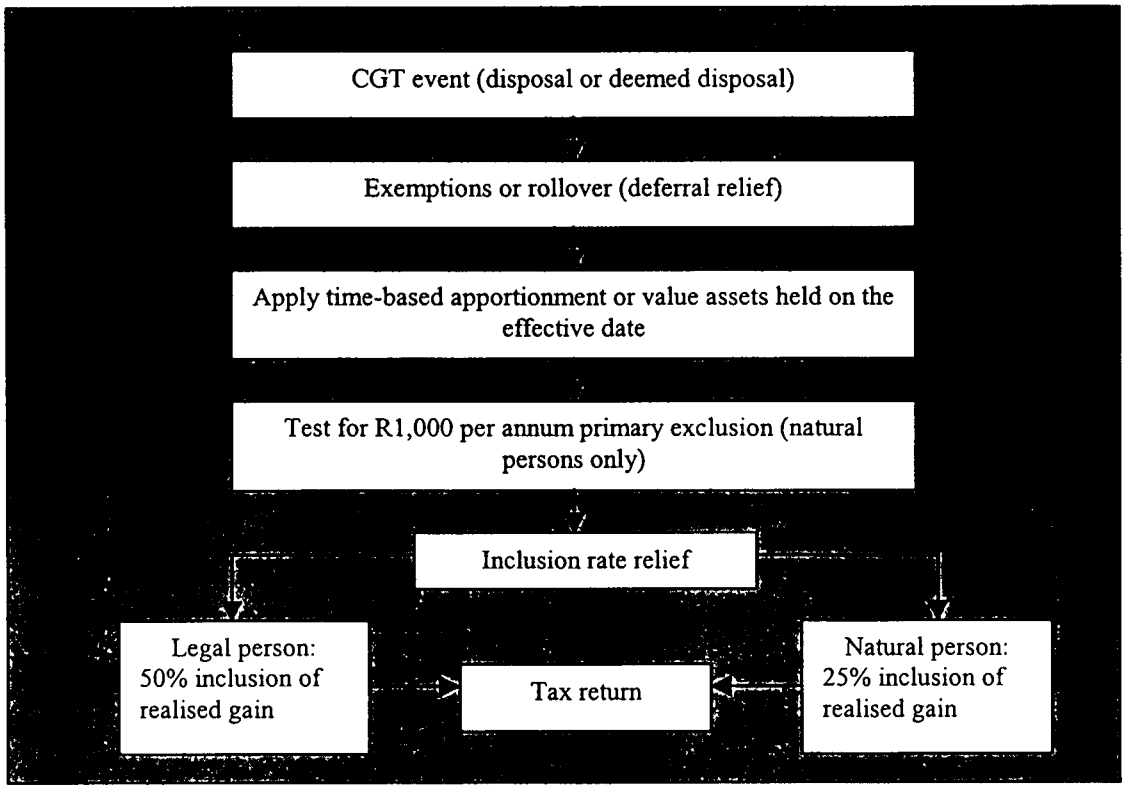


Figure 3.1: Basic framework of CGT
Source: Adapted from SARS Guide to CGT, (2000).

CGT event

A CGT event occurs when property of any kind, including assets that are movable or immovable, tangible or intangible, excluding trading stock and mining assets qualifying for an income tax deduction as capital expenditure, is disposed or deemed to be disposed of. As a general rule, an asset is acquired or disposed of whenever there is a change in ownership of the concerned asset. Disposal can occur when an asset is:

- Sold,
- given away,
- scrapped,
- exchanged, for example a share swap,

- lost,
- destroyed, or
- when it is redeemed or cancelled.

A number of rules will deem a disposal to have occurred and include rather complicated legal situations. All of these situations will however not be discussed here and only the most applicable is presented (the reader can however consult the draft legislation in this regard):

- Where a natural person or legal person ceases to be resident in the Republic.
- Where ownership of an asset does not change, but for all intents and purposes disposal does occur. For instance certain derivative and value shifting transactions.
- Where the beneficial interest in a trust changes.

With the above background the nature of a simple disposal or deemed disposal can be evaluated. If the disposal or deemed disposal qualifies as a CGT event, the transaction or deemed transaction will fall within the CGT regime implying that it will be taxable.

Exclusions

Private residence exclusion: In the SARS CGT guide, a primary or principle owner occupied residence (including the land adjacent to it) was totally exempted from CGT. However, the draft legislation documents that only one residence may be a primary residence and as a general rule, only capital gains in excess of R 1 Million will be included in the CGT regime. It is furthermore stated that the residence and land on which the residence is situated, together with the unconsolidated adjacent land will only be excluded when sold to one buyer, all at the same time. Additionally, all land must not exceed two hectares to qualify for this exclusion.

Other exclusions: The draft legislation provides for additional exclusions as well. However, please note that these exemptions are again fairly complicated in terms of the legal characteristics of the situation and will thus only be briefly discussed. For a

detailed description, please refer to the draft legislation. Additional exclusions are the following:

(a) **Personal-use assets** are defined as assets of a natural person or a special trust, used for purposes other than the carrying on of a trade. In calculating capital gains, natural persons and special trusts should therefore disregard the proceeds from disposing of personal-use assets. However, the following assets are not excluded:

- Coins of which the intrinsic value is mainly attributable to the material of which it consists;
- Immovable properties;
- Aircrafts with an empty mass exceeding 450 kilograms;
- Boats exceeding 10 metres in length;
- Financial instruments of whatever nature;
- Any fiduciary, usufructuary, or other like interests; and
- Rights or interests of whatever nature to or in an asset envisaged in the abovementioned assets.

(b) **Assurance and retirement benefits:** In general, assurance and retirement benefits are excluded from CGT calculations.

(c) **Disposal of small business assets:** In general, this exclusion provides exclusion from CGT for natural persons who attained the age of 55 years and dispose of their business assets, or had to dispose of their business assets due to ill health. However, this exclusion is only applicable where the gross asset value does not exceed R5 million.

(d) **Compensation for personal injury, illness or defamation**

(e) **Prize money**

(f) **Conversion of foreign currency:** Only natural persons and only in terms of foreign currency obtained for personal spending outside the Republic.

(g) **Insurance proceeds:** Relevant for natural and legal persons, but proceeds must be utilised for repairing or replacing the damaged asset.

(h) **Unit trust funds:** Unit trust companies are excluded from CGT in determining their taxable income.

(i) **Donations to public benefit organisations:** Exclusion allowed for natural and legal persons.

(j) **Assets used to produce exempt income:** Assets in terms of section 10 of the Income Tax Act of 1962, as amended.

- **Rollover relief**

Where assets are subject to rollover, it means that a CGT liability does not arise upon disposal of or transfer of ownership, but is rather deferred until a subsequent CGT event. In all rollover cases, the 'pre-exchange' base cost is rolled over as well. The only rollover cases applicable to primary agriculture seem to be the following:

(a) **Transfers between spouses:** Where a person disposes of an asset to his or her spouse, the person disposing of the asset will be treated as if disposal was at the base cost of the asset. The spouse receiving the asset will be treated as if the asset was acquired for the base cost. Capital gains or losses will therefore not be applicable.

(b) **Involuntary disposals,** for example fire, theft, condemnation, etc. In these cases a contract must be entered into for repairing or replacing the concerned asset within one year and the replacement asset must be brought into use within three years. If this timeframe is not adhered to, the gain will be taxed at the applicable rate for the year in which the asset was originally disposed of, plus interest at the prescribed rate.

(c) **Re-investment in similar assets:** where an asset utilised in the production of income is disposed of and the proceeds are re-invested in a similar asset, provided that the base cost is no less than that of the asset disposed of, the situation qualifies for rollover relief. However, in this case, 20% of the capital gains or losses must be added to the person's (natural or legal) capital gain in the year of assessment during which that asset is brought into use again as well as into each of the four succeeding years of assessment. Such a re-investment must occur within one year, or at the discretion of SARS, may be extended up to a maximum of 18 months. If the person does not re-invest within the defined time-period, the same measure applies as in the case of involuntary disposals.

Time based apportionment basis and the valuation option

All assets acquired before the effective date and disposed of thereafter are subject to CGT on a time-based apportionment basis or, alternatively, a valuation basis, if so elected by the taxpayer. This means that, although an asset acquired before the effective date is affected by the introduction of CGT, any capital gain or loss accruing up until the effective date is not subject to CGT. Only capital gains or losses accruing after the effective date are subject to CGT. Assets, other than marketable shares, bonds, tradable derivatives and other tradable securities listed on a recognised formal exchange, will be subject to CGT on a time-based apportionment basis (whole years or part thereof) upon disposal. Time-based apportionment effectively excludes capital gains made prior to the effective date. However, no more than 20 years prior to the effective date may be brought into account in respect of the time-based apportionment. In brief the time-based apportionment basis works as follows:

Say for instance the asset was acquired 15 years prior to the effective date and disposed of 5 years after the effective date. In this case the time-based apportionment of the capital gain will be: *(Selling price) - (Base cost) = (Capital gain on disposal) x (The time-based apportionment factor being 5/(15+5))*, implying that only ¼ (5/20) of the capital gains are considered to be gained during the 5 years after the effective date. Alternatively, the taxpayer can elect to have his or her assets valued at the effective date. This will, however, be more costly.

Primary exclusion

The SARS CGT guide indicated that a primary exclusion of R1000 will be applicable, whilst the financial press had it that word on the street indicated the possibility of R15 000. Eventually the draft legislation indicated that a primary exclusion of R10 000 be applicable.

Inclusion rate relief

The inclusion rate refers to the amount of capital gains that will be added to the taxable income of the concerned entity. The following inclusion rates are to be applied to net capital gains:

- Legal persons (including companies, close corporations and trusts): 50%
- Natural persons and special trusts 25%
- In the case of insurers, in respect of its individual policyholder fund: 25%

In other words, a company will only include 50% of a net capital gain in taxable income (50% is exempt from tax) and an individual will only include 25% of a net capital gain in taxable income (75% is exempt from tax). The primary exclusion will then be subtracted from this amount.

Typical farming examples

With the aim of explaining the working of CGT in terms of agriculture, Appendix B contains various typical farming examples of CGT events. The reader is referred to this section, since the practical application of the CGT regime will ensure that the reader can familiarise himself/herself with the application of the system described in this section.

2.5.3 Literature overview on capital gains tax

In general, income derived from the sale of a property can be either of an income nature or capital nature, depending on the nature of the business entity. In terms of the current Income tax Act 58 of 1962 (section 11 (a)), only the former is taxed. However, referring to the foregoing discussion, draft legislation has already been published relating to the introduction of a capital gains tax. Gird (1995), however, states that the imposition of a capital gains tax in South Africa needs most careful consideration in order to take cognisance of our unique, rapidly changing economic and political climate. He continues and points out that the tax should not be imposed, as has been the experience of many other countries, in order to satisfy the politicians' need to be seen taxing the wealthy.

2.5.3.1 Horizontal and vertical equity

Adam Smith (1937 reprint), indicates that equity can be tested by reference to two principles, namely 'the ability to pay' and the 'benefit principle'. When taxes are levied on the basis of ability to pay, horizontal and vertical equity become relevant. According to James and Nobes (1988), horizontal equity means that people in the same circumstances must bear the same tax liability. According to the Margo Report (1987), vertical equity means that the tax liability of people in different economic circumstances differs. However, the Margo Report does recognise that precisely when people's economic circumstances differ is a value judgement and therefore a moot point.

The Katz Commission's Report of 1995 states that capital gains tax is equitable both in terms of vertical and horizontal equity, since the ability to pay principle is effectively taken into account. They argue that the absence of capital gains taxation interferes particularly with the progressive incidence of the income tax across the income distribution, as ownership of capital is highly concentrated amongst higher income groups. Additionally, income switching aggravates these problems. However, contrary to the Katz (1995) statements, Gird (1995) argues that capital gains are in effect not equitable. He states that the tax burden could fall mainly on the wealthier taxpayers who are already paying a higher marginal rate of income tax. He continues and

mentions the argument that the perceived political equity of a capital gains tax, whereby the wealthier are supposedly the greatest effected, is often not achieved, as it is precisely the wealthy who can afford to sit on rather than realise their gains.

2.5.3.2 The tax base

The width of a CGT system has a direct effect on the neutrality and efficiency of the capital gains tax (Fölsher, 1993). Limiting the tax base reduces the administrative complexity of the tax, but increases tax evasion opportunities, especially in a country with a sophisticated financial system (Fölsher, 1993). Additionally, a limited tax base influences economic efficiency (as described in section 2.2.2) in the sense that asset keeping is discouraged in properties falling under the CGT regime and encouraged in assets falling outside the CGT net – a distortion in the economic allocation of resources occurs (Stallman & Jones, 1997).

According to Fölsher (1993), the tax base of the Australian and Canadian CGT systems are unlimitedly wide. Their systems are taxing, subject to certain exclusions, all capital gains realised through the disposal of any kind of asset, including intangible assets like goodwill, intellectual goods, claims against debtors, etc. In contrast the tax base of Zimbabwe and Botswana limits the taxation of capital gains to fixed property and tradable securities. Fidji opted for a simple and transparent system and only levy CGT on land and buildings, and excludes primary dwellings, stocks and equity.

The currently proposed South African CGT system correlates with the Canadian and Australian systems in the sense that it is fairly wide, except for the introduction of intangible assets. It can therefore be argued that at least economic efficiency in terms of resource allocation was kept in mind during the design of the draft legislation.

2.5.3.3 The tax rate

CGT can either be a separate tax rate levied on the realised capital gain in isolation, or it can be part of the Income tax system where the CGT regime determines the amount of capital gains to be regarded as taxable income. The South African regime coincides with the latter. In this regard international practice indicates that various CGT rate-

schemes are implemented consisting of different inclusion rates, CGT tax rates and primary exclusions. The intensity of the CGT burden is therefore dependent on the relationship between the tax rate, the capital gains inclusion rate and the primary exclusion granted. It is clear from the draft legislation that the burden of CGT will fall more on the corporate side of the economy. This statement stems from the differential treatment of legal and natural entities in terms of the inclusion rate – 25% for natural persons and 50% for legal entities – as well as the primary exclusion of R10 000 only granted to natural persons.

Taking the USA as an example, presents somewhat of a roller coaster ride. In the mid 1970's capital gains were taxed as high as 35%. This tax rate was cut to 28% in 1978 and cut further to 20% by the 1981 Reagan tax reduction (Utt, 1992). The Tax Reform Act of 1986 introduced a capital gains tax of 28% (equal to the income tax rates), only to be changed back to the current 20% tax rate introduced by the Tax Reform Act of 1997. Globally, researchers are fiercely arguing in terms of the optimal capital gains tax rate and various articles concluded that the optimal rate is actually 0% (Chamley, 1986; Razin & Sadka, 1995; Jones, Manuelli & Rossi, 1997; Atkeson *et al*, 1999). These authors argue that the total welfare of a country's economy will be higher when capital gains taxation is abolished. Even the Chairman of the United States Federal Reserve Bank, Allan Greenspan, recently went on record stating that he felt that CGT should be set to zero (Personal Finance, 2001).

According to the World Bank (1998), there are substantial differences across countries in the tax treatment of capital income. Within the European Union tax rates on capital income vary between 0% and 62% in Denmark, and 0% and 74% in the Netherlands. Equal treatment of all taxpayers is obtained in Finland and Norway only, where a uniform rate of 28% applies to all types of capital income (World Bank, 1998).

2.5.3.4 Indexation

Given the time value of money and the major impact inflation has on it, many countries, especially the ones with a significant inflation rate, introduced indexation into their CGT systems. Indexation ensures that the capital appreciation component caused by the ordinary time value of money, is not included into the tax base of CGT.

In a study by Fölsher (1993), the GCT systems of Australia, Canada, Zimbabwe, Botswana and the proposed system of Fiji were investigated. Of these five countries, only Canada did not make use of indexation, but can also be regarded as a low inflation country. Australia, Fiji and Botswana (only in terms of immovable property) utilise a consumer price index for indexation purposes.

According to Wesbury & Given (1995), the American CGT system also does not provide for indexation. They pointed out that if an investor invested a $100 000, in 1980, in a small business and sold it in 1992 for $200 000, a gain of $100 000 would be taxable at the US rate of 28%. However, during the same period the consumer price index of the USA rose by 70,4%, implying an average annual inflation rate of 4,5%. This means that although the nominal gain was $100 000, the real gain was only $29 600 ($70 400 came from inflation). The effective real tax rate is therefore much higher than the 28% that has been advertised, and is in fact 94,6% ($28 000/$29 600) (Wesbury & Given, 1995). Table 2.3 portrays the effective tax rate, given the real annual rate of return and the different inflation rates for the US CGT system (using a 28% CGT rate).

Table 2.3: Effective capital gains tax rate scenarios (using a 28% CGT rate)

Average annaul inflation rate	**Real annual rates of return on investment**				
	2%	**3%**	**4%**	**5%**	**6%**
0%	28%	28%	28%	28%	28%
4%	84%	65,3%	56%	50,4%	46,7%
8%	140%	102,7%	84%	72,8%	65,3%

Source: Adapted from Wesbury & Given (1995)

An investor in the USA realising a nominal annual rate of return of 8% and given an inflation rate of 4% in effect realises a real rate of return of 4%. Referring to Table 2.3, upon selling the asset, the concerned investor will be taxed at an effective rate of 56% on the capital gain. It is furthermore evident, that as long as the inflation rate is above 0%, it will have a significant impact on the effective tax rate when indexation is not allowed.

Referring to the draft legislation, the proposed South African capital gains tax regime will not provide for indexation. As a reason, SARS claims that the South African inflation targets will ensure that the impact of the time value of money will not be that severe (SARS, 2000). SARS further introduced a relative low inclusion rate (in the case of natural persons) implying that the taxpayer is not taxed on the total amount of capital gains. However, referring to Table 2.3, even a relative low inflation rate of 4% already has a significant impact on the effective tax rate. Table 2.3 presents evidence that inflation rates in the region of 8% and higher have a tremendous impact on the effective CGT rate. The absence of indexation and presence of relative high inflation rates can even lead to a situation where the tax amount exceeds the real capital gain.

2.5.3.5 Impact on capital mobility

Auerbach (1992) indicates that, since capital gains are only taxed once it is realised, it favours the taxpayer, who in effect receives an interest free tax deferral, with the result that the effective tax rate on accrued capital gains tax is well below the statutory rate. This cost of the tax deferral is an economic distortion known as the lock-in effect (Stretton, 1994). According to Stretton (1994), investors usually hold on to assets with accrued capital gains for longer than they would if no CGT is levied. Without a CGT, investors would usually alter their investment portfolios if other investments were presenting a higher return. The mobility of capital therefore seems to be impaired by a CGT. Gird (1995) agrees and argues that a tax on capital gains would encourage the 'lock-in' effect by discouraging the sale of certain investments, even where it is economically wise to dispose of these investments. The disposal of the asset will thus become a trade-off between the amount of capital lost due to taxation and the possible higher return of a new investment. Risk considerations in terms of the success of a new investment will certainly influence this decision. Eventually such decisions could imply that the concerned capital be kept in the lower yielding investment rather than being realised, taxed thereon, and then put to a better economic use with a possible higher return on investment. Sandford (1992) states that the lock-in effect, where owners cling to their assets, negatively influences the mobility of capital. This hindrance in terms of capital movement will impact on entrepreneurial activity, economic growth as well as job creation.

2.5.3.6 Impact on the value of agricultural property

The initial impact of a capital gains tax on land values could be positive. This argument is based on the provision of the draft legislation that the taxpayer can choose to either value his/her property on the effective date of CGT or use the time based apportionment approach. Consequently, farmers who choose to have their farms valued, will try to influence the valuation positively since the higher the valuation, the higher the base cost will be upon selling the farm. However, it can also be argued that the land market will discount the negative impact of CGT causing market values to decrease. Therefore, the question whether the valuation price evolving from the above process will be defendable in an open land market remains uncertain. Notion should be taken that the buyer of land will certainly make an attempt to discount the future CGT impact. Farmers should familiarise themselves with the fact that, in the SARS CGT Guide, the above process has been anticipated and taxpayers are warned that unrealistic valuations will be evaluated and if any inconsistencies are found, penalties will be charged (even as high as 40%).

Featherstone (1997) conducted a study on the effect of different taxes on the market value of farmland in the USA. His results indicated that by lowering the impact of capital gains taxation, the value of farmland in effect increases. The inverse will therefore also be true being that the introduction of capital gains tax implies a decrease in the value of farmland. An interesting point to note is that the seller of land actually has to do a trade-off between a higher price for his property (implying a larger amount of CGT) and a lower price (implying a lower CGT liability). Utt (1992) points out that the last two decades in the USA revealed that investors, businesses and venture capital markets are sensitive to changes in capital gains tax rates. Data has shown that when rates are raised, venture funding slows or declines; conversely, when rates are cut, the venture market spurts (Utt, 1992). This phenomenon only indicates the impact of CGT on risk-bearing investments. Given agriculture's inherent risk due to climatic and market volatility, it can be deducted that CGT will have a negative impact on agricultural property values due to a lower demand for risk-bearing ventures.

2.5.3.7 Impact on investment decisions

In general the Franzsen Commission's Report (1969) concluded that a tax on capital gains would result in a shift away from investments that show a high degree of capital appreciation relative to interest or dividends. The taxing of capital gains could therefore curb the flow of funds to risk-bearing ventures. The problem is further compounded due to the fact that shareholders are exempt from normal tax on their dividend receipts and accruals in South Africa, so there would thus be an incentive to invest in shares with little or no capital appreciation which would pay out large tax-free dividends. However, this situation can be counterfeited by the secondary tax on companies, which is indirectly borne by the shareholders.

In terms of the effects on agriculture in specific, most farming ventures can be categorised as capital intensive and require huge investment in buildings, equipment and land to produce primary agricultural commodities. Recently, South African farmers started to adapt to the international trends in terms of shifting from a commodity based production approach towards the coordination of production with the specific demand of the local and international consumers (niche markets). This shift, however, entails additional capital expenditures, since the farmer is required to produce products with specific characteristics, requiring additional equipment and processes. Furthermore, on-farm value adding is widely believed to be a solution to the low share of the consumer Rand that farmers currently receive. Due to the impact of capital gains tax, it can, however, be argued that farmers will in effect be discouraged from selling outdated assets and equipment so that they can adapt and upgrade their operations.

2.5.3.8 CGT impact on savings

Gird (1995), states that CGT is in fact a tax paid out of capital, which amounts to savings and has a greater effect on personal savings than has normal income tax. Utt (1992), states that advocates of a reduced capital gains tax rate in the USA content that capital gains tax increases the cost of capital for firms, thereby decreasing the return on investment. Lower returns on investment on its turn hampers investment decisions, since a firm will set a certain required rate of return before investing in a venture – increased costs of capital will have an increasing effect on the required rate of return.

Gird (1995) concludes that the effects of a stagnant economy, resulting from a lack of savings and investment will be felt by all sectors of the economy, not only by the wealthy. Utt (1992) summarises the economic effect of CGT as impacting on the discouragement of investment, savings and entrepreneurial risk-taking. He points out the negative impact the above effects have on the competitiveness of a country.

2.5.3.9 Revenue potential

In the United States, for the period 1980 to 1985, the fiscus collected an average of US$15,8 billion per annum in revenue attributable to taxes on long-term capital gains. This constituted an average 0,46% of GNP (Katz, 1995). In the United Kingdom, CGT generated 0,4% of GDP in 1994/1995 (0,7% for the 1999/2000 fiscal year) (Personal Finance, 2001). In 1995, the IMF Fiscal Affairs Department expressed the opinion that the direct revenue potential of the capital gains tax remains limited and could at best generate additional tax revenue to the extent of 0,1 to 0,3 percent of a country's GDP (Katz, 1995). The Katz Commission (1995) was of the opinion that during 1995/96 a CGT revenue of between R500 million and R1,5 billion could have been realised, given the then GDP of approximately R500 billion.

SARS, however expects an income of between R900 million and R2,7 million from CGT (SARS, 2000). The financial press, however, advocates revenue potential to only amount to R100 million per year due to the high initial administration costs (Cameron and Dasnois, 2000). According to Cameron and Dasnois (2000), eventually revenue potential will be in the region of R900 million once all the systems and processes are running smoothly.

2.5.3.10 Administrative Aspects of a CGT

Many first world countries have opted for a capital gains tax even though many of them were well aware of the complexities and administrative difficulties that have to be faced in applying this kind of tax. In contrast, many developing countries have desisted from introducing such a tax mainly due to these administrative difficulties (SA Banker, 2000). Even the New Zealand and Dutch governments decided not to implement a capital gains tax due to the high administrative costs (Business Day, Sept. 2000).

Soon after the implementation of CGT the financial press drew attention to the disastrous results experienced by the United Kingdom after CGT was implemented during the Callaghan administration of the 1960's (CDFM, 2000). SARS was unfortunate enough to mention this attempt in its proposals, which gave the financial press a golden opportunity to fire a full broadside. It is suggested that it is safe to say that CGT was a complete disaster in the United Kingdom. But this does not necessarily mean that the system will fail (from the point of view of the fiscus at least) when it is implemented in South Africa in 2001.The problems with CGT that were experienced in the United Kingdom's Customs and Excise were twofold:

- It was virtually impossible to detect all capital gains.
- The legislation was too complicated to enforce.

According to CDFM (2000), it did not take the ANC Government long to realize, quite rightly, that if there was to be any hope of achieving an "African Renaissance", the first step would be to completely overhaul the Revenue collection mechanism. A programme of reform was implemented as follows:

- The Revenue collection function was given complete autonomy by divorcing it from what was the Public Service Commission and creating South African Revenue Services ("SARS") under the Department of Finance.

- Funds were made available to staff SARS properly and replace its computer systems.

- Tax amnesty and public awareness campaigns were designed in an attempt to bring all taxpayers into the system.

Although SARS has experienced a host of problems, which have caused plenty of criticism to be leveled at its initiative, progress is being made. Taxpayers are now advised to beware (CDFM, 2000):

- Staff recruitment and training is yielding results. Furthermore, substantial additional financial resources have been granted to SARS to take these processes even further.

- The New Income Tax System (NITS) became operational in December 1999. The teething problems were acute. However, SARS has already made huge progress in sorting these problems out. It can now be accepted that NITS is operational.

- When fully operational the NITS interface with the Deeds Registry, Motor Vehicle Registry, Johannesburg Stock Exchange and financial institutions will place the competent SARS official in a position to detect all forms of income without reference to the tax return.

Although there are approximately 43 million people in South Africa, only about 500 000 are responsible for submitting tax returns (CDFM, 2000). Consequently SARS will soon be in a position that it will have enormous resources at its disposal to monitor a relatively small population. Taxpayers will really receive "individual attention".

In view of the above it is submitted that SARS will have the resources to collect CGT. The problems encountered by other tax authorities in the collection of CGT cannot really be compared to South Africa. Furthermore, perhaps Manuel has taken a lesson from Barend du Plessis. The only reason du Plessis was able to get away with VAT implementation was by imposing the purest and simplest form of VAT (CDFM, 2000). Manuel has done the same with CGT. The concepts demonstrated in the SARS documents are simple in the extreme (as far as CGT is concerned).

However, the financial press does not agree with the above in terms of administrative capacity. The cost of collecting and developing the necessary capacity is seen to be too high and render CGT's revenue generating potential to be non-economical. Absa (in Insurance Times and investments, June, 2000) mentioned that from a sample of 36 countries, South Africa will be the only country that will have four out of six different taxes on capital. A research paper released by the South African Foundation (quoted in the Business Day of 4 September 2000), states that SARS' revenue expectation of between R900 million and R2,7 million is insufficient to bring about greater income

equality. This paper also points out to an auditor-general's report that says the revenue service was unable to collect R7bn in outstanding VAT because of an excessive workload and unfilled vacancies.

SARS is however, determined that they will be able to handle the CGT administration. They already budgeted for R100 million administrative costs and states that the benefits of the CGT will not be the only revenue generated, but many tax loopholes will be countered implying that many other taxes will then be more effectively collected (SARS, 2000).

2.6 Summary

The introduction of new taxes holds various implications for the agricultural economic sector of a country. Given a deregulated agricultural arena together with an open border policy, the introduction of additional taxes does not seem rational in terms of a farmer's global competitiveness. This chapter accentuated that the introduction of new taxes should not be evaluated in isolation, but rather through taking account of the economic effects on the concerned sector as well as the interactive relationship between a new tax and the existing environment in which agriculture operates.

It crystallised from the various sources of literature that the impact of land taxation will be the greatest on the value of land, investment decisions in agriculture, the risk profile of agriculture and ultimately the decision to farm or not to farm. In terms of the reduction in land value, the effects on security based lending and the farmer's balance sheet indicated negative effects. Worldwide, the administrative complexity and costs of land taxation has proven to absorb a significant amount of the tax revenue implying that non-fiscal goals might be more important to government than revenue goals. It was furthermore pointed out that the new entrant in agricultural (being a historically disadvantaged citizen or not) will have to face the additional costs of land taxation influencing their viability in a farming venture.

In terms of a capital gains tax, the proposed South African CGT regime will have a certain effect as well. The horizontal and vertical equity characteristics of a CGT was pointed out, but certain authors argue that the burden can sometimes actually fall more

heavily on the poorer side of the economy. In terms of the tax base it was indicated that the proposed South African CGT base is to an extent characterised by neutrality and economic efficiency due to its wideness. Regarding the tax rate, it was indicated that various countries use various rates. International research and prominent international figures, however, has indicated that the most effective CGT rate is actually zero percent. Currently the South African CGT system does not provide for indexation. The literature indicated that inflation has a significant impact on the effective rate of taxation and that government should seriously consider an indexation system. Regarding the value of agricultural property, it was indicated that CGT has a negative effect on investments implying that risky investments such as agricultural property will decline in value. In terms of administration, international experience has shown that administrative costs will be high due to the complexity of a CGT system. SARS, however referred to their New Income Tax System (NITS) and is confident that they will be able to handle the CGT processes.

It is interesting to note that South Africa tends to introduce tax instruments that other countries are trying to abolish. This statement refers to land taxation as well as capital gains tax. Internationally land taxes are becoming less important as other more sophisticated tax instruments are implemented. The same is actually happening to CGT. Prominent researchers and even politicians are indicating that CGT does not serve its professed fiscal and non-fiscal goals and that the optimal rate is actually zero percent.

CHAPTER 3

POSSIBLE SHORT-TERM EFFECTS OF LAND TAX

3.1 Introduction

Short-term effects point to the impact of land tax over a one-year period and will naturally be the effects of land tax during the first year of implementation. It will furthermore, over the short-term, mainly have its impact on the cost structure of the farm. Analyzing the longer-term effects of land taxation will involve an extended time period (more than one year). However, the next chapter will comment on the longer-term effects land taxation might imply.

This chapter commences with a description of the static linear programming methodology that was employed to analyse the effect of land tax over the short-term. This discussion is followed by a description of the study areas after which the research results are presented and thoroughly discussed. The impact of land taxation in terms of the backward and forward multipliers is also discussed.

3.2 Methodology

In theory, various tools and techniques can be used to analyze the efficient utilization and allocation of scarce resources within the farm business. Linear programming is essentially a mathematical technique for solving a problem that has certain characteristics. The essential characteristics of linear programming is presented in the function or objective to be maximized or minimized, limited resources that are available to be used in the satisfaction of the objective, and the fact that the available resources have numerous means of utilisation (Boehlje & Eidman, 1984). Most resource allocation decisions in the farming business have these characteristics and linear programming algorithms can therefore be applied in almost any resource allocation problem faced by the farm manager. The procedure can furthermore handle

more complex problems than budgeting or marginal analysis. Although the data and input requirements for linear programming are similar to those of other techniques, the computations required to obtain a solution are much more complex and tedious, using budgeting and other techniques. In the past, the utilisation of linear programming was, however, limited due to the computational requirements. Nevertheless, the technology of today in terms of computer computation capacity altered this situation and it is no longer difficult to perform these operations – in fact, the computers of today can perform far more complex calculations in a fraction of the time.

Linear programming provides not only information on the best or most optimal way of allocating resources and the best production-marketing-financial plan, but provides additional information concerning the value of various resources used in the concerned plan (Louw, 1996). Thus, a computational byproduct of the programming procedure is information concerning what resources are limiting the income potential of the farm operation, what resources are in excess, and how much it is worth to acquire additional units of the limiting resources - the marginal value product of these resources. For example, linear programming would indicate how much land is used and how much is under-utilized in a whole-farm planning problem, indicate whether land is limiting the potential for growing additional crops and increasing income, and even how much the operator could pay for an additional hectare of land. The value of land created in this way is also called the shadow price of land and represents the marginal revenue that can be realised on an additional unit of land. To elaborate, the shadow price indicates the amount foregone if a hectare of land is lost or withdrawn. Although this information could be obtained from other analysis procedures, it will only be computed with difficulty and significant effort.

Another attribute of using linear programming in farm management analysis is that it can be easily implemented to evaluate how the results would change if changes occurred in product prices or technical efficiency - the sensitivity or stability of the farm plan. For example, the linear programming procedure indicates how the farm organisation will change if overhead cost (e.g. the land tax rate) increases or decreases. Other questions of the "what would happen if...?"-variety, is also handled with ease. For instance, what would happen to income if a land tax were raised at 2% on the market value of land?

Linear programming handles opportunity cost with ease. Opportunity cost reflects the income foregone in using a resource in an alternative enterprise. The process of pricing resources in the production of various products, based on the income generating capacity or opportunity cost of that resource in alternative uses, is the heart of the programming procedure (Louw, 1996). This characteristic will be very useful to provide some indication of the productive value of the land. The effect of a land tax raised at different levels on the shadow value can easily be determined by simply comparing the results before the introduction of the land tax with that after the introduction of the land tax.

3.2.1 Static linear programming models

In this section different case studies have been selected and data has been gathered for insertion into the static model input sheets. Recall that the static linear programming approach stretches only over a one-year period and results are therefore only given for year one. In the subsequent chapter, a dynamic linear programming model is used to test the effect of a land tax over the longer term. The following discussion provides some detail in terms of the mathematics behind the static linear programming model.

Algebraically the objective function of a static linear programming model, in its simplest form is as follows:

$$\sum_{j=1}^{n} \{P_j Q_j - C_j X_j\} = MAX \qquad (1)$$

where:

P_j = the price per unit of good 'j'

Q_j = the selling activity for good 'j'

C_j = the cost of producing 1 Ha of good 'j'

X_j = the producing activity for good 'j'

Equation (1) therefore calculates total revenue (P_jQ_j) and then subtracts total costs (C_jX_j).

The objective function is subjected to:

$$A_{ij}X_j \leq B_i \quad \text{(for all } i = 1,2,...,m) \qquad (2)$$

where:

i	=	1,2,...,m constraints
j	=	1,2,...,n enterprises
A_{ij}	=	the resource requirement of good 'j' activity for constraint 'i'
X_j	=	the producing activity for good 'j'
B_i	=	the constraint level of constraint 'i'

The static linear programming model still provides essential information and will show the effects of land tax on variables like labour use, short term structural changes, changes in the objective function, etc. In this case, the objective function is constructed by using long-term average gross margins, which in itself contains a time factor.

3.2.2 Data used for the analysis

With the aim of obtaining a realistic and representative set of data for the different types of farming enterprises, encompassed that different representative areas be identified for data compilation. The following districts and areas were included:

- **Southern Cape:** Case study of a group of typical farms in the Olifants River basin
- **Great Karoo:** Beaufort West magisterial district
- **Free State:** Bloemfontein magisterial district
- **Natal:** Cedara study group information
- **Mpumalanga:** Nelspruit magisterial district
- **North-West:** Potchefstroom magisterial district

The above areas more or less cover the entire of the South African agricultural sector's characteristics and enterprises. This approach enables an investigation that covers a wide spectrum of the South African circumstances.

Completing the model input sheets require area specific data. In this regard, the necessary data was obtained from a wide spectrum of institutions varying from provincial departments of agriculture to the national department of agriculture, farmers associations, farmer study groups and the former Central Statistical Service (Now, Statistics South Africa). In many areas, computerized enterprise budgets (as constructed by the Directorate of Agricultural Economics) do not exist for all products. Certain budgets required updating whilst, in other cases new budgets had to be constructed from data obtained from farmer associations and farmer study groups.

In the model, different land tax rates are levied on different land tax bases. Market values of the areas under discussion were obtained from farmers associations, study groups and extension officers. The shadow prices of the base scenarios were used as a proxy of the productive use values of the concerned land. The amount of arable hectares, natural pastures, irrigation land, the carrying capacities, labour use, wages, amount of livestock, etc. for each area was gathered as well. The information hereby obtained was utilised to quantify the constraints applicable for each area included in the model.

3.3 Brief overview of the different study areas

Given the objective of this chapter, it was vital that a representative data set be obtained. Complying herewith, an attempt was made to include most of the typical farming areas in South Africa. An approach was followed where areas that could give more or less the same results or, at least show the same direction in terms of the effects of a land tax, were left out. The characteristics of the chosen areas are given below:

- **Southern Cape (Olifants River basin)**

This area represents a typical irrigation scheme. It is situated in the Olifants River basin and mainly long-term agricultural crops are produced. The majority of the crops are under irrigation. The following enterprises represent the main products in this area:

- Citrus, table grapes, wine grapes and tomatoes

This area was included to measure the effect of a land tax on a typical irrigation scheme.

- **Central Karoo (Great Karoo case study)**

The Beaufort West district was chosen to represent the Great Karoo. This area consists of primarily extensive farming enterprises and is situated in the more arid parts of the South African agricultural sector. The most dominant enterprises are livestock with the exception of some small irrigation areas near the rivers. The main products produced in this area are:

- Goats, sheep, dairy, established pastures and beef production.

The Great Karoo area is known for its frequent droughts and it was therefore regarded as essential to include this area in the study.

- **Free State (Bloemfontein magisterial district)**

The Bloemfontein farming area represents the more arid areas on which dry land farming and livestock production are practiced. The concerned area is known for the following products:

- Beef, maize, wheat, sunflower, mutton and dairy.

The Free State is known for its agriculturally supported contribution to the South African economy. It is one of the major suppliers of staple food in the Republic and forms an integral part of the agricultural sector.

- **Kwazulu-Natal (Cedara Study group)**

Data for this case study were obtained from the FINREC Business Summary for Beef farmers (1996/97). The study group consists of 23 farmers in the interior parts of Kwazulu-Natal. These farmers were classified as beef farmers because, on average, approximately 63% of the gross farm income was derived from the beef grade enterprise. The subtropical fruit production areas (i.e. bananas, litchis, etc.) of Kwazulu-Natal were not included, because these enterprises will be represented in the Nelspruit case study. The dominant crops produced are:

- Maize, dry land kikuyu, irrigated ryegrass, dry land eragrostis and dry land smuts finger

The Cedara study group area, with its relative higher rainfall, represents the more intensive livestock producing areas in South Africa.

- **Mpumalanga (Nelspruit magisterial district)**

The Nelspruit magisterial district is known for its production of tropical and other exotic fruit types. Rainfall in this area is relatively high with a favourable climate for subtropical fruit production. A couple of South Africa's major fruit exporters are situated in this area. The main products are:

- Beef, dairy, maize, tobacco, wheat, irrigated lucerne, dry land teff, pecan nuts, avocados, litchies, bananas, mangoes, sugar and valencias.

This case study represents areas with a combination of short- and long-term crops. A large variety is produced and many of the farmers are export orientated, which makes the area important in terms of its agricultural export value.

- **Northwest province (Potchefstroom magisterial district)**

The Potchefstroom magisterial district represents an area where both crop and livestock production forms an integral part of the farm income. The main farming enterprises relating to this region are:

- Beef, dairy, mutton, white maize, grain sorghum, dry beans, sunflower and established pastures.

Potchefstroom is close to the maize triangle with the employment of similar cultivation techniques. This case study therefore represents a typical mixed farming operation.

3.4 Research results

The analysis concerned the measurement of the effect of the following variables:

- Different levels of land tax,
- The cost of the land tax to the owner of the land,
- Different tax bases (i.e. market value versus productive use value),
- Different ways in which the land tax is implemented (e.g. deductible from income tax).
- Comparison in terms of the current Regional Services Levies

Different scenarios were constructed to test the effect of different land tax rates and bases. The scenarios differ mainly in terms of the land tax rate, land tax base as well as deductibility rates regarding income tax. Please note that the maximum marginal tax rate at the time this research was done, was 43% and not 42% as is currently the case.

The aim of the above exercises is to extract information on the most optimal way in which land tax could be implemented. The results of all the areas are not individually discussed in detail since the same trend repeats itself – it is only the magnitude of the impact that differs. It was consequently decided to discuss the Olifants River basin results in detail since this area consists mainly of irrigation land where the market

values and productive use values are the highest implying that the effect of land tax will thus be more intense. The other areas are discussed using summarised tables, indicating the effect of the land tax base and land tax rate. For the sake of completeness, the individual results of each area are, however, provided in Appendix B.

3.4.1 The Olifants River basin results

The situation, as it existed in 1997 in the Olifants River basin was taken as the base scenario. This was done because (1) there is a big difference between the optimum and the base scenario; (2) the Olifants River irrigation farming system is modelled as one unit, which brings with it the problem of averages and aggregation; and (3) the majority of products produced in the Olifants River basin are long-term products, which makes short-term production decisions difficult. The results of all the different scenarios are listed in Table 3.1. An additional scenario representing the case where a 2% land tax is raised on the market values and where current production decisions (base scenario) apply is also given in Table 3.1.

When land tax rates of 0,5%, 1%, 1,5% and 2% is introduced on the shadow prices (utilised as a proxy of the productive use value) of land and it is not deductible from income tax, the land tax per year amounts to R33, R65, R98 and R130 per hectare respectively. Regarding the objective function per hectare, the above values account for 0,59%, 1,19%, 1,80%, and 2,42% of the respective objective functions. When a land tax is raised on the market value of land, the amount per hectare increases sharply as the tax rate increases. The land tax per hectare at a 0,5%, 1%, 1,5% and 2% tax rate is R200, R400, R600 and R800 per hectare, and the percentages relative to the objective function per hectare, accounts for 3,77%, 7,84% 12,23% and 17,00% respectively.

Table 3.1: Summary of the Olifants River case study

Item	Optimal Solution	Land tax (shadow price of land)				Land tax (market value of land)			
		0,5%	1,0%	1,5%	2,0%	0,5%	1,0%	1,5%	2,0%
Land tax per ha (not deductible from income tax)	0	33	65	98	130	200	400	600	800
Objective function per ha (not deductible from income tax)	5505	5472	5440	5407	5375	5305	5105	4905	4705
Land tax as a percentage of the objective function per hectare	0,00%	0,59%	1,19%	1,80%	2,42%	3,77%	7,84%	12,23%	17,00%
Land tax per ha (20% deductible from income tax)	0	26	52	78	104	160	320	480	640
Objective function per ha (20% deductible from income tax)	5505	5479	5453	5427	5401	5345	5185	5025	4865
Land tax as a percentage of the objective function per hectare	0,00%	0,47%	0,95%	1,44%	1,93%	2,99%	6,17%	9,55%	13,16%
Land tax per ha (43% deductible from income tax)	0	19	37	56	74	114	228	342	456
Objective function per ha (43% deductible from income tax)	5505	5486	5468	5449	5431	5391	5277	5163	5049
Land tax as a percentage of the objective function per hectare	0,00%	0,34%	0,68%	1,02%	1,36%	2,11%	4,32%	6,62%	9,03%
Land tax as % of gross income - long-term crops (not deductible from income tax)	0,00%	0,16%	0,31%	0,47%	0,62%	0,96%	1,91%	2,87%	3,83%
Land tax as % gross income – long-term crops (20% deductible from income tax)	0,00%	0,12%	0,25%	0,37%	0,50%	0,77%	1,53%	2,30%	3,06%
Land tax as % gross income – long-term crops (43% deductible from income tax)	0,00%	0,09%	0,18%	0,27%	0,35%	0,55%	1,09%	1,64%	2,18%
Land tax as % gross income – vegetable crops (not deductible from income tax)	0,00%	0,10%	0,21%	0,31%	0,41%	0,64%	1,27%	1,91%	2,55%
Land tax as % gross income – vegetable crops (20% deductible from income tax)	0,00%	0,08%	0,17%	0,25%	0,33%	0,51%	1,02%	1,53%	2,04%
Land tax as % gross income – vegetable crops (43% deductible from income tax)	0,00%	0,06%	0,12%	0,18%	0,24%	0,36%	0,73%	1,09%	1,45%
Land tax as % DAC – long-term crops (not deductible from income tax)	0,00%	0,25%	0,51%	0,76%	1,02%	1,56%	3,13%	4,69%	6,26%
Land tax as % DAC – long-term crops (20% deductible from income tax)	0,00%	0,20%	0,41%	0,61%	0,81%	1,25%	2,50%	3,75%	5,01%
Land tax as % DAC – long-term crops (43% deductible from income tax)	0,00%	0,14%	0,29%	0,43%	0,58%	0,89%	1,78%	2,67%	3,57%
Land tax as % DAC – vegetable crops (not deductible from income tax)	0,00%	0,17%	0,34%	0,51%	0,68%	1,05%	2,07%	3,08%	4,06%
Land tax as % DAC – vegetable crops (20% deductible from income tax)	0,00%	0,14%	0,27%	0,41%	0,55%	0,84%	1,67%	2,48%	3,28%
Land tax as % DAC – vegetable crops (43% deductible from income tax)	0,00%	0,10%	0,20%	0,29%	0,39%	0,60%	1,19%	1,78%	2,36%
Shadow prices of land (Irrigation land)									
Not deductible from income tax	6504,5	6472,0	6439,5	6407,0	6374,5	6304,5	6104,5	5904,5	5704,5
Deductible at 20% from income tax	6504,5	6478,5	6452,5	6426,5	6400,5	6344,5	6184,5	6024,5	5864,5
Deductible at 43% from income tax	6504,5	6478,5	6452,5	6426,5	6400,5	6344,5	6184,5	6024,5	5864,5

When a land tax is deductible from income tax (i.e. at a 43% rate), the situation alters significantly. In terms of the shadow prices as tax base, and rates of 0,5%, 1,0%, 1,5% and 2,00%, the amount of land tax decreases to R19, R37, R56 and R74 per hectare. These values account for percentages of 0,34%, 0,68%, 1,02% and 1,36% relative to the respective objective function values per hectare. With regard to the market values, the variance in the percentages is of a higher magnitude. These results indicate that income tax deductibility favours the farmer who is in a higher income tax bracket. To elaborate, when farmers find themselves in a high tax bracket, the impact of a land tax would be lower since the deductible amount of the tax is (i.e. only 57 % of the land tax is an additional burden – the rest is deductible from ordinary income tax). Therefore, in the cases where the farmer is in a lower tax bracket, land tax would imply a higher tax burden.

Table 3.1 additionally shows the effect of a land tax relative to the direct allocatable costs of the different enterprise types. The same information is also supplied with regard to the different gross incomes. The effect of a land tax, relative to gross income, when raised on market values, ranges from 0,51% to 3,83% for long-term crops depending on the land tax rate levied. When levied on shadow prices the range for this selection is between 0,06% and 0,62%. The difference in the effect of these two tax bases is therefore obvious. If the land tax is deductible from income tax, the magnitude of the concerned amount decreases as the deductibility from income tax increases. For the vegetable crops, the trend is more or less the same. However, it differs in the sense that the effect on these crops seems to be lower than in the case of the long-term crops. A factor contributing hereto might be the high investment costs and consequently higher land values associated with established long-term crops.

When a land tax is expressed as a percentage of the direct allocatable cost, the same trend arises as when the land tax is expressed as a percentage of gross income. Again the effect of the market value is more severe than in the case of shadow values. It is important to note that the tax as a percentage of the direct allocatable costs as well as a percentage of gross income, is not comparable with the tax rate levied. To report on the effect of the tax rate, one should rather compare it with the net farm income because this variable determines the ability of the farmer to pay the tax.

When the land tax is levied on the market value the effect on net farm income is much larger than the actual tax raised – when not deductible from income tax and levied at 2% on market values, the land tax per hectare consumes 17% of the net farm income per hectare. These findings coincide with Niewoudt (1980) & Ortmann (1993), who found that the average return on investment in agriculture is 4 to 5%. If land tax, in the above case, constitutes 17% of net farm income, it boils down to an almost 2% return of the land that is being absorbed by the land tax liability. For arguments sake, if a farmer does realise 5% on his investment, almost 40% (2% of the 5%) of the profits are nationalised through land taxation. It can therefore be argued that the state actually becomes a partner in the farming business without any contributions or risk taking. In the case where the land tax is raised on shadow prices the effect is much closer to the actual tax raised. One can therefore say that a land tax raised on market values will not take the ability-to-pay principle into account, whilst in the case of the shadow prices, the effect is quantifiable and is much closer to the tax rate being raised. The small differences between the effect on the net farm income and the tax rate can be attributed to data problems as well as the fact that shadow values are only a proxy of the productive use value. Therefore, in theory, the effect on the net farm income should be equal to the effect of the land tax rate since the productive potential of the land should be equal to its net income raising capability.

Referring to Chapter 2, Eckert *et al* (1997) calculated the multipliers of the different sectors of the economy of the Western Cape. It is seen as appropriate to show the actual effect of the land tax using this case study. Table 3.2 presents the multipliers of the Western Cape.

Table 3.2: Multipliers of the Western Cape economy

Item	Unit	Economic sector		
		Agriculture	Agribusiness	Non-Agriculture
Employment multiplier	Jobs/R mil.	72,9	42,4	39,5
Capital per job	R 000	25,5	27,8	36,9
GDP multiplier	Rand/Rand	1,27	1,07	0,83
Government revenue	Rand/Rand	0,26	0,20	0,16
Farm worker income %	Per cent	14,28	5,35	5,41
Imports	Rand/Rand	0,42	0,55	0,65

Source: Eckert *et al,* (1997)

The multiplier effects of a decline in the objective function value of the Olifants River basin after a land tax is imposed is given in Table 3.2. It is clear from Table 3.2 that apart from the additional cost to farmers, land tax has a negative impact on the economy as a whole. Quite a number of job opportunities will be lost if a land tax is imposed. The exact number depends on the tax rate and the tax base used. The revenue collected from the land tax will however be reinvested in the economy. This investment will have its own positive multipliers. However, the benefit will be smaller since, as can be seen from Table 3.2, multipliers of agriculture exceeds that of the non-agricultural sector.

The multiplier effects of a land tax in terms of the different land tax regimes are given in Table 3.3. When a 2% land tax is levied on the market values and if it is not deductible from income tax, the Olifants River basin will have to sustain the termination of 1 305 jobs. Referring to the GDP multiplier, the contribution of the Olifants River basin to the GDP will decrease by R 22,7 million. Government revenue will decrease by R 4,7 million. On the other hand, land tax revenue amounts to a mere R 12,6 million for the same scenario.

When the land tax is levied on shadow prices for the same scenario as above, the effect is smaller. The employment multiplier indicates a loss of 212,2 job opportunities and a decrease of R3,7 million in the contribution to the GDP. It is clear from this analysis that whatever land tax regime is followed, the effect will be negative on the economy as a whole. The land tax revenue will have to be wisely allocated to compensate for the negative effect on farm income. On the other hand, government might, however, have as its objective the redistribution of income.

Table 3.3: Effect of different land tax rates and bases on certain economic variables in the Western Cape economy

Land tax is not deductible from income tax								
	Shadow prices of land				Market value of land			
Item	0,5%	1,0%	1,5%	2,0%	0,5%	1,0%	1,5%	2,0%
Decrease in objective function values	-727558,0	-1455116,0	-2182674,0	-2910232,0	-4477280,0	-8954560,0	-13431840,0	-17909120,0
Employment multiplier	-53,0	-106,1	-159,1	-212,2	-326,4	-652,8	-979,2	-1305,6
GDP multiplier (mill)	-0,9	-1,8	-2,8	-3,7	-5,7	-11,4	-17,1	-22,7
Government revenue (mill)	-0,2	-0,4	-0,6	-0,8	-1,2	-2,3	-3,5	-4,7
Land tax revenue (mill)	0,5	1,0	1,5	2,0	3,1	6,3	9,4	12,6
Land tax is deductible at a 20% income tax rate								
	Shadow prices of land				Market value of land			
Item	0,5%	1,0%	1,5%	2,0%	0,5%	1,0%	1,5%	2,0%
Decrease in objective function values	-582046,4	-1164092,8	-1746139,2	-2328185,6	-3581824,0	-7163648,0	-10745472,0	-14327296,0
Employment multiplier	-42,4	-84,9	-127,3	-169,7	-261,1	-522,2	-783,3	-1044,5
GDP multiplier (mill)	-0,7	-1,5	-2,2	-3,0	-4,5	-9,1	-13,6	-18,2
Government revenue (mill)	-0,2	-0,3	-0,5	-0,6	-0,9	-1,9	-2,8	-3,7
Land tax revenue (mill)	0,4	0,8	1,2	1,6	2,5	5,0	7,6	10,1
Land tax is deductible at a 43% income tax rate								
	Shadow prices of land				Market value of land			
Item	**0,5%**	**1,0%**	**1,5%**	**2,0%**	**0,5%**	**1,0%**	**1,5%**	**2,0%**
Decrease in objective function values	-414708,1	-829416,1	-1244124,2	-1658832,2	-2552049,6	-5104099,2	-7656148,8	-10208198,4
Employment multiplier	-30,2	-60,5	-90,7	-120,9	-186,0	-372,1	-558,1	-744,2
GDP multiplier (mill)	-0,5	-1,1	-1,6	-2,1	-3,2	-6,5	-9,7	-13,0
Government revenue (mill)	-0,1	-0,2	-0,3	-0,4	-0,7	-1,3	-2,0	-2,7
Land tax revenue (mill)	0,3	0,6	0,9	1,2	1,8	3,6	5,4	7,2

Table 3.4: The effect of different land tax rates on the objective function (NFI/ha) (%) when raised on market values

Region	Great Karoo	Bloemfontein	Nelspruit	Potchefstroom	Cedara	Olifants River
1% land tax if not deductible from income tax						
% change in the objective function (%/ha)	-7,80%	-1,85%	-2,51%	-3,26%	-2,54%	-7,27%
Land tax (R/ha)	R 1,37	R 7,00	R 27,80	R 11,30	R 5,60	R 400,00
1,5% land tax if not deductible from income tax						
% change in the objective function (%/ha)	-11,70%	-2,77%	-3,76%	-4,90%	-3,82%	-10,90%
Land tax (R/ha)	R 2,05	R 10,50	R 41,70	R 17,00	R 8,40	R 600,00
2% land tax if not deductible from income tax						
% change in the objective function (%/ha)	-15,60%	-3,69%	-5,02%	-6,53%	-5,09%	-14,53%
Land tax (R/ha)	R 2,74	R 14,00	R 55,50	R 22,70	R 11,20	R 800,00
1% land tax if deductible at 20%from income tax						
% change in the objective function (%/ha)	-6,24%	-1,48%	-2,01%	-2,61%	-2,04%	-5,81%
Land tax (R/ha)	R 1,09	R 5,60	R 22,20	R 9,10	R 4,50	R 320,00
1,5% land tax if deductible at 20%from income tax						
% change in the objective function (%/ha)	-9,36%	-2,22%	-3,01%	-3,92%	-3,05%	-8,72%
Land tax (R/ha)	R 1,64	R 8,40	R 33,30	R 13,60	R 6,70	R 480,00
2% land tax if deductible at 20%from income tax						
% change in the objective function (%/ha)	-12,48%	-2,96%	-4,01%	-5,22%	-4,07%	-11,63%
Land tax (R/ha)	R 2,19	R 11,20	R 44,40	R 18,20	R 9,00	R 640,00
1% land tax if deductible at 43% from income tax						
% change in the objective function (%/ha)	-4,45%	-1,05%	-1,43%	-1,86%	-1,45%	-4,14%
Land tax (R/ha)	R 0,78	R 4,00	R 15,80	R 6,50	R 3,20	R 228,00
1,5% land tax if deductible at 43% from income tax						
% change in the objective function (%/ha)	-6,67%	-1,58%	-2,15%	-2,79%	-2,18%	-6,21%
Land tax (R/ha)	R 1,17	R 6,00	R 23,70	R 9,70	R 4,80	R 342,00
2% land tax if deductible at 43% from income tax						
% change in the objective function (%/ha)	-8,90%	-2,11%	-2,86%	-3,72%	-2,90%	-8,28%
Land tax (R/ha)	R 1,56	R 8,00	R 31,70	R 12,90	R 6,40	R 456,00

Table 3.5: The effect of different land tax rates on the objective function (NFI/ha) (%) when raised on shadow values

Region	Great Karoo	Bloemfontein	Nelspruit	Potchefstroom	Cedara	Olifants River
1% land tax if not deductible from income tax						
% change in the objective function (%/ha)	-0,92%	-0,87%	-1,12%	-1,34%	-1,21%	-1,18%
Land tax (R/ha)	R 0,16	R 3,30	R 12,40	R 5,20	R 2,70	R 65,00
1,5% land tax if not deductible from income tax						
% change in the objective function (%/ha)	-1,38%	-1,31%	-1,68%	-2,00%	-1,82%	-1,77%
Land tax (R/ha)	R 0,24	R 5,00	R 18,60	R 7,80	R 4,00	R 98,00
2% land tax if not deductible from income tax						
% change in the objective function (%/ha)	-1,84%	-1,75%	-2,24%	-2,67%	-2,43%	-2,36%
Land tax (R/ha)	R 0,32	R 6,60	R 24,80	R 10,40	R 5,30	R 130,00
1% land tax if deductible at 20%from income tax						
% change in the objective function (%/ha)	-0,74%	-0,70%	-0,90%	-1,07%	-0,97%	-0,94%
Land tax (R/ha)	R 0,13	R 2,60	R 9,90	R 4,20	R 2,10	R 52,00
1,5% land tax if deductible at 20%from income tax						
% change in the objective function (%/ha)	-1,10%	-1,05%	-1,34%	-1,60%	-1,46%	-1,42%
Land tax (R/ha)	R 0,19	R 4,00	R 14,90	R 6,30	R 3,20	R 78,00
2% land tax if deductible at 20%from income tax						
% change in the objective function (%/ha)	-1,47%	-1,40%	-1,79%	-2,14%	-1,94%	-1,89%
Land tax (R/ha)	R 0,26	R 5,30	R 19,80	R 8,40	R 4,30	R 104,00
1% land tax if deductible at 43% from income tax						
% change in the objective function (%/ha)	-0,52%	-0,50%	-0,64%	-0,76%	-0,69%	-0,67%
Land tax (R/ha)	R 0,09	R 1,89	R 7,10	R 3,00	R 1,50	R 37,00
1,5% land tax if deductible at 43% from income tax						
% change in the objective function (%/ha)	-0,79%	-0,75%	-0,96%	-1,14%	-1,04%	-1,01%
Land tax (R/ha)	R 0,14	R 2,80	R 10,60	R 4,50	R 2,30	R 56,00
2% land tax if deductible at 43% from income tax						
% change in the objective function (%/ha)	-1,05%	-0,99%	-1,28%	-1,52%	-1,38%	-1,35%
Land tax (R/ha)	R 0,18	R 3,80	R 14,10	R 5,90	R 3,00	R 74,00

The neutrality principle (i.e. resource allocation between different areas) is therefore not followed. It is also difficult to quantify what the effect will be on the net farm income of the different areas because one will first have to identify the non-farm factors that are capitilised in the market values of the different land areas. Raising a land tax on market values can therefore be seen as distortive.

When a land tax is levied on the shadow prices as tax base, the percentage effect of the land tax on the net farm income of the different areas is more comparable even though the actual tax per hectare paid differs considerably. Table 3.5 represents the results of this scenario. When a land tax is levied at a 2% rate on the shadow price of land and if it is not deductible from income tax, the effect in terms of the objective function per hectare ranges between 1,84% and 2,67%. When a land tax is levied at 2% and deductible from income at 43%, the effect of a land tax in terms of the objective function per hectare is 1,05%, 0,99% 1,28% 1,52% 1,38% and 1,35% for the Great Karoo, Bloemfontein, Nelspruit, Potchefstroom, Cedara and Olifants River areas respectively. It is clear from these results that when shadow values are used as the tax base, the difference in terms of the effect of the tax is of a smaller magnitude between the different areas.

In theory, the effect of a land tax when raised on the productive use value of land (in this study shadow prices are used as a proxy for productive use value) should be equal to the actual land tax rate being raised. However, this can only be true when the productive use value has been calculated with absolute accuracy. The productive use value should only represent the productive potential of the land and nothing more or less. As mentioned, shadow prices are only a proxy of the productive use value and resulted in differences regarding the effect of land tax. However, it should be noted that this method already presents better results than when the market value of land is used.

3.4.2.2 Land tax as a percentage of direct allocatable costs for the different areas

Tables 3.6 and 3.7 present the research results when land tax is expressed as a percentage of the direct allocatable cost of different enterprises in the concerned areas.

Table: 3.6: Land tax as a percentage of direct allocatable costs (DAC) if raised on market values

Region	Great Karoo	Bloemfontein	Nelspruit	Potchefstroom	Cedara
0,5% land tax if not deductible from income tax					
Land tax as % of DAC/LSU – livestock	2,75%	2,52%	3,80%	2,17%	2,83%
Land tax as % of DAC - dry-land cash crops	0,25%	0,83%	0,48%	0,78%	0,65%
Land tax as % of DAC - irrigation crops	0,13%	1,19%	0,87%	1,10%	0,90%
1% land tax if not deductible from income tax					
Land tax as % of DAC/LSU – livestock	5,50%	5,05%	7,60%	4,34%	5,67%
Land tax as % of DAC - dry-land cash crops	0,50%	1,65%	0,96%	1,54%	1,30%
Land tax as % of DAC - irrigation crops	0,26%	2,35%	1,72%	2,18%	1,78%
1,5% land tax if not deductible from income tax					
Land tax as % of DAC/LSU – livestock	8,25%	7,57%	11,39%	6,51%	8,50%
Land tax as % of DAC - dry-land cash crops	0,74%	2,45%	1,44%	2,30%	1,93%
Land tax as % of DAC - irrigation crops	0,39%	3,49%	2,56%	3,24%	2,64%
2% land tax if not deductible from income tax					
Land tax as % of DAC/LSU – livestock	11,01%	10,09%	15,19%	8,68%	11,34%
Land tax as % of DAC - dry-land cash crops	0,99%	3,24%	1,91%	3,04%	2,56%
Land tax as % of DAC - irrigation crops	0,52%	4,60%	3,39%	4,27%	3,50%
0,5% land tax if deductible at 20% from income tax					
Land tax as % of DAC/LSU - livestock	2,20%	4,04%	3,04%	1,74%	2,27%
Land tax as % of DAC - dry-land cash crops	0,20%	0,67%	0,39%	0,62%	0,52%
Land tax as % of DAC - irrigation crops	0,10%	0,95%	0,70%	0,88%	0,72%
1,0% land tax if deductible at 20% from income tax					
Land tax as % of DAC/LSU - livestock	4,40%	4,04%	6,08%	3,47%	4,54%
Land tax as % of DAC - dry-land cash crops	0,40%	1,32%	0,77%	1,24%	1,04%
Land tax as % of DAC - irrigation crops	0,21%	1,89%	1,38%	1,75%	1,43%
1,5% land tax if deductible at 20% from income tax					
Land tax as % of DAC/LSU - livestock	6,60%	6,06%	9,12%	5,21%	6,80%
Land tax as % of DAC - dry-land cash crops	0,60%	1,97%	1,15%	1,85%	1,55%
Land tax as % of DAC - irrigation crops	0,31%	2,81%	2,06%	2,61%	2,13%
2,0% land tax if deductible at 20% from income tax					
Land tax as % of DAC/LSU - livestock	8,80%	8,07%	12,15%	6,94%	9,07%
Land tax as % of DAC - dry-land cash crops	0,79%	2,61%	1,53%	2,45%	2,06%
Land tax as % of DAC - irrigation crops	0,42%	3,71%	2,73%	3,45%	2,82%
0,5% land tax if deductible at 43% from income tax					
Land tax as % of DAC/LSU - livestock	1,57%	1,44%	2,16%	1,24%	1,62%
Land tax as % of DAC - dry-land cash crops	0,14%	0,48%	0,28%	0,44%	0,37%
Land tax as % of DAC - irrigation crops	0,07%	0,07%	0,50%	0,63%	0,51%
1,0% land tax if deductible at 43% from income tax					
Land tax as % of DAC/LSU - livestock	3,14%	2,88%	6,49%	4,95%	6,46%
Land tax as % of DAC - dry-land cash crops	0,28%	0,95%	0,82%	1,76%	1,47%
Land tax as % of DAC - irrigation crops	0,15%	1,35%	1,48%	2,48%	2,02%
1,5% land tax if deductible at 43% from income tax					
Land tax as % of DAC/LSU - livestock	4,71%	4,32%	6,49%	3,71%	4,85%
Land tax as % of DAC - dry-land cash crops	0,42%	1,41%	0,82%	1,76%	1,11%
Land tax as % of DAC - irrigation crops	0,22%	2,02%	1,48%	2,48%	1,52%
2,0% land tax if deductible at 43% from income tax					
Land tax as % of DAC/LSU – livestock	6,27%	5,75%	8,66%	4,95%	6,46%
Land tax as % of DAC – dry-land cash crops	0,57%	1,88%	1,10%	1,76%	1,47%
Land tax as % of DAC – irrigation crops	0,30%	0,30%	1,96%	2,48%	2,02%

Table 3.7: Land tax as a percentage of direct allocatable costs (DAC) if raised on shadow prices

Region	Great Karoo	Bloem-fontein	Nelspruit	Potchef-stroom	Cedara
0,5% land tax if not deductible from income tax					
Land tax as % of DAC/LSU - livestock	0.14%	1.13%	1.15%	1.19%	1.35%
Land tax as % of DAC - dry land cash crops	0.06%	0.40%	0.25%	0.47%	0.30%
Land tax as % of DAC - irrigation crops	0.05%	0.63%	0.41%	0.42%	0.64%
1% land tax if not deductible from income tax					
Land tax as % of DAC/LSU - livestock	0.29%	2.27%	2.30%	2.38%	2.70%
Land tax as % of DAC - dry land cash crops	0.12%	0.80%	0.50%	0.93%	0.60%
Land tax as % of DAC - irrigation crops	0.09%	1.24%	0.82%	0.84%	1.28%
1,5% land tax if not deductible from income tax					
Land tax as % of DAC/LSU - livestock	0.43%	3.40%	3.45%	3.56%	4.05%
Land tax as % of DAC - dry land cash crops	0.18%	1.19%	0.74%	1.39%	0.90%
Land tax as % of DAC - irrigation crops	0.14%	1.86%	1.22%	1.26%	1.91%
2% land tax if not deductible from income tax					
Land tax as % of DAC/LSU - livestock	0.57%	4.53%	4.60%	4.75%	5.40%
Land tax as % of DAC - dry land cash crops	0.24%	1.58%	0.99%	1.85%	1.19%
Land tax as % of DAC - irrigation crops	0.18%	2.46%	1.62%	1.67%	2.53%
0,5% land tax if deductible at 20% from income tax					
Land tax as % of DAC/LSU - livestock	0.11%	1.81%	0.92%	0.95%	1.08%
Land tax as % of DAC - dry land cash crops	0.05%	0.32%	0.20%	0.37%	0.24%
Land tax as % of DAC - irrigation crops	0.04%	0.50%	0.33%	0.34%	0.52%
1,0% land tax if deductible at 20% from income tax					
Land tax as % of DAC/LSU - livestock	0.23%	1.81%	1.84%	1.90%	2.16%
Land tax as % of DAC - dry land cash crops	0.10%	0.64%	0.40%	0.75%	0.48%
Land tax as % of DAC - irrigation crops	0.07%	1.00%	0.66%	0.68%	1.03%
1,5% land tax if deductible at 20% from income tax					
Land tax as % of DAC/LSU - livestock	0.34%	2.72%	2.76%	2.85%	3.24%
Land tax as % of DAC - dry land cash crops	0.14%	0.96%	0.59%	1.12%	0.72%
Land tax as % of DAC - irrigation crops	0.11%	1.49%	0.98%	1.01%	1.53%
2,0% land tax if deductible at 20% from income tax					
Land tax as % of DAC/LSU - livestock	0.46%	3.63%	3.68%	3.80%	4.32%
Land tax as % of DAC - dry land cash crops	0.19%	1.27%	0.79%	1.48%	0.96%
Land tax as % of DAC - irrigation crops	0.15%	1.98%	1.30%	1.34%	2.03%
0,5% land tax if deductible at 43% from income tax					
Land tax as % of DAC/LSU - livestock	0.08%	0.65%	0.66%	0.68%	0.77%
Land tax as % of DAC - dry land cash crops	0.03%	0.23%	0.14%	0.27%	0.17%
Land tax as % of DAC - irrigation crops	0.03%	0.03%	0.23%	0.24%	0.37%
1,0% land tax if deductible at 43% from income tax					
Land tax as % of DAC/LSU - livestock	0.16%	1.29%	1.97%	2.71%	3.08%
Land tax as % of DAC - dry land cash crops	0.07%	0.46%	0.42%	1.06%	0.68%
Land tax as % of DAC - irrigation crops	0.05%	0.71%	0.70%	0.96%	1.46%
1,5% land tax if deductible at 43% from income tax					
Land tax as % of DAC/LSU - livestock	0.24%	1.94%	1.97%	2.03%	2.31%
Land tax as % of DAC - dry land cash crops	0.10%	0.68%	0.42%	1.06%	0.51%
Land tax as % of DAC - irrigation crops	0.08%	1.07%	0.70%	0.96%	1.10%
2,0% land tax if deductible at 43% from income tax					
Land tax as % of DAC/LSU - livestock	0.33%	2.58%	2.62%	2.71%	3.08%
Land tax as % of DAC - dry land cash crops	0.14%	0.91%	0.56%	1.06%	0.68%
Land tax as % of DAC - irrigation crops	0.10%	0.10%	0.93%	0.96%	1.46%

Due to the difference in the climatic and soil conditions, the farming practices and farming enterprises differ in the different areas. One should therefore not expect the effects of the land tax as a percentage of the direct allocatable costs of an enterprise, in different areas, to be similar. This information is supplied to provide the reader with a perspective on the order sizes of the impact of a land tax relative to the direct allocatable costs of a specific enterprise. It is clear from Table 3.6 and 3.7 that when the land tax is raised on market values, the effect is much more severe than is the case when it is raised on shadow prices. When the shadow values are used as tax base, the effect of the land tax is more predictable than in the case of the market value as tax base. As explained earlier, the effect in terms of the direct allocatable costs differs even in the case where shadow prices are used as the tax base. The agricultural use value does not depend on the cost to produce, but once again on the difference between the income received from production and the production cost. The ability-to-pay principle is therefore again emphasised.

3.4.2.3 Land tax as a percentage of the income of different enterprises in different areas

Tables 3.8 and 3.9 represent the effects of a land tax as a percentage of the income of different enterprises when raised on market values and shadow values. With a 2% land tax rate on market values (i.e. not deductible from income tax), the negative impact on the gross income per LSU is as follows: 5,02% for the Great Karoo, 2,12% in the Bloemfontein area, 4,32% in the Nelspruit area, 2,68% in the Potchefstroom area and 3,44% in the Cedara area. From the mentioned figures and the rest of the information in the Table, one can see that there is a relatively huge variance in the effect of a land tax on gross income in the different areas.

When the land tax is raised on the shadow prices, the percentage effect is smaller and of less variance. With a 2% land tax rate, the effect in terms of the percentage of gross income per LSU was: 0,57% in the Great Karoo, 0,95% in the Bloemfontein area, 1,31% in the Nelspruit area, 1,03% in the Potchefstroom area and 1,64% in the Cedara area. One should not be concerned about the fact that the effect of a land tax on the gross income of an enterprise varies between regions. Gross income does not determine a farmer's ability to pay. It is the gross income less the production cost that determines it.

Table 3.8: Land tax as a percentage of different income items if raised on market values

Region	Great Karoo	Bloemfon= tein	Nelspruit	Potchef= stroom	Cedara
0,5% land tax if not deductible from income tax					
Land tax as % of gross income/LSU – livestock	1,25%	0,53%	1,08%	0,67%	0,86%
Land tax as % of gross income – dry-landcash crops	0,15%	0,44%	0,21%	0,53%	0,35%
Land tax as % of gross income – irrigation crops	0,11%	0,50%	0,47%	0,56%	0,53%
1% land tax if not deductible from income tax					
Land tax as % of gross income/LSU – livestock	2,51%	1,06%	2,16%	1,34%	1,72%
Land tax as % of gross income – dry-landcash crops	0,29%	0,87%	0,43%	1,07%	0,69%
Land tax as % of gross income – irrigation crops	0,22%	1,00%	0,94%	1,12%	1,05%
1,5% land tax if not deductible from income tax					
Land tax as % of gross income/LSU – livestock	3,76%	1,59%	3,24%	2,01%	2,58%
Land tax as % of gross income – dry-landcash crops	0,44%	1,31%	0,64%	1,60%	1,04%
Land tax as % of gross income – irrigation crops	0,34%	1,50%	1,42%	1,68%	1,58%
2% land tax if not deductible from income tax					
Land tax as % of gross income/LSU – livestock	5,02%	2,12%	4,32%	2,68%	3,44%
Land tax as % of gross income – dry-landcash crops	0,59%	1,74%	0,86%	2,13%	1,39%
Land tax as % of gross income – irrigation crops	0,45%	2,00%	1,89%	2,24%	2,11%
0,5% land tax if deductible at 20% from income tax					
Land tax as % of gross income/LSU – livestock	1,00%	0,85%	0,86%	0,54%	0,69%
Land tax as % of gross income – dry-landcash crops	0,12%	0,35%	0,17%	0,43%	0,28%
Land tax as % of gross income – irrigation crops	0,09%	0,40%	0,38%	0,45%	0,42%
1,0% land tax if deductible at 20% from income tax					
Land tax as % of gross income/LSU – livestock	2,01%	0,85%	1,73%	1,07%	1,38%
Land tax as % of gross income – dry-landcash crops	0,23%	0,70%	0,34%	0,85%	0,56%
Land tax as % of gross income – irrigation crops	0,18%	0,80%	0,76%	0,89%	0,84%
1,5% land tax if deductible at 20% from income tax					
Land tax as % of gross income/LSU – livestock	3,01%	1,27%	2,59%	1,61%	2,07%
Land tax as % of gross income – dry-landcash crops	0,35%	1,04%	0,51%	1,28%	0,83%
Land tax as % of gross income – irrigation crops	0,27%	1,20%	1,13%	1,34%	1,26%
2,0% land tax if deductible at 20% from income tax					
Land tax as % of gross income/LSU – livestock	4,01%	1,70%	3,46%	2,14%	2,76%
Land tax as % of gross income – dry-landcash crops	0,47%	1,39%	0,69%	1,71%	1,11%
Land tax as % of gross income – irrigation crops	0,36%	1,60%	1,51%	1,79%	1,68%
0,5% land tax if deductible at 43% from income tax					
Land tax as % of gross income/LSU – livestock	0,71%	0,30%	0,62%	0,38%	0,49%
Land tax as % of gross income – dry-landcash crops	0,08%	0,25%	0,12%	0,30%	0,20%
Land tax as % of gross income – irrigation crops	0,06%	0,06%	0,27%	0,32%	0,30%
1,0% land tax if deductible at 43% from income tax					
Land tax as % of gross income/LSU – livestock	1,43%	0,60%	1,85%	1,53%	1,96%
Land tax as % of gross income – dry-landcash crops	0,17%	0,50%	0,37%	1,22%	0,79%
Land tax as % of gross income – irrigation crops	0,13%	0,57%	0,81%	1,28%	1,20%
1,5% land tax if deductible at 43% from income tax					
Land tax as % of gross income/LSU – livestock	2,14%	0,91%	1,85%	1,15%	1,47%
Land tax as % of gross income – dry-landcash crops	0,25%	0,74%	0,37%	1,22%	0,59%
Land tax as % of gross income – irrigation crops	0,19%	0,85%	0,81%	1,28%	0,90%
2,0% land tax if deductible at 43% from income tax					
Land tax as % of gross income/LSU – livestock	2,86%	1,21%	2,46%	1,53%	1,96%
Land tax as % of gross income – dry-landcash crops	0,33%	0,99%	0,49%	1,22%	0,79%
Land tax as % of gross income – irrigation crops	0,25%	0,25%	1,08%	1,28%	1,20%

Table 3.9: Land tax as a percentage of different income items if raised on shadow prices

Region	Great Karoo	Bloem-fontein	Nelspruit	Potchef-stroom	Cedara
0,5% land tax if not deductible from income tax					
Land tax as % of DAC/LSU – livestock	0,14%	0,24%	0,33%	0,26%	0,41%
Land tax as % of DAC - dry-landcash crops	0,06%	0,21%	0,11%	0,23%	0,16%
Land tax as % of DAC – irrigation crops	0,05%	0,26%	0,22%	0,23%	0,38%
1% land tax if not deductible from income tax					
Land tax as % of DAC/LSU – livestock	0,29%	0,48%	0,66%	0,51%	0,82%
Land tax as % of DAC - dry-landcash crops	0,12%	0,42%	0,22%	0,46%	0,32%
Land tax as % of DAC – irrigation crops	0,09%	0,52%	0,45%	0,47%	0,75%
1,5% land tax if not deductible from income tax					
Land tax as % of DAC/LSU – livestock	0,43%	0,71%	0,98%	0,77%	1,23%
Land tax as % of DAC - dry-landcash crops	0,18%	0,63%	0,33%	0,69%	0,48%
Land tax as % of DAC – irrigation crops	0,14%	0,78%	0,67%	0,70%	1,13%
2% land tax if not deductible from income tax					
Land tax as % of DAC/LSU – livestock	0,57%	0,95%	1,31%	1,03%	1,64%
Land tax as % of DAC - dry-landcash crops	0,24%	0,84%	0,44%	0,92%	0,64%
Land tax as % of DAC – irrigation crops	0,18%	1,04%	0,89%	0,93%	1,51%
0,5% land tax if deductible at 20% from income tax					
Land tax as % of DAC/LSU – livestock	0,11%	0,38%	0,26%	0,21%	0,33%
Land tax as % of DAC - dry-landcash crops	0,05%	0,17%	0,09%	0,18%	0,13%
Land tax as % of DAC – irrigation crops	0,04%	0,21%	0,18%	0,19%	0,30%
1,0% land tax if deductible at 20% from income tax					
Land tax as % of DAC/LSU – livestock	0,23%	0,38%	0,52%	0,41%	0,66%
Land tax as % of DAC - dry-landcash crops	0,10%	0,33%	0,18%	0,37%	0,26%
Land tax as % of DAC – irrigation crops	0,07%	0,42%	0,36%	0,37%	0,60%
1,5% land tax if deductible at 20% from income tax					
Land tax as % of DAC/LSU – livestock	0,34%	0,57%	0,79%	0,62%	0,98%
Land tax as % of DAC - dry-landcash crops	0,14%	0,50%	0,26%	0,55%	0,38%
Land tax as % of DAC – irrigation crops	0,11%	0,63%	0,53%	0,56%	0,91%
2,0% land tax if deductible at 20% from income tax					
Land tax as % of DAC/LSU – livestock	0,46%	0,76%	1,05%	0,82%	1,31%
Land tax as % of DAC - dry-landcash crops	0,19%	0,67%	0,35%	0,73%	0,51%
Land tax as % of DAC – irrigation crops	0,15%	0,83%	0,71%	0,75%	1,21%
0,5% land tax if deductible at 43% from income tax					
Land tax as % of DAC/LSU – livestock	0,08%	0,14%	0,19%	0,15%	0,23%
Land tax as % of DAC - dry-landcash crops	0,03%	0,12%	0,06%	0,13%	0,09%
Land tax as % of DAC – irrigation crops	0,03%	0,03%	0,13%	0,13%	0,22%
1,0% land tax if deductible at 43% from income tax					
Land tax as % of DAC/LSU – livestock	0,16%	0,27%	0,56%	0,59%	0,94%
Land tax as % of DAC - dry-landcash crops	0,07%	0,24%	0,19%	0,52%	0,36%
Land tax as % of DAC – irrigation crops	0,05%	0,30%	0,38%	0,53%	0,86%
1,5% land tax if deductible at 43% from income tax					
Land tax as % of DAC/LSU – livestock	0,24%	0,41%	0,56%	0,44%	0,70%
Land tax as % of DAC - dry-landcash crops	0,10%	0,36%	0,19%	0,52%	0,27%
Land tax as % of DAC – irrigation crops	0,08%	0,45%	0,38%	0,53%	0,65%
2,0% land tax if deductible at 43% from income tax					
Land tax as % of DAC/LSU – livestock	0,33%	0,54%	0,75%	0,59%	0,94%
Land tax as % of DAC - dry-landcash crops	0,14%	0,48%	0,25%	0,52%	0,36%
Land tax as % of DAC – irrigation crops	0,10%	0,10%	0,51%	0,53%	0,86%

The emphasis should therefore be on the correct calculation of the net farm income. This variable provides an indication of the productive potential of the land and can also be used to calculate the agricultural use value of land.

3.5 Land tax versus RSC levies

Owing to the boundaries of this study, it was decided to do only one case study on the effect of a land tax with regard to the RSC (Regional Services Council) levies. Although all RSC's do not levy the same percentages, a study of all RSC's in South Africa would encompass a study on its own. However, a case study was done on the Olifants River area. RSC levies are levied as a percentage of the turnover of a farm as well as a percentage of the wages paid out. According to the Regional Services Council in the Western Cape, the establishment levy, which is levied on the turnover, amounts to 0.15504% of the turnover, whilst the service levy, which is charged on the gross salaries, wages and drawings, amounts to 0,3876% of these components. These values, however, already includes VAT at 14%. The concerned Regional Services Council informed that administration costs account for more or less 20% of the revenue generated through these levies. Table 3.10 compares RSC levies per ha to the land tax per ha.

Table 3.10: RSC levies compared with different land tax regimes

Item	Land tax (shadow values)				Land tax (market values)			
	0,5%	1,0%	1,5%	2,0%	0,5%	1,0%	1,5%	2,0%
Olifants River case study								
Income from land tax per ha (R)	R32,50	R65,00	R97,50	R130,00	R200,00	R400,00	R600,00	R800,00
Income from RSC levies per ha (R)	R57,00	R57,00	R57,00	R57,00	R57,00	R57,00	R57,00	R57,00

It is clear from Table 3.10 that if a land tax is levied on market values, the cost of a land tax will exceed the RSC levies by far. However, when the land tax is raised on the shadow prices of the land, the RSC levies and the land tax are much more comparable. It should be noted that RSC levies are deductible from income tax and the actual cost of the levies will therefore be smaller. It should still be considered whether a land tax should come as an additional tax or whether RSC levies should be abolished when a

land tax is raised. However, it should be noted that RSC levies are not a perfect tax for the following reasons:

- It is levied on turnover and wages. It therefore acts as a disincentive to productivity and employment.
- Turnover as shown in this study, does not necessarily represent ability to pay.
- It is very easy to avoid this tax, especially in a deregulated market system.
- This tax system has distortive effects because it is raised on the turnover of the farmer. The equity principle between regions is therefore not followed.

3.6 Conclusion

This chapter has shown that if a land tax is raised, the following should be considered:

- The land tax rate
- The land tax base
- The deductibility of the land tax from income tax

The effect of a land tax when raised on market values is more severe than when it is raised on the shadow value of the land (a proxy of the agricultural use-value). The effect of the tax when compared between different regimes is unequal when a land tax is raised on market values. If raised on market values a distortive effect will therefore arise – there will be an incentive to rather invest in regions where the market value is closer to the productive use value. Given the application of market value as tax base, some regions will therefore become less profitable relative to other. This will affect the competitive advantages of the different regions in the country and will thus distort production practices. As an example, areas close to cities might find it unprofitable to produce agricultural crops. These areas might then be used for residential purposes only and/or very intensive agricultural production practices.

It can be concluded that a land tax should rather be raised on the agricultural use value of the land. It should still be considered whether the tax rate should be capped, since if it is not capped, it might lead to competition between different areas. However, the

author is of the opinion that it should not be capped and that the responsible body in the area should determine the tax rate. The authority raising the tax will then be under a lot of pressure to deliver to the community certain services with the income received. Such an approach would keep administration costs as well as the tax rate relatively low. A prerequisite for not capping the rate is, however, that the taxpayer be adequately represented on the body that raises the tax.

CHAPTER 4

POSSIBLE LONG-TERM EFFECTS OF LAND TAX

4.1 Introduction

A study on the impact of land tax will not be completed without reference to the effect thereof over a longer period of time. In Chapter 3, the modelling was restricted to a timeframe of only one-year. Nevertheless, it was possible to extract valuable information and guidelines from the results of the short-term studies. However, the time-dependant processes of a biological system, such as a farming system, requires a dynamic approach to complete the picture. Biological processes vary over time, which makes it impossible to be described without adequate reference to the time dimension (Brockington, 1979). The dynamic approach involves calculations that are much more complex and consequently consumes a lot of computer time. It was consequently decided that only one case study would be done using dynamic linear programming as methodology.

This chapter consequently presents an overview on the methodology underlying the dynamic linear programming technique as well as a discussion of the results regarding the effects of a land tax over the longer term. The focus will be on the long-term effect of the following variables:

- Different levels of a land tax;
- The cost of the land tax to the owner of the land;
- Different tax bases (i.e. market value versus productive use value);
- Impact of subjectivity on the side of land assessors.

The aim of this chapter is to present the reader with some information regarding the most optimal way in which a land tax can be imposed - this time with specific reference to the time factor. The dynamic approach provides information on the use of long- and

short-term loans, the possibility of reinvesting surplus funds into the farming business or alternatively, investment in other sectors, i.e. fixed deposits. The dynamic programming approach will therefore present another perspective on the effects of land tax on the farming business.

4.2 Methodology

Chapter 3 presented a detailed discussion regarding the reasons for using linear programming as methodology. These arguments will therefore not be repeated in this chapter. In contrast to the static approach, dynamic linear programming extents the time horizon and therefore presents some information regarding the longer-term impact of policy instruments.

4.2.1 Dynamic linear programming

In Dynamic Linear Programming, plans are formulated for distinctive and consecutive production periods within the planning horizon. The periods are mutually combined and co-joined by transfers. This means that activities and resources for each year under consideration have to be defined. The activities, which are executed in each year, are therefore in relation with the resources available in that specific year (Louw, 1996).

Backeberg (1988) described a DLP problem over a five-year period as follows:

Maximize $Z = C_1X_1 + C_2X_2 + C_3X_3 + C_4X_4 + C_5X_5$

With:

$B_1 = A_{11}X_1$

$B_2 = A_{12}X_1 + A_{22}X_2$

$B_3 = A_{13}X_1 + A_{23}X_2 + A_{33}X_3$

$B_4 = A_{14}X_1 + A_{24}X_2 + A_{34}X_3 + A_{44}X_4$

$B_5 = A_{15}X_1 + A_{25}X_2 + A_{35}X_3 + A_{45}X_4 + A_{55}X_5$ with $X = 0$.

Z represents the objective function that is maximized, whilst C_1 to C_5 represents the level at which the activity X enters the model for the respective years. X_1 to X_5

represents activity X that can discretely be included in the solution from year 1 to 5. Thus, C_3X_3 represents the amount of X that enters the solution in year 3 multiplied by the coefficient (C) of activity X in that specific year. A_1 represents the quantity of a resource (B) needed by X in a specific year.

To explain the mathematical rigor of the DLP method better, it is schematically portrayed in Figure 4.1. From this figure, it is apparent why the model is charaterised as dynamic. Decisions made in Year 0, have a direct impact on decisions that will be made in future years. For example, take a 100 ha farm on which 60 ha of lucerne is established in year 0 (expected lifetime of lucerne is 6 years). This means that for each of the six years there will only be 40 ha left for other enterprises to enter into the model. If one establishes another 20 ha of lucerne in year 2, there would be only 20 ha of land available for alternative crops in year 2 to 6.

The objective function is optimised by obtaining the solution of all the periods simultaneously. Two important observations can therefore be made:

(i) In a decision-making framework, the plan for the first year leads the optimal direction for consecutive years.

(ii) The optimal solution provides an indication, over a couple of years, of the dynamic growth of a farming venture over time.

The Optima Dynamic Linear Programming model as developed by Louw (1996), has been adapted to determine the effect of a possible land tax on the farming structures of the Southern Cape farmers. Since the model stretches over a six-year period, net present value (NPV) has to be calculated to obtain the current value of future income streams. All other values are also aggregated over the six-year period.

The methodology is dynamic, since the time factor is implicitly incorporated into the model. Absolute certainty is accepted for decision making and the model is therefore deterministic. Present price expectations and technology determines the entrepreneur's final plan, which is the optimal plan.

Activities: year 1-6

		A11	A12	a13	a14	a15	a16
EXPENSES ONLY	y 0 TR	H 0					
	y 1 TR	H 1					
	y 2 TR	H 2					
MODEL TIME	y 3 TR	H 3					
	y 4 TR	H 4					
	y 5 TR	H 5					
INCOME ONLY	y 6 TR						
OBJECTIVE		SUM 0-6	SUM 1-6	SUM 2-6	SUM 3-6	SUM 4-6	SUM 5-6

y = Model year

a = Quantity of activities included in the model

TR = Total resources

H 0-5 = Resources required for each year

Sum = Sum of inputs and outputs in PRESENT Rand values for the remaining planning period

Objective max {a1 x (SUM 0-6)} + {a2 x (SUM 1-6)} + {a3 X (SUM 2-6)} + {a4 x (SUM3-6)} + {a5 x (SUM 4-6)} + {a6 X(SUM 5-6)}

Subject to:

j 0 {a1 x H 0} TR

j 1 {a1 x H 0} + {a2 x H1} TR

j 2 {a1 x H 0} + {a2 x H1} + {a3 x H2} TR

j 3 {a1 x H 0} + {a2 x H1} + {a3 x H2} + {a4 x H3} TR

j 4 {a1 x H 0} + {a2 x H1} + {a3 x H2} + {a4 x H3} + {a5 x H4} TR

j 5 {a1 x H 0} + {a2 x H1} + {a3 x H2} + {a4 x H3} + {a5 x H4} + {a6 x H5 } TR

j 6 Closing year - End of planning horison where a = 0

Figure 4.1 Explanation of a DLP matrix
Source: Louw, (1994)

The model assumes management is of high quality and that the manager will react immediately to counter any activity threatening the objective function to decline. In reality this might not be the case. Usually, even better than average farmers do not react as fast as the model does. The effect on a farming unit might therefore be larger than implied by the model. The situation is magnified due to the long production periods in agriculture, i.e. a farmer has to wait for the current crop to be harvested and sold before the altering of his cultivation activities become an option.

The optimum farm plan without a land tax is used as a base scenario from which the effect of land tax is determined. Different land tax rates (1%, 1,5% and 2%) are introduced in the model. The different land tax rates are raised on conservative and optimistic market values as well as on the shadow values of the land under question. For this case study the conservative market values were taken as being 17% lower than the current market values and the optimistic market value as being 17% higher than the current market values. The two market values were introduced in the model to capture the effect of possible subjectivity on the side of the land assessors. The shadow value of land as obtained by the Optima model were used as a proxy for agricultural use values

4.2.2 Specifications of the case study

For the purpose of this study, a typical Southern Cape farm was used as a case study. The farm information relates to the 1997 book year and was obtained from the Department of Agriculture in George. Table 4.1 presents a summary of the specification of this case study.

Table 4.1: Specifications of the case study

Resources	Amount available or value
Land available for cultivation	1123 ha
Natural pastures	1135 ha
Fixed labour	6 workers
Seasonal labour (max)	18 workers
Overhead costs	R450 000
Max Short-term liabilities	R700 000
Own Working Capital	R600 000
Interest rate: Short-term liabilities	21 %
Interest rate: Savings	4 %
Living expenses	R60 000 per year
Inflation	10 %
Discount rate	8 %

The reader will note that the interest rate on short-term loans is set at 21%, which is considered to be the long-term average cost of capital (Standard Bank, 2000b). Given the current rates, the impact of the loans should therefore actually be lower. However, it was considered appropriate to use a conservative longer-term cost of funds. This issue will receive adequate attention in the discussion of the results.

4.3 Research results

The results show both direct and indirect effects as depicted in Tables 4.2 and 4.3. In all the scenarios the model has chosen only wheat and barley as cash crops. As an explanation, it can be argued that, given the resource constraints, there is a limited amount of alternatives between which the model can choose. When a land tax is introduced on the shadow values of land, no changes occur to the farming structure. However, the net present value of the objective function for the six- year period declines with 1,1 %, 1,7 % and 2,3 % when a land tax of respectively 1 %, 1,5 % and 2 % is raised on shadow values. It is interesting to note the relation between the tax rate percentage and the percentage impact on the objective function. Labour hours stayed constant because of the static production structure. The largest impact of the land tax seemed to be on the liabilities.

Table 4.2 and 4.3 show that the farmers will need more debt to operate their farms at an optimal level. For the first year short-term liabilities increased with 3,7% when a 1% land tax is levied on shadow values and with 7,4% when a 2% land tax is levied on shadow values. In year 3 the increase in debt use is more with 131,5% and 262,9% for the respective scenarios. It is important to note that in the base scenario, the short-term credit demand was only in the region of R50 000. An increase of 131,5% thus implies that an additional R119 000 is needed to operate the farm at an optimum level. The situation is worse when the land tax is levied on market values. The year 1 short-term liabilities increase with 9,3% when a 1% land tax is levied, and with 18,9% if a 2% land tax is levied. In year 3, short-term liabilities increase with 328,7% and 652,2% respectively when land taxed is levied at a 1% and 2% land tax rate. When land tax is levied at a 2% rate on market values, financial assistance is also needed in the fifth year. It can therefore be argued that when a land tax is levied at a 2% rate on the market value of land, the farmer's financial needs and viability can be significantly affected. Although the 21% interest rate seems high, it should be kept in mind that commercial banks are currently (2001) using more or less the same rate (21,5% is the current rate). Nevertheless, the results still show that operating capital has to be increased to operate the farm at an optimal level. The only possible effect, if the interest rate were decreased, would be a decline in the value of the objective function (higher net income due to lower direct costs). Farmers exposed to a debt situation are however exposed to solvency and liquidity risk. Table 4.3 clearly shows that the impact of a land tax raised on shadow values differs considerably from the scenario where it is raised on market values. In fact, the percentage impact of land tax in the case of shadow values as tax base is very much related to the percentage of the tax rate.

Table 4.2: Effects of different land tax rates when levied on the shadow values of land

Item	Base	Land tax rate		
		1%	1,5%	2%
Wheat (ha) % change	1284	1284 -	1284 -	1284 -
Barley (ha) % change	2483	2483 -	2483 -	2483 -
Established pastures (ha) % change	2974	2974 -	2974 -	2974 -
LSU % change	647	647 -	647 -	647 -
NPV (R) % change	303707	300339 (-1,1%)	298656 (-1,7%)	296972 (-2,3%)
Short term liabilities Year 1 % change	581087	602727 (3,7%)	613547 (5,6%)	624387 (7,4%)
Short term liabilities Year 2	-	-	-	-
Short term liabilities Year 3 % change	51440	119065 131,5%	152878 197,2%	186691 262,9%
Short term liabilities Year 4	-	-	-	-
Short term liabilities Year 5	-	-	-	-
Short term liabilities Year 6	-	-	-	-
Total labor hours over six years Change in hours	34891 -	34891 -	34891 -	34891 -

Table 4.1 indicated that a facility limit of R 700 000 was introduced in terms of production credit. This constraint is in relation to the real situation as it exists on the case study farm. From Table 4.3 it is clear that, as the land tax rate increases, the use of labour hours increases. This can be explained by referring to the change in the production structure – an activity influenced by the scarcity of production credit. In other words, it is not possible for the farmer to plant conventional crops with a higher income, since these crops require more production capital than the R700 000 that is available.

Table 4.3: Effects of different land tax rates if levied on market values

Item	Conservative market value			Optimistic market value		
	1%	1,5%	2%	1%	1,5%	2%
Wheat (ha)	1284	1275	1245	1275	1245	1356
% change	-	(-0,7%)	(-3,0%)	(-0,7%)	(-3,0%)	(5,6%)
Barley (ha)	2483	2492	2503	2492	2503	2417
% change	-	(0,3%)	(0,8%)	(0,3%)	(0,8%)	(-2,7%)
Established pastures (ha)	2974	2971	2998	2971	2998	2927
% change	-	(-0,1%)	(0,7%)	(-0,1%)	(0,7%)	(-1,4%)
LSU	647	647	647	647	647	647
% change	-	-	-	-	-	-
NPV (R)	295288	291020	281480	291861	280602	261875
% change	(-2,8%)	(-4,2%)	(-7,3%)	(-3,9%)	(-7,6%)	(-13,8%)
Short term liabilities Year 1	635187	661237	690863	655837	696265	700000
% change	(9,3%)	(13,8%)	(18,9%)	(12,9%)	(19,8%)	(20,5%)
Short term liabilities Year 2	-	-	-	-	-	-
%change						
Short term liabilities Year 3	220504	304871	386934	287976	403809	516391
% change	328,7%	492,7%	652,2%	459,8%	685%	903,9%
Short term liabilities Year 4	-	-	-	-	-	-
% change						
Short term liabilities Year 5	-	-	44264	-	71664	302365
% change			(NA)		(NA)	(NA)
Short term liabilities Year 6	-	-	-	-	-	-
% change						
Total labor hours over six years	34891	34897	34919	34897	34919	35167
Change in hours	-	6	22	6	22	276
% change in hours	-	(0,02%)	(0,06%)	(0,06%)	(0,06%)	(0,8%)

Therefore, as the land tax amount per hectare increases the farmer moves to barley – a crop that consumes more labour hours than the other crop options, but portrays a better ability to defray production credit. These activities can be explained if one looks at the operating rules of the dynamic linear programming model. Deciding upon the enterprises that would enter the optimal solution, the model takes all the resources needed for the different enterprises into consideration over a six-year period – limitations in anyone of the six years, consequently influences the entire six-year optimal plan. Therefore, when there is not enough resources in a specific year, due to limitations in i.e. production credit, the model makes structural changes to obtain a optimal solution that complies with the resource constraints.

4.4 Summary

This chapter indicated that the use of market values as tax base has a more severe impact on the farming operations than using shadow values as tax base. Subjectivity on

the side of land assessors was also tested, and its was indicated that subjectivity will definitely have impact on the eventual effects of the land tax. The primary result of the chapter is however, that farmers will have to make use of more short-term liabilities to sustain optimal production on their farms. This situation implies that farmers will become more exposed to credit risk and will consequently be more frequently challenged with solvency and liquidity risks. For instance, if a worse case land tax regime is analysed, the debt load increases especially in year 5. Due to the production credit limit imposed, the farmer is forced to plant more barley to cover the expenses. As mentioned, this is also the reason for the structural changes that take place and thus increases the vulnerability of the farming unit and makes it less viable over the longer term.

CHAPTER 5

AN ANALYSIS OF THE IMPACT OF LAND TAX AND CAPITAL GAINS TAX ON SECURITY BASED LENDING

5.1 Introduction

Agriculture was characterised by many measures of state support in the not too recent past. Amongst these were state sureties where the state was the actual guarantor in terms of production loans granted to farmers. However, during the agricultural deregulation process, these measures, together with many other state support programmes, were phased out. Consequently, financing in the agricultural sector changed drastically, since the more or less risk free loans previously granted, were not available anymore.

As a general rule, commercial banks base their lending decisions on the repaymentability of the farm. However, given the risky nature of agricultural production (i.e. dependence on climate and volatile market prices, interest rates and macro economic policy parameters) and adding the impact of the deregulation process, adverse conditions can now, easier than in the past, lead to a situation where the farmer becomes incapable of servicing his/her financial responsibilities. This situation lead thereto that financiers had to transform their lending policy implying that farmers now had to present collateral, in their personal capacity, prior to the granting of funds. Although repaymentability presents the first source of repayment, collateral serves as a second source for repayment and therefore has to be adequate in terms of the loan amount (Standard Bank, 2000b).

Land presents the major asset in almost any primary producer's balance sheet. Following the deregulation of state sureties, the bonding of agricultural land as collateral, therefore, occurred more regularly in obtaining the required funding for either production inputs or purchasing production machinery and equipment. The extent of the concerned loans correlates with the security value of the land as collateral.

It is therefore clear that factors influencing the value of land also have its impact on the amount of funds that a farmer will be able to borrow (Van Schalkwyk, 1995).

Given the aforementioned, the aim of this chapter is to analyse the effect of land and capital gains taxation in terms of security based agricultural lending. In granting an agricultural loan, many commercial banks make use of the so-called resource repaymentability approach. This chapter will therefore incorporate the effect of the concerned taxes and a case study will be used to indicate the effect of these instruments on repaymentability and the value of land as collateral.

5.2 Background

According to the Abstract of Agricultural Statistics (2000) and the Standard Bank Agricultural Information Department (2001), the debt burden of the South African agricultural sector increased from R18,18 billion in 1994, to R29,60 billion in the 1999/2000 season – an increase of almost 63% in only 6 years time. It is therefore evident that the South African farmers' demand for credit has increased considerably during the period after deregulation. However, to report on the impact of state policy on the debt burden of agriculture, it is first necessary to determine which factors influence the demand for debt in agriculture.

Peterson (1986) states that land values and the amount of debt a farmer can afford are influenced by the following factors:

- Farm factors
- Non-farm factors

Farm factors reflect the present and future expected income that can be generated through the production of agricultural outputs. Lowenberg-DeBoer & Boehlje (1986) has shown that, in the USA, yield plays an important role in terms of the debt burden of a farm. Van Zyl *et al* (1987) indicated that the same situation applies to the South African agricultural sector. Nevertheless, Peterson (1986) takes farm factors further and states that farm factors can be subdivided into factors over which the farmer has control

(i.e. deciding between a capital intensive or labour intensive farming approach), and farm factors he has no or little control over (i.e. product prices, productive capacity of the land, etc.).

Non-farm factors influencing the debt burden of a farmer include amongst other monetary and fiscal policy (Ruttan, 1961; Peterson, 1986, Lowenberg-DeBoer & Boehlje, 1986). Monetary policy amongst other includes the interest rate. Fiscal policy on the other hand refers to economic and tax policy under which the proposed land tax and capital gains tax resides. The impact of land and capital gains tax can therefore be considered as non-farm factors influencing the debt burden of a farming business.

5.3 Impact of land and capital gains tax on the security value of land

According to Peterson (1986), the market value of land is also dependent on farm and non-farm factors. Introducing land and capital gains taxes will therefore increase the impact of non-farm factors implying that the profit generating potential of the land under question deteriorates. Subsequently the market and security value of the land will decline implying that the landowner's capacity in terms of providing collateral also decreases. A decrease in collateral implies that the farmer will experience a decline in the amount of funds that lenders will be willing to grant. This situation can lead thereto that the farmer cannot obtain the necessary credit to optimally utilise the resources on his farm leading to an even lower amount of profits generated. Eventually, the farmer might find himself in a negative spiral effect, since the lower the returns on the land, the lower the market and security value becomes.

5.4 Determining the maximum debt burden of a farm

According to Boehlje and Eidman (1984), lenders typically evaluate farms and farm operators with respect to the three R's of credit:

- Risk-bearing ability;
- Returns generated by the business; and
- Repaymentability of loans.

Risk-bearing ability basically refers to the ability of a farming business to withstand financial losses without being forced into liquidation or insolvency – so-called bumper capacity. Notion should, however, be taken that financial risk is influenced by other business risks, such as production risk, price risk, interest rate risk, etc. In this regard, the financial leverage of the firm usually indicates whether losses will have to be financed through additional loans, or whether it can be absorbed by the existing equity. Financial institutions usually require a certain amount of bumper capacity to ensure that adverse conditions do not financially ruin the borrowing entity (Boehlje and Eidman, 1984).

Returns generated by the business refer to the requirement that the use of credit should add to the potential profits of the concerned business. Basically this requirement refers to the financial leverage of the business. Only if business profits will be increased will there be additional income available to use in making principle and interest payments on the borrowed capital (Boehlje and Eidman, 1984).

The ability to repay loans refers to a financier's desire to be repaid in cash, since their actual business does not constitute the repossession of the security as a means of obtaining performance on a debt obligation. According to Boehlje and Eidman, repaymentability is the final determination of whether credit should be extended or not.

Given the above, the question regarding the maximum amount of debt a farm business can handle is thus not so simple. Various factors such as the enterprise mix, the quality of the resources, the ability of the farm manager, and other factors influence this amount. Past South African agriculture, however, was characterised by an approach where a farmer was able to borrow against the market value of his land. In this instance, the maximum debt burden was therefore the market value of the land bonded as security. However, given the risk involved in agriculture, the deregulated environment and changes in policy, the South African financing institutions have adopted the three R's of credit. In this regard, the repaymentability of the loan weighs the most and correlates with Boehlje and Eidman's statement that it presents the final determination.

5.5 Repaymentability as an approach to lending decisions

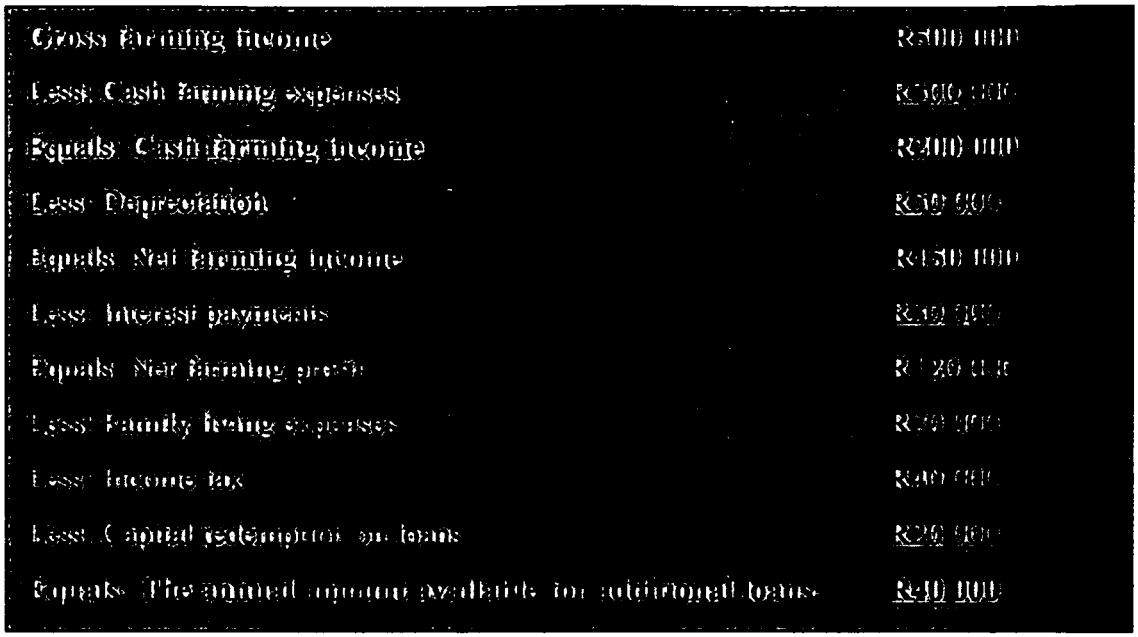
For the purposes of this study, the Standard Bank of South Africa's approach in terms of calculating repaymentability will be discussed. Not only is this approach practically in use, but it will also clearly demonstrate how commercial banks will think about agriculture after the introduction of the two taxes.

Repaymentability can be described as the annual amount of funds available to a farmer to defray his or her liability agreements. It is therefore the amount available after all operating expenses, taxes, as well as family expenses are subtracted from the farm income (Standard Bank, 2000; Boehlje and Eidman, 1984). Financiers are no longer keen to lend to farmers, unless the information necessary for calculating the repaymentability is available. Prior to the approval of a loan, the financier needs to be comfortable that installments will be paid in a timely fashion and that the farmer's family expenses have been sufficiently provided for. Complying with the three R's of credit, another important factor is that the farmer's business should present a sustainable growth rate after utilising the loan, implying that a positive financial leverage still exists. A negative financial leverage will exist when the farmer's business growth becomes negative due to too large an outflow of funds to cover capital redemption and interest payments.

According to Standard Bank (2000b), repaymentability is influenced by the following factors:

- The income generating potential of the farm's resources;
- The fixed costs associated with the farming operations;
- The after tax income of the farm;
- The interest rate;
- The term of the loan.

The relation between the above factors are demonstrated with the aid of the following example:



Example 1: Determining repaymentability

Source: Adapted from Standard Bank, (2000b)

Determining the repaymentability of the above farm involves that the surplus of R40 000 per annum be discounted by a factor equal to the long-term average cost of capital over a 20-year planning horizon. Given the 20-year horizon and South Africa's history of fluctuating fiscal and monetary policy, it is difficult to accurately determine the long-term average cost of funds. In this regard commercial banks opted for a conservative value (on their side) and stipulated a value of 21,5% (Standard Bank, 2000b). Although this value seems high, complying with financing realities of lending, requires that this study also use 21,5% as discounting factor. Determining the repaymentability of the above example encompasses that the R40 000 available for additional loans is assumed to be available for each of the 20 years of the planning horizon. Given the fact that farming income tends to fluctuate significantly between seasons, this assumption furthermore urges financiers to be conservative in calculating this amount. However, assuming that the R 40 000 was conservatively calculated, the above farmer should be able to repay an additional amount of R182 261. In determining the repaymentability, a quicker, but less accurate calculation can also be used. This involves that the R40 000 be merely divided by 21,5% resulting in a value of R186 046. Given its higher accuracy, most financiers opt for the first method where the 20-year planning horizon is utilised.

Now that the principle behind repaymentability was explained each of the factors influencing it will briefly be discussed. The aim will be to point out the areas that will be impacted by land and capital gains taxation.

5.5.1 Income generating potential of the resource

The income generating potential of land as a resource, primarily lies in the relation between the resource characteristics and the enterprise mix. Management therefore plays an essential role, since the farm manager should be well aware of the requirements of a certain enterprise. Take for instance the cultivation of maize. To effectively produce maize, a certain soil depth and soil composition is required. Furthermore, in terms of climate, a minimum rainfall of at least 500 mm per annum and certain frost-free periods is vital (Standard Bank, 1999). The farm manager should furthermore understand the production process and manage the necessary operations and applications. To conclude, given the resource characteristics and climate, the income potential of the concerned resources is very dependent on management skills, technical knowledge and general farming ability of the farm manager.

5.5.2 Fixed cost

Fixed costs can be defined as the part of total costs that remains unchanged whether production occurs or not. It does not increase when production is increased and therefore stays constant whatever amount of produce realises. However, keep in mind that fixed costs per unit produced, decreases as the amount of units increase - so-called economies of scale. Fixed cost items are for instance depreciation, licenses, insurance (not crop insurance), fixed labour, etc. Given the nature of fixed costs, land tax will also categorise under this grouping.

5.5.3 After tax income

Taxes take a large share of the profits produced in agriculture either through income tax or through other tax instruments like excise duties, fuel levies, customs duties on imported agricultural inputs and machinery or machinery parts, RSC-levies, etc. However, Chapter 2 already comprehensively described these taxes. Nevertheless, the

proposed capital gains tax will have its impact on repaymentability in this category. It is clear from Chapter 2 that a capital gains tax would increase the amount of income tax to be paid. Consequently the after tax income of a farmer will decrease implying that the eventual amount available for additional loans will decline. This situation will, however, only occur if the farmer realised a significant capital gain during a concerned year of assessment.

5.5.4 Interest rate and term of the loan

The past five years witnessed the South African prime interest rate fluctuating significantly, with the highest rate at 25,5% and the lowest at 14,5% - a difference of 9%. The interest rate therefore presents a vital determinant of the repaymentability of the loan. Take for instance the R40 000 available for loans in our example. If the discount factor is increased to 25%, the repaymentability decreases to R158 155 - a decline of more than R24 000 or 13,2%.

The term of the loan has its impact in terms of the time value of money. Although incorporated in the discount factor derived from the cost of long-term capital, notion should be taken of the effect high inflation rates can have over the longer term. However, given the South African Reserve Bank's current commitment regarding inflation targets, interest rate hikes can be expected to counter high inflation rates.

5.6 The case study

A typical case study was constructed, with the aim of analyzing the impact of land and capital gains taxes. The data presented below pertains to the typical characteristics of a grain producing farm in the North-West Free State. Enterprise budgets were obtained from the Standard Bank Productive Value Matrix for the North and North-West Free State (Standard Bank, 1999). Appendix C contains all the budgets as well as overhead costs included in this case study. Although the concerned data does not pertain to a real farm, all efforts were made to ensure that the case study includes all necessary costs. The reader should note that, given the aim of indicating the impact of land taxation and capital gains taxation on a typical farm, the base scenario is not necessarily important.

What is of importance is the change in the base scenario upon introducing the land and capital gains tax. Table 5.1 presents only the basic information.

Table 5.1: Basic information on the case study

Description	Amount available or value
Land available for cultivation	1500 ha
Enterprise mix	500 ha Maize
	500 ha Sunflower
	500 ha Peanuts
Fixed labour	R48 000 per annum
Current hire purchases	R600 000 over 10 years
Interest rate: Short-term liabilities	14,5 %
Interest rate: Savings	3 %
Living expenses	R62 000 per year
Discount rate	21,5%

The productive value is assumed to be equal to the discounted repaymentability of the farm prior to the introduction of any of the two taxes being investigated. Market value is assumed to be R1350 per ha relating to a conservative expectation for market values in the concerned region.

5.6.1 Methodology

An Excell Spreadsheet model, developed by Standard Bank, will be used in determining the repaymentability of the case study. In brief, the model consists of enterprise budgets and overhead cost budgets. These values are categorised and aggregated to eventually arrive at the repaymentability of the farm. In this regard, a 20-year projection is made of the surplus income of the farm and is then discounted to present values using a 21,5% rate (as used by Standard Bank).

In analysing the effect of land taxation, two scenarios were used. In the first scenario a land tax was included at a 2% rate levied on the market value of the land. Scenario 2 included a land tax levied at a 2% rate on the productive value of the land.

For the purposes of this case study, it is assumed the that effective date of CGT was ten years ago. The reason is that the objective of this chapter is to point out the effect of CGT, once the past capital gains are not anymore excluded (a longer-term viewpoint is therefore taken). The inclusion of capital gains transactions in this study is, however, arbitrary and only presents a specific case. The reason is that, given the nature of CGT, it is difficult to determine what kind of transactions a typical farmer will definitely take part in. Nevertheless, the following capital transactions were included in the analyses:

Assuming that the farmer initially had 2000 ha of land, scenario three and four presents the case where, in the first year, the farmer (operating his business as a natural person) decides to sell 500 ha of land for R1 000 000. It is assumed that the farmer's base cost (including all improvements) amounted to R500 000 at the time of sale, all occurring after the effective date of CGT. This implies that a capital gain of R500 000 is realised. It is however, assumed that the whole R1000 000 is immediately invested in a fixed deposit, thereby not influencing the operational income stream of the farming business. The reason being that such income is not regarded to be regular and can thus not be included in a calculation where the repaymentability of a farm is calculated. It is furthermore assumed that the marginal tax rate is 42%. Additionally, during year two the farmer decides to sell all excess equipment on his farm for R200 000. Since these assets were already written off from income tax, the whole R200 000 is regarded as a capital gain, but is also invested in a fixed deposit. According to the draft legislation on capital gains tax, the farmer qualifies for a 25% inclusion rate as well as for the R10 000 primary exclusion. The amount therefore included in this study is: ((R700 000 x 25%)-R10 000) x 42% = R69 300.

Covering all of the set objectives involved a process where five different scenarios were analysed. Table 5.2 contains a description of each of these scenarios.

Table 5.2: Description of scenarios

Scenario	Land tax base	Land tax rate	Capital Gains Tax
Scenario 1: (Base scenario)	None	None	None
Scenario 2:	Productive value equal to R1125 per ha	2%	None
Scenario 3:	Market value equal to R1350 per ha	2%	None
Scenario 4:	Productive value equal to R1125 per ha	2%	CGT causing additional Income tax to the amount of R69 300 only in year 1
Scenario 5:	Market value equal to R1350 per ha	2%	CGT causing additional Income tax to the amount of R69 300 only in year 1

5.7 Results

Table 5.3 presents a summary of the model results, whilst Figure 5.1 presents a graphical summary of all the scenarios. As mentioned, the repaymentability is calculated by discounting all future incomes to present values (presented on the Y-axis) over a 20-year period (240 months as presented on the X-axis):

From Table 5.3 and Figure 5.1, it is clear that the tax base used to calculate the amount of land taxes due, has a significant impact on the repaymentability per hectare. Using the productive use value (which is assumed to be equal to the base scenario's repaymentability values per hectare), a 2% land tax reduces the repaymentability by 9,11% or (R102 per hectare). In terms of the market value as tax base, the repaymentability is reduced by 10,94% (or R123 per hectare). These values correspond to Van Schalkwyk, (1995). He stated that a land tax rate of between 1% and 2% levied on market value as tax base, has a declining effect on land values of between 6% and 12%.

Table 5.3: Research Results

Scenario	Base scenario's repayment-ability per ha	Analysed scenario's repayment-ability per ha	Difference in Rand	Percentage difference
Scenario 2: 2% on Productive value	R1 125	R1 023	R102	9,11 %
Scenario 3: 2% on Market value	R1 125	R1 002	R123	10,94%
Scenario 4: 2% on Productive value + CGT	R1 125	R946	R179	15,91%
Scenario 5: 2% on Market value + CGT	R1 125	R925	R200	17,74%

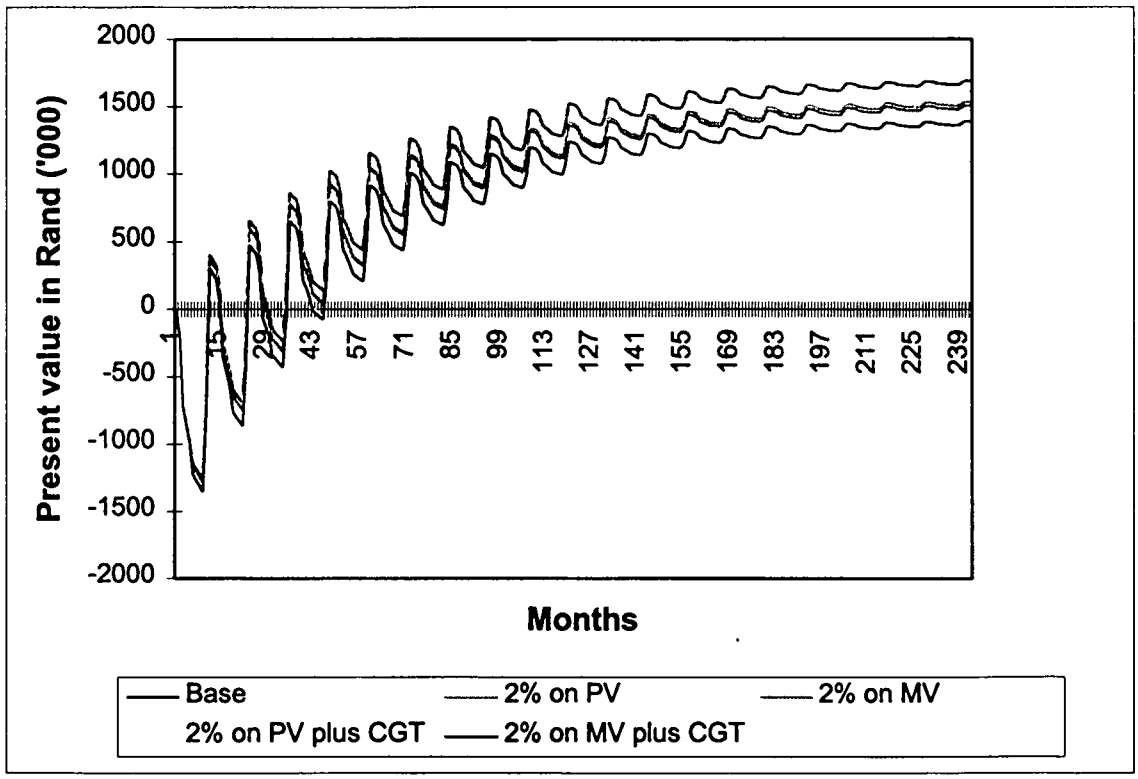


Figure 5.1: Graphical summary of all scenarios.

Since repaymentability presents a proxy of the productive use value of the farmland, the above results therefore indicate a decline in the security value of the concerned land. After the implementation of land and capital gains taxes, the farmer will therefore experience a decline in the amount of debt commercial banks will be agreeable to lend. To elaborate, the land and capital gains taxes decrease the realisable value of security, implying that additional security will be required if the farmer applies for the same loan amount. If no additional security can be provided, the farmer will have to downscale his/her operations implying that the repaymentability of the farm declines even further and the farmer might get trapped in a negative spiral effect.

In terms of the capital gains tax, the impact was also quite significant. Using the productive value as tax base, the aggregated effect of the land tax and CGT was a decrease of 15,91%. Regarding the market value as tax base, this negative effect increased to 17,74%. Given the 20-year period used to determine repaymentability, additional capital transactions and possible consequent capital gains tax during this period seem highly likely. Even though this case study only presented one year where a capital gains event occurred, it is alarming to note the possible impact such a single event has on repaymentability. If the frequency of capital transactions increase, the impact of the capital gains tax will be more severe.

5.8 Impact of land and capital gains tax on agricultural risk

To determine the impact of land and capital gains taxation on agricultural risk, an income variation approach was used. This approach encompasses that the net farming income is discounted with 10% and then 20% respectively or it is appreciated with 10% and then 20% respectively, over a five-year period. The reader should note that the larger the amplitude of the variation, the larger the variability of income and thus the higher the risk involved. This methodology aims at simulating the impact of product price fluctuations, fluctuations in yield or a combination of price and yield variations. Figure 5.1 presents the results of this exercise.

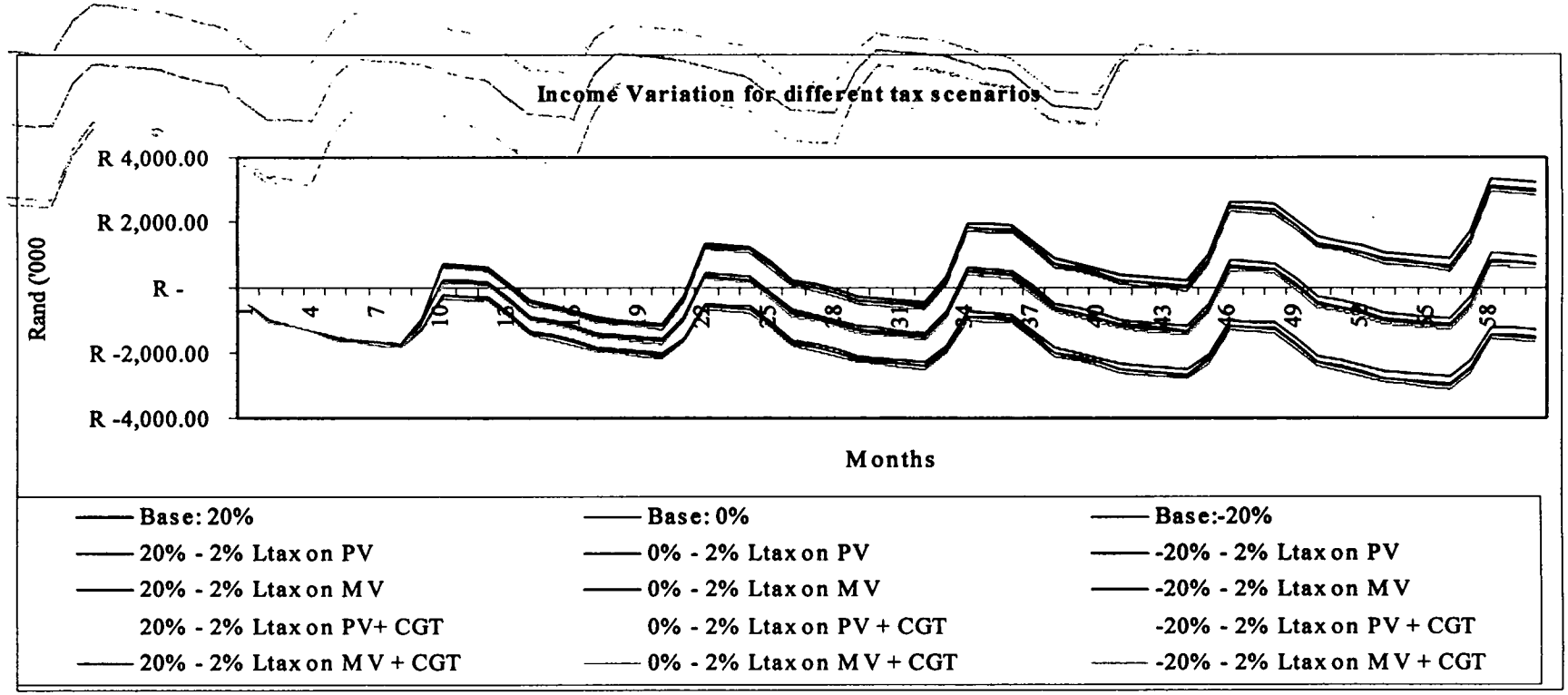


Figure 5.1: Income variation for different tax scenarios

From Figure 5.1 it is clear that land taxation levied on market values has a more significant impact on income variation than when levied on productive use value. Adding capital gains taxation to the scenario increases the amplitude of the variation even further. It can therefore be concluded that land and capital gains taxation increases the risk of a farming venture.

5.9 Discussion of the results

The above results clearly indicated that land taxation and the capital gains tax significantly influence the repaymentability of a farm. Therefore, upon the introduction of these two tax instruments, farmers should be aware that their farmland's repaymentability of loans would decline. In cases where the farmer already has a high debt burden, additional facilities will probably not be granted once the impact of the new taxes is taken into account. Furthermore, commercial banks have an annual review on all facilities granted before they are extended for the next season. The introduction of these instruments might therefore cause commercial banks to withdraw facilities granted in the previous seasons due to the decline in repaymentability. It was furthermore indicated that land and capital gains taxes increase the risk involved in farming. However, farmers will probably not receive higher income to justify the higher risk in their investment.

5.10 Summary

This chapter commenced with a brief overview in terms of the changes between the current lending approach of financiers in comparison to the approaches followed in the past. This discussion concluded that financiers are no longer keen to lend without adequate collateral and pointed out that the repaymentability approach became widely applicable. The chapter continued with a description and discussions surrounding the factors influencing repaymentability. Land taxes and capital gains taxes were categorised in terms of these factors. Following this section, the case study was described as well as the methodology used. The research results followed, indicating that land taxation levied on the productive value of land causes the repaymentability of the concerned land to decline with 9,11%. Using market values as tax base resulted in a decline of 10,94%. In terms of repaymentability, the aggregated impact of land tax and

capital gains tax on the repaymentability varied between 15,91% and 17,74% depending on the tax base. The analysis continued with an investigation of the impact of land and capital gains tax on income variation and it was concluded that risk will increase as the tax burden increases. The chapter concluded with a discussion of the impact that land tax and capital gains tax will have, especially on farmers with an already high debt burden. It was pointed out that, once these two taxes are introduced, certain farmers might not be able to acquire sufficient funding for their operations and might get caught in a negative spiral effect.

CHAPTER 6

CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

The objective with this study was to provide answers to certain critical questions regarding the impact of a land tax and capital gains tax on the South African Agricultural sector. The issues, which were analysed, are:

- the impact of different land tax rates,
- the impact of different land tax bases;
- the impact of land taxation over the short- and longer-term;
- the impact of land and capital gains taxation on security based lending.

The following sections give a summary of the major findings of this study.

6.2 The land tax rate

Although the land tax rate influences the severity of land taxation, this study has shown that the land tax rate is not the main factor in terms of the distortive effects that a land tax might have. To elaborate, it was shown that the impact of a land tax (irrelevant of the rate used) raised on the productive value of land is more stable in terms of forecasting the percentage impact on farm profits – there is a close relationship between the land tax rate and the percentage impact on farm profits. Using the market value as tax base indicated that the impact of the land tax is difficult to forecast due to the impact of non-farm factors. Due to the difference in terms of the non-farm factors between different areas, the neutrality of the resource allocation in agriculture will therefore be distorted. Although the land tax rate does determine the significance in terms of the tax amount payable, the main factor regarding the distortion effect will therefore be the tax base.

In terms of determining the land tax rate, account should be taken of the cost of the services that the community receives for the tax money, the administrative costs in terms of collecting the land tax and finally taking consideration of the value of the tax base.

6.3 The land tax base

The Property Rates Bill that was published on the 4th of August 2000 proposes that market values be used when valuing all properties in a municipal area. This situation, however, presents various problems, especially in terms of distortion it will present. The results of this study have shown that if a land tax is raised on market values the following effects will be applicable:

- The South African agricultural sector is characterised by a large diversity of farming conditions, which ranges from the dry arid Karoo to intensive irrigation areas near the rivers. Furthermore, certain areas are closer to urban centers than others, whilst some agricultural land presents itself to be developed for other purposes than agriculture. The aforementioned features can all be regarded as non-farm factors that influence the market value of agricultural land. This diversity of factors influencing agricultural market values, causes the effects of land tax to be unequal between different farming regions.

- Given the fact that non-farm factors are capitalised in market values, farmers who own land near major cities or in prestige areas like nature reserves will definitely have to pay more land tax than other areas where non-farm factors are not as common. Land tax can therefore negatively influence nature conservation since these landowners will be taxed on unrealised capital gains that might force them to utilise the concerned farms for other purposes than nature conservation. It should furthermore be kept in mind that farmers receive the same price for most commodity products, irrespective of where it was produced. This situation brings to mind the equity principle and one can ask whether it is fair that farmers near major cities have to pay more taxes than their partners in the more rural type of areas.

- Another point that needs attention is the fact that farmers use their land as a production factor and not for residential purposes only. In effect farmers are therefore taxed on their

production capital, whilst this is not the case in most of the other economic sectors. Property taxes in cities has the same impact on businesses albeit their turnover per m^2 is much higher.

In the light of the above findings, the use of market values as tax base for a rural land tax clearly poses many problems. Although there are many proponents of a market value assessment of the tax base, it is interesting to note that although various countries use market values as tax base, it is seldom that true market values are used. For example, as stated in Chapter 2, Denmark raises a land tax on market values, but due to lobbying powers exercised by the agricultural community, only 33% – 50% of the true market value is used as tax base. In countries like Nepal, the land tax base has not been revalued since 1975 causing a major drop in tax revenue due to inflation. In the USA for example, agricultural land is treated in a preferential manner. Forty eight of the 50 states use "use value" assessment thereby providing farmers with a kind of tax break. To conclude, this study has shown that if a land tax is raised on market values, the cost of the land tax to the owner of the land becomes difficult to measure and is unequal between different areas. In terms of the evaluation criteria for taxes, the neutrality requirement is not met when using market values as a tax base. The wisdom of applying a land tax on market values as is stated in the Property Rates Bill (of August 2000) is therefore questionable.

6.4 Assessing the land tax base

Bourhill (1998) mentions that South African land assessors are not trained in all the aspects of assessing rural areas. The use of market values as tax base will therefore introduce subjectivity in terms of the market value assessment. The effect of subjectivity was pointed out in Chapter 4, where the impact thereof was shown to be significant. Furthermore, the assessment of the market value of land in South Africa will be a tremendous task leading to a bottleneck in terms of the quantity of qualified valuers in South Africa. Assessing the productive value of land will present an easier task since mass appraisal techniques can be employed.

The capacity of local valuers will eventaully be sorted out even if it takes a few years. The negative economic effects of using a market value as a tax base therefore weighs more than the ability to manage a specific type of assessment method. Supported by the research of this

study, it can be argued that land should be assessed in terms of its productivity. In this regard the American approach towards preferential treatment for agriculturally used rural land can be seriously considered as a guideline for the South African system.

In Indiana State, USA, assessment is based on a true tax value of $495 per acre, adjusted for soil productivity, slope, coverage and other factors. The base rate is set by the state tax board in consultation with an agricultural advisory council, which is composed of state and local officials, agricultural leaders and others. The value can only change in reassessment years and is the same for the whole state. The base value is multiplied by a soil productivity factor, developed by agronomists to reflect the typical crop yield of the soil type. There are no restrictions or penalties applied when land is developed.

In the rest of the USA, use value assessment is usually done using an income capitalization method. The net income earned by an acre of land with particular characteristics is estimated either from cash rents charged for similar land, or by a complex calculation involving yields, resource quality, commodity prices, and farm costs. Net income is then divided by a rate of return, which may be fixed by state or based on current or past interest rates. This gives the price a buyer would offer for the land solely on its income potential from agriculture (DeBoer, 1996).

As mentioned in Chapter 2, thirty-eight states have special requirements for participation in use value programmes. Requirements beyond the simple application by the landowner include minimum acreage, minimum income productivity and documentation that the land has been used in farming in the past. These "entry" requirements are designed to restrict the programmes to land actually used in farming. Thirty states have penalties or restrictions on changing agricultural land to other uses. Penalties may include repayment of at least part of the tax breaks received in the past. Restrictions include agreements signed by the landowner not to develop for a period of years. Sometimes use value assessment is only available to land that is zoned agricultural. These "exit" requirements are designed to enhance the preservation of open space. Twenty-five states have both entry and exit restrictions.

6.5 The cost of the land tax to the landowner

This study has shown that a land tax will have a definite impact on the operating and overhead costs of a farming industry. The major findings centered mainly around the following:

- Due to the direct effect a land tax has on the overhead costs of a farm, the operating costs of a typical farm will increase. This situation forces the farmer to make more use of production credit. When the use of liabilities increases, it might eventually have an impact on the solvency of the farm - especially over the longer-term.

- Imposing a land tax leads to a drop in land prices, thereby reducing the asset side of a farmer's balance sheet – solvency therefore deteriorates. If the land tax is levied at a too high level (i.e. 8% according to Van Schalkwyk, 1995; 5% according to Nieuwoudt, 1980) agricultural land will be effectively nationalised. It was also indicated that, through levying land tax, the state actually becomes a profit-taking partner in the farm without contributing any capital or sharing any risk. Furthermore, the mentioned decreases in land values, the increases in operating costs as well as the current risk status of the agricultural operating arena, poses a significant threat for the long-term survival of farmers.

- Defraying the higher operating costs induced by a land tax, actually requires the farmer to intensify his farming operation. Although certain farmers can be regarded as unproductive, the majority of farmers cannot be classified as such. The imposition of land taxation might therefore force the farmer to move away from conventional commodities like grains to higher income crops like fruits and vegetables. Such a situation will lead to increased risk taking as well as possible distortions in the different agricultural sub-sectors.

- Agriculture, in terms of its contribution to the rural economies, plays an important interactive role in any rural economy by means of its forward and backward linkages with other sectors. It has been shown that the multiplier effects of the agricultural sector are superior to any other economic sector. In other words, the taxation of one of the most

effective economic sectors would certainly result in a loss of welfare for the community as a whole.

- In comparison with the RSC levies, a land tax will, if raised at a higher rate than 0,5% on the shadow value as tax base, cost the farmer more than the current RSC levies. With the high administration costs associated with a land tax, it is most likely that the land tax would be raised at rates higher than 0,5%. In conclusion, a land tax will therefore introduce a higher tax burden for farmers than in the case of RSC levies.

6.6 Impact of land tax and capital gains tax on security based lending

In Chapter 2, it was indicated that the primary impacts of capital gains tax would be a decrease in savings and investment. Furthermore, CGT discourages investment in risk-bearing ventures – a category agriculture can easily qualify for. Chapter 5 involved a case study on the impact of land tax and capital gains tax on the repaymentability of a farm. In brief the study concluded the following:

- Although the impact of capital gains tax can to a certain extent be avoided, the impact thereof on the repaymentability of the case study farm was significant. Chapter 5 indicated that a land tax levied on the productive value of land causes the repaymentability of the concerned farm to decline with 9,11%. Using market values as tax base, resulted in a decline of 10,94%. In terms of repaymentability, the aggregated negative impact of land tax and capital gains tax varied between 15,91% and 17,74% depending on the tax base. The chapter concluded with an indication of the negative impact land tax and capital gains tax will have on farmers already exhibiting high debt burdens.

- Due to the direct relation between the repaymentability of a farm and the security value commercial banks attach to the concerned land, a decrease in repaymentability also implies a decrease in the amount of funds a financier will be willing to lend. This effect might eventually cause farmers with high debt ratios to be unable to obtain sufficient working capital.

- It was furthermore pointed out that risk increases when the land and capital gains taxes are levied. This implies that the farmer's ability to survive less favourable years decreases.

6.7 Recommendations

According to the Constitution, local government has the right to levy a land tax in rural areas. However, with reference to the above findings, it is clear that local governments have to carefully consider the implementation regime. The current agricultural operating arena is characterised by high input prices, decreasing tax breaks for agriculture, high fluctuations in commodity prices, decreasing government support, recently liberalised markets and others. Whether farmers can absorb another fiscal instrument and to what extents, elicit doubts. One has to bear in mind that a country such as South Africa with its rising population and consequent increase in food demand cannot afford to seriously hamper its agricultural sector.

However, if a land tax is implemented, the following is recommended:

The land tax should be levied at local government level and the agricultural use values should be used as the tax base – not market values as currently proposed in the Property Rates Bill (published in August 2000). The assessment of these agricultural use values should be done according to the Indiana example. This encompasses a consultation process with an agricultural advisory council, which should be composed of state and local officials, agricultural leaders and other elected members. Entry restrictions should be introduced before a person qualifies for preferential tax treatment (only for agriculture). The entry requirements should restrict the programmes to land actually used in farming. Penalties for converting land to other uses should be introduced and may include repayment of at least part of the tax breaks received in the past.

If agricultural use values are used as the tax base, the cost to the owner will be easy to determine. This cost should then be incorporated when the local land tax rate is determined. It is further recommended that each local government should decide on its own local rate. The underlying reason is that when the local authority is not forced to levy a certain rate, the local taxpayers can question the concerned authority when the services are not provided at satisfactory levels. Factors that should be considered are the cost of the service to be provided, the administration cost of the land tax, and the possibility of avoidance by the

taxpayers. The higher the tax rate the higher the avoidance will be. It is, however, important that the taxpayer be adequately represented on the body levying the tax.

In terms of the multiplier effects illustrated in this study, it is of utmost importance that only the needed funds be removed from agriculture. This statement coincides with the fact that local authorities should decide on the land tax rate, especially due to the fact that this framework will ensure the efficiency of the tax system and counter over-taxation and inefficient use of the taxpayers money. The land tax should not be used for anything else but to raise income for local authorities to supply their communities with much needed services.

It became clear from this study that land taxation will have a significant impact on the agricultural sector. Farmers should prepare to manage factors such as lower market and security values for their land, increased production loan amounts, higher financial risks and other factors as described in this study. Surviving in agriculture will therefore encompass that farmers will have to focus even more on financial planning and management, marketing as well as technological innovations that will increase the productivity of land.

Given the additional impact of CGT on the repaymentability and security value of agricultural land, the application thereof on agriculture is not recommendable. However, given the draft legislation that was made available in December 2000, the introduction of CGT does not seem to be able to be stopped. Therefore, farmers should familiarise themselves in terms of the tax implications a certain capital transaction will imply. Farmers should also carefully consider their options before operating a farm as a legal entity. In certain cases it might be better not to dispose of a certain asset, but to rather live from the revenue generated thereby.

6.8 Recommendation for further studies:

During the process of completing this study and given the boundaries set for this study, certain areas have been identified for further research and investigation:

- A workable solution in terms of effectively incorporating communal areas into the land tax base.
- Mass appraisal methods applicable to agricultural land for valuing the land tax base.

- A quantitative analysis and international comparison of the tax burden of farmers in South Africa.
- The impact of taxation policy on the global competitiveness of the South African agricultural producer.

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Appendix A

Table A.1: Summary of the Great Karoo case study

Item	Optimal solution	Land tax (shadow prices of land)				Land tax (market value of land)			
		0.5%	1.0%	1.5%	2.0%	0.5%	1.0%	1.5%	2.0%
Land tax per ha (not deductible from income tax)	0.00	0.08	0.16	0.24	0.32	0.68	1.37	2.05	2.74
Objective funtion per ha (not deductible from income tax)	17.59	17.51	17.43	17.35	17.26	16.90	16.22	15.53	14.84
Land tax as a percentage of the objective function per hectare	0.00%	0.46%	0.92%	1.39%	1.87%	4.05%	8.44%	13.22%	18.44%
Land tax per ha (20% deductible from income tax)	0.00	0.06	0.13	0.19	0.26	0.55	1.09	1.64	2.19
Objective funtion per ha (20% deductible from income tax)	17.59	17.52	17.46	17.39	17.33	17.04	16.49	15.94	15.39
Land tax as a percentage of the objective function per hectare	0.00%	0.37%	0.74%	1.11%	1.49%	3.21%	6.64%	10.30%	14.22%
Land tax per ha (43% deductible from income tax)	0.00	0.05	0.09	0.14	0.18	0.39	0.78	1.17	1.56
Objective funtion per ha (43% deductible from income tax)	17.59	17.54	17.50	17.45	17.40	17.20	16.81	16.41	16.02
Land tax as a percentage of the objective function per hectare	NA	0.26%	0.52%	0.79%	1.06%	2.27%	4.64%	7.13%	9.73%
Land tax as % of gross income/LSU - livestock (not deductible)	NA	0.14%	0.29%	0.43%	0.57%	1.25%	2.51%	3.76%	5.02%
Land tax as % of gross income/LSU - livestock (20% deductible)	NA	0.11%	0.23%	0.34%	0.46%	1.00%	2.01%	3.01%	4.01%
Land tax as % of gross income/LSU - livestock (43% deductible)	NA	0.08%	0.16%	0.24%	0.33%	0.71%	1.43%	2.14%	2.86%
Land tax as % of gross income - vegetables crops (not deductible)	NA	0.06%	0.12%	0.18%	0.24%	0.15%	0.29%	0.44%	0.59%
Land tax as % of gross income - vegetables crops (20% deductible)	NA	0.05%	0.10%	0.14%	0.19%	0.12%	0.23%	0.35%	0.47%
Land tax as % of gross income - vegetables crops (43% deductible)	NA	0.03%	0.07%	0.10%	0.14%	0.08%	0.17%	0.25%	0.33%
Land tax as % of gross income - irrigation crops (not deductible)	NA	0.05%	0.09%	0.14%	0.18%	0.11%	0.22%	0.34%	0.45%
Land tax as % of gross income - irrigation crops (20% deductible)	NA	0.04%	0.07%	0.11%	0.15%	0.09%	0.18%	0.27%	0.36%
Land tax as % of gross income - irrigation crops (43% deductible)	NA	0.03%	0.05%	0.08%	0.10%	0.06%	0.13%	0.19%	0.25%
Land tax as % of DAC/LSU - livestock (not deductible)	NA	0.31%	0.63%	0.94%	1.25%	2.75%	5.50%	8.25%	11.01%
Land tax as % of DAC/LSU - livestock (20% deductible)	NA	0.25%	0.50%	0.75%	1.00%	2.20%	4.40%	6.60%	8.80%
Land tax as % of DAC/LSU - livestock (43% deductible)	NA	0.18%	0.36%	0.54%	0.72%	1.57%	3.14%	4.71%	6.27%
Land tax as % of DAC - dryland cash crops (not deductible)	NA	0.10%	0.20%	0.30%	0.41%	0.25%	0.50%	0.74%	0.99%
Land tax as % of DAC - dryland cash crops (20% deductible)	NA	0.08%	0.16%	0.24%	0.32%	0.20%	0.40%	0.60%	0.79%
Land tax as % of DAC - dryland cash crops (43% deductible)	NA	0.06%	0.12%	0.17%	0.23%	0.14%	0.28%	0.42%	0.57%
Land tax as % of DAC - irrigation crops (not deductible)	NA	0.05%	0.11%	0.16%	0.21%	0.13%	0.26%	0.39%	0.52%
Land tax as % of DAC - irrigation crops (20% deductible)	NA	0.04%	0.09%	0.13%	0.17%	0.10%	0.21%	0.31%	0.42%
Land tax as % of DAC - irrigation crops (43% deductible)	NA	0.03%	0.06%	0.09%	0.12%	0.07%	0.15%	0.22%	0.30%
Shadowprices of land (veld)									
Not deductable	10.7	10.7	10.6	10.6	10.5	10.1	9.5	8.9	8.2
20% income tax rate	10.7	10.7	10.6	10.6	10.6	10.2	9.7	9.2	8.7
43% income tax rate	10.7	10.7	10.7	10.6	10.6	10.4	10.0	9.7	9.3
Shadowprices of land (dry land)									
Not deductable	236.9	235.7	234.6	233.4	232.2	234.9	232.9	230.9	228.9
20% income tax rate	236.9	236.0	235.0	234.1	233.1	235.3	233.7	232.1	230.5
43% income tax rate	236.9	236.3	235.6	234.9	234.2	235.8	234.6	233.5	232.4
Shadowprices of land (irrigation land)									
Not deductable	2450.4	2438.1	2425.8	2413.5	2401.2	2420.3	2390.2	2360.1	2330.0
20% income tax rate	2450.4	2440.6	2430.7	2420.9	2411.1	2426.3	2402.2	2378.2	2354.1
43% income tax rate	2450.4	2443.4	2436.4	2429.4	2422.4	2433.2	2416.1	2398.9	2381.8

Table A.2: Summary of the Bloemfontein case study

Item	Optimal solution	Land tax (shadow prices of land)				Land tax (market value of land)			
		0.5%	1.0%	1.5%	2.0%	0.5%	1.0%	1.5%	2.0%
Land tax per ha (not deductible from income tax)	0.0	1.7	3.3	5.0	6.6	3.5	7.0	10.5	14.0
Objective funtion per ha (not deductible from income tax)	379	377	376	374	372	375	372	368	365
Land tax as a percentage of the objective function per hectare	0.00%	0.44%	0.88%	1.33%	1.78%	0.93%	1.88%	2.85%	3.84%
Land tax per ha (20% deductible from income tax)	0.0	1.3	2.6	4.0	5.3	2.8	5.6	8.4	11.2
Objective funtion per ha (20% deductible from income tax)	379	378	376	375	374	376	373	371	368
Land tax as a percentage of the objective function per hectare	0.00%	0.35%	0.70%	1.06%	1.42%	0.74%	1.50%	2.27%	3.05%
Land tax per ha (43% deductible from income tax)	0.0	0.9	1.9	2.8	3.8	2.0	4.0	6.0	8.0
Objective funtion per ha (43% deductible from income tax)	379	378	377	376	375	377	375	373	371
Land tax as a percentage of the objective function per hectare	NA	0.25%	0.50%	0.75%	1.00%	0.53%	1.06%	1.60%	2.15%
Land tax as % of gross income/LSU - livestock (not deductible)	NA	0.24%	0.48%	0.71%	0.95%	0.53%	1.06%	1.59%	2.12%
Land tax as % of gross income/LSU - livestock (20% deductible from income tax)	NA	0.19%	0.38%	0.57%	0.76%	0.42%	0.85%	1.27%	1.70%
Land tax as % of gross income/LSU - livestock (43% deductible from income tax)	NA	0.14%	0.27%	0.41%	0.54%	0.30%	0.60%	0.91%	1.21%
Land tax as % of gross income - dryland cash crops (not deductible from income tax)	NA	0.21%	0.42%	0.63%	0.84%	0.44%	0.87%	1.31%	1.74%
Land tax as % of gross income - dryland cash crops (20% deductible from income tax)	NA	0.17%	0.33%	0.50%	0.67%	0.35%	0.70%	1.04%	1.39%
Land tax as % of gross income - dryland cash crops (43% deductible from income tax)	NA	0.12%	0.24%	0.36%	0.48%	0.25%	0.50%	0.74%	0.99%
Land tax as % of gross income - irrigation crops (not deductible from income tax)	NA	0.26%	0.52%	0.78%	1.04%	0.50%	1.00%	1.50%	2.00%
Land tax as % of gross income - irrigation crops (20% deductible from income tax)	NA	0.21%	0.42%	0.63%	0.83%	0.40%	0.80%	1.20%	1.60%
Land tax as % of gross income - irrigation crops (43% deductible from income tax)	NA	0.15%	0.30%	0.45%	0.59%	0.28%	0.57%	0.85%	1.14%
Land tax as % of DAC/LSU - livestock (not deductible from income tax)	NA	1.13%	2.27%	3.40%	4.53%	2.52%	5.05%	7.57%	10.09%
Land tax as % of DAC/LSU - livestock (20% deductible from income tax)	NA	0.91%	1.81%	2.72%	3.63%	2.02%	4.04%	6.06%	8.07%
Land tax as % of DAC/LSU - livestock (43% deductible from income tax)	NA	0.65%	1.29%	1.94%	2.58%	1.44%	2.88%	4.32%	5.75%
Land tax as % of DAC - dryland cash crops (not deductible from income tax)	NA	0.40%	0.80%	1.19%	1.58%	0.83%	1.65%	2.45%	3.24%
Land tax as % of DAC - dryland cash crops (20% deductible from income tax)	NA	0.32%	0.64%	0.96%	1.27%	0.67%	1.32%	1.97%	2.61%
Land tax as % of DAC - dryland cash crops (43% deductible from income tax)	NA	0.23%	0.46%	0.68%	0.91%	0.48%	0.95%	1.41%	1.88%
Land tax as % of DAC - irrigation crops (not deductible from income tax)	NA	0.63%	1.24%	1.86%	2.46%	1.19%	2.35%	3.49%	4.60%
Land tax as % of DAC - irrigation crops (20% deductible from income tax)	NA	0.50%	1.00%	1.49%	1.98%	0.95%	1.89%	2.81%	3.71%
Land tax as % of DAC - irrigation crops (43% deductible from income tax)	NA	0.36%	0.71%	1.07%	1.42%	0.68%	1.35%	2.02%	2.67%
Shadowprices of land (natural grazing)									
Not deductable	143.5	142.8	142.1	141.3	140.6	141.9	140.2	138.6	137.0
20% income tax rate	143.5	142.9	142.3	141.8	141.2	142.2	140.9	139.6	138.3
43% income tax rate	143.5	143.1	142.7	142.3	141.9	142.6	141.6	140.7	139.8
Shadowprices of land (dry land)									
Not deductable	576.4	573.5	570.7	567.8	564.9	571.2	566.1	560.9	555.7
20% income tax rate	576.4	574.1	571.8	569.5	567.2	571.8	568.4	563.7	559.1
43% income tax rate	576.4	574.7	573.0	571.2	570.1	573.8	570.7	568.4	564.9
Shadowprices of land (irrigation land)									
Not deductable	3400.9	3383.9	3366.9	3349.9	3332.9	3368.4	3335.9	3303.4	3270.9
20% income tax rate	3400.9	3387.3	3373.7	3360.1	3346.5	3374.9	3348.9	3322.9	3296.9
43% income tax rate	3400.9	3391.2	3381.5	3371.8	3362.1	3382.3	3363.8	3345.3	3326.8

Table A.3: Summary of the Nelspruit case study

Item	Optimal solution	Land tax (shadow price of land)				Land tax (market value of land)			
		0.5%	1.0%	1.5%	2.0%	0.5%	1.0%	1.5%	2.0%
Land tax per ha (not deductible from income tax)	0.0	6.2	12.4	18.6	24.8	13.9	27.8	41.7	55.5
Objective funtion per ha (not deductible from income tax)	642	636	630	624	618	628	615	601	587
Land tax as a percentage of the objective function per hectare	0.00%	0.97%	1.97%	2.98%	4.01%	2.21%	4.52%	6.93%	9.47%
Land tax per ha (20% deductible from income tax)	0.0	5.0	9.9	14.9	19.8	11.1	22.2	33.3	44.4
Objective funtion per ha (20% deductible from income tax)	642	637	632	627	623	631	620	609	598
Land tax as a percentage of the objective function per hectare	0.00%	0.78%	1.57%	2.37%	3.18%	1.76%	3.58%	5.47%	7.43%
Land tax per ha (43% deductible from income tax)	0.0	3.5	7.1	10.6	14.1	7.9	15.8	23.7	31.7
Objective funtion per ha (43% deductible from income tax)	642	639	635	632	628	634	627	619	611
Land tax as a percentage of the objective function per hectare	NA	0.55%	1.11%	1.68%	2.25%	1.25%	2.53%	3.84%	5.18%
Land tax as % of gross income/LSU - livestock (not deductible)	NA	0.33%	0.66%	0.98%	1.31%	1.08%	2.16%	3.24%	4.32%
Land tax as % of gross income/LSU - livestock (20% deductible from income tax)	NA	0.26%	0.52%	0.79%	1.05%	0.86%	1.73%	2.59%	3.46%
Land tax as % of gross income/LSU - livestock (43% deductible from income tax)	NA	0.19%	0.37%	0.56%	0.75%	0.62%	1.23%	1.85%	2.46%
Land tax as % of gross income - dryland cash crops (not deductible from income tax)	NA	0.11%	0.22%	0.33%	0.44%	0.21%	0.43%	0.64%	0.86%
Land tax as % of gross income - dryland cash crops (20% deductible from income tax)	NA	0.09%	0.18%	0.26%	0.35%	0.17%	0.34%	0.51%	0.69%
Land tax as % of gross income - dryland cash crops (43% deductible from income tax)	NA	0.06%	0.13%	0.19%	0.25%	0.12%	0.24%	0.37%	0.49%
Land tax as % of gross income - irrigation crops (not deductible from income tax)	NA	0.22%	0.45%	0.67%	0.89%	0.47%	0.94%	1.42%	1.89%
Land tax as % of gross income - irrigation crops (20% deductible from income tax)	NA	0.18%	0.36%	0.53%	0.71%	0.38%	0.76%	1.13%	1.51%
Land tax as % of gross income - irrigation crops (43% deductible from income tax)	NA	0.13%	0.25%	0.38%	0.51%	0.27%	0.54%	0.81%	1.08%
Land tax as % of DAC/LSU - livestock (not deductible from income tax)	NA	1.15%	2.30%	3.45%	4.60%	3.80%	7.60%	11.39%	15.19%
Land tax as % of DAC/LSU - livestock (20% deductible from income tax)	NA	0.92%	1.84%	2.76%	3.68%	3.04%	6.08%	9.12%	12.15%
Land tax as % of DAC/LSU - livestock (43% deductible from income tax)	NA	0.66%	1.31%	1.97%	2.62%	2.16%	4.33%	6.49%	8.66%
Land tax as % of DAC - dryland cash crops (not deductible from income tax)	NA	0.25%	0.50%	0.74%	0.99%	0.48%	0.96%	1.44%	1.91%
Land tax as % of DAC - dryland cash crops (20% deductible from income tax)	NA	0.20%	0.40%	0.59%	0.79%	0.39%	0.77%	1.15%	1.53%
Land tax as % of DAC - dryland cash crops (43% deductible from income tax)	NA	0.14%	0.28%	0.42%	0.56%	0.28%	0.55%	0.82%	1.10%
Land tax as % of DAC - irrigation crops (not deductible from income tax)	NA	0.41%	0.82%	1.22%	1.62%	0.87%	1.72%	2.56%	3.39%
Land tax as % of DAC - irrigation crops (20% deductible from income tax)	NA	0.33%	0.66%	0.98%	1.30%	0.70%	1.38%	2.06%	2.73%
Land tax as % of DAC - irrigation crops (43% deductible from income tax)	NA	0.23%	0.47%	0.70%	0.93%	0.50%	0.99%	1.48%	1.96%
Shadowprices of land (veld)									
Not deductable	170.1	169.2	168.4	167.5	166.7	167.1	164.1	161.1	158.1
20% income tax rate	170.1	169.4	168.7	168.0	167.3	167.7	165.3	162.9	160.5
43% income tax rate	170.1	169.6	169.1	168.6	168.1	168.4	166.6	164.9	163.2
Shadowprices of land (dry land)									
Not deductable	768.3	764.5	760.6	756.8	753.0	760.8	753.3	745.8	738.3
20% income tax rate	768.3	765.3	762.2	759.1	756.0	762.3	756.3	750.3	744.3
43% income tax rate	768.3	766.1	763.9	761.8	759.6	764.0	759.8	755.5	751.2
Shadowprices of land (irrigation land)									
Not deductable	7068.0	7032.6	6997.3	6961.9	6926.6	6993.0	6918.0	6843.0	6768.0
20% income tax rate	7068.0	7039.7	7011.4	6983.1	6954.9	7008.0	6948.0	6888.0	6828.0
43% income tax rate	7068.0	7047.8	7027.7	7007.5	6987.4	7025.2	6982.5	6939.7	6897.0

Table A.4: Summary of Potchefstroom case study

Item	Optimal	Land tax (shadow prices of land)				Land tax (market value of land)			
	solution	0.5%	1.0%	1.5%	2.0%	0.5%	1.0%	1.5%	2.0%
Land tax per ha (not deductible from income tax)	0.0	2.8	5.6	8.5	11.3	5.7	11.3	17.0	22.7
Objective funtion per ha (not deductible from income tax)	128	125	122	119	116	122	116	111	105
Land tax as a percentage of the objective function per hectare	0.00%	2.26%	4.62%	7.10%	9.70%	4.65%	9.75%	15.37%	21.60%
Land tax per ha (20% deductible from income tax)	0.0	2.3	4.5	6.8	9.0	4.5	9.1	13.6	18.2
Objective funtion per ha (20% deductible from income tax)	128	125	123	121	119	123	119	114	110
Land tax as a percentage of the objective function per hectare	0.00%	1.80%	3.67%	5.60%	7.61%	3.68%	7.65%	11.93%	16.57%
Land tax per ha (43% deductible from income tax)	0.0	1.6	3.2	4.8	6.4	3.2	6.5	9.7	12.9
Objective funtion per ha (43% deductible from income tax)	128	126	125	123	121	125	121	118	115
Land tax as a percentage of the objective function per hectare	0.00%	1.28%	2.58%	3.93%	5.31%	2.60%	5.33%	8.22%	11.27%
Land tax as % of gross income/LSU - livestock (not deductible)	NA	0.29%	0.58%	0.88%	1.17%	0.54%	1.08%	1.62%	2.16%
Land tax as % of gross income/LSU - livestock (20% deductible from income tax)	NA	0.23%	0.47%	0.70%	0.94%	0.43%	0.87%	1.30%	1.73%
Land tax as % of gross income/LSU - livestock (43% deductible from income tax)	NA	0.17%	0.33%	0.50%	0.67%	0.31%	0.62%	0.93%	1.23%
Land tax as % of gross income - dryland cash crops (not deductible from income tax)	NA	0.28%	0.56%	0.83%	1.11%	0.53%	1.07%	1.60%	2.13%
Land tax as % of gross income - dryland cash crops (20% deductible from income tax)	NA	0.22%	0.45%	0.67%	0.89%	0.43%	0.85%	1.28%	1.71%
Land tax as % of gross income - dryland cash crops (43% deductible from income tax)	NA	0.16%	0.32%	0.48%	0.63%	0.30%	0.61%	0.91%	1.22%
Land tax as % of gross income - irrigation crops (not deductible from income tax)	NA	0.21%	0.42%	0.63%	0.84%	0.58%	1.17%	1.75%	2.34%
Land tax as % of gross income - irrigation crops (20% deductible from income tax)	NA	0.17%	0.34%	0.50%	0.67%	0.47%	0.93%	1.40%	1.87%
Land tax as % of gross income - irrigation crops (43% deductible from income tax)	NA	0.12%	0.24%	0.36%	0.48%	0.33%	0.67%	1.00%	1.33%
Land tax as % of DAC/LSU - livestock (not deductible from income tax from income tax)	NA	1.19%	2.38%	3.56%	4.75%	2.20%	4.40%	6.59%	8.79%
Land tax as % of DAC/LSU - livestock (20% deductible from income tax)	NA	0.95%	1.90%	2.85%	3.80%	1.76%	3.52%	5.28%	7.03%
Land tax as % of DAC/LSU - livestock (43% deductible from income tax)	NA	0.68%	1.35%	2.03%	2.71%	1.25%	2.51%	3.76%	5.01%
Land tax as % of DAC - dryland cash crops (not deductible from income tax)	NA	0.47%	0.93%	1.39%	1.85%	0.89%	1.77%	2.63%	3.48%
Land tax as % of DAC - dryland cash crops (20% deductible from income tax)	NA	0.37%	0.75%	1.12%	1.48%	0.72%	1.42%	2.12%	2.80%
Land tax as % of DAC - dryland cash crops (43% deductible from income tax)	NA	0.27%	0.53%	0.80%	1.06%	0.51%	1.02%	1.52%	2.01%
Land tax as % of DAC - irrigation crops (not deductible from income tax)	NA	0.42%	0.84%	1.26%	1.67%	1.17%	2.32%	3.44%	4.53%
Land tax as % of DAC - irrigation crops (20% deductible from income tax)	NA	0.34%	0.68%	1.01%	1.34%	0.94%	1.86%	2.77%	3.66%
Land tax as % of DAC - irrigation crops (43% deductible from income tax)	NA	0.24%	0.48%	0.72%	0.96%	0.67%	1.33%	1.99%	2.63%
Shadowprices of land (veld)									
Not deductable from income tax	266.1	264.8	263.5	262.2	260.8	263.7	261.3	258.9	256.5
20% income tax rate from income tax	266.1	265.1	264.0	263.0	261.9	264.2	262.3	260.4	258.5
43% income tax rate from income tax	266.1	265.4	264.6	263.9	263.1	264.8	263.4	262.0	260.7
Shadowprices of land (dry land)									
Not deductable from income tax	782.9	779.0	775.1	771.2	767.3	775.4	767.9	760.4	752.9
20% income tax rate from income tax	782.9	779.8	776.6	773.5	770.4	776.9	770.9	764.9	758.9
43% income tax rate from income tax	782.9	780.7	778.4	776.2	774.0	778.6	774.4	770.1	765.8
Shadowprices of land (irrigation land)									
Not deductable from income tax	2511.1	2498.5	2486.0	2473.4	2460.9	2476.1	2441.1	2406.1	2371.1
20% income tax rate from income tax	2511.1	2501.0	2491.0	2480.9	2470.9	2483.1	2455.1	2427.1	2399.1
43% income tax rate from income tax	2511.1	2503.9	2496.8	2489.6	2482.4	2491.1	2471.2	2451.2	2431.3

Table A.5: Summary of the Cedara case study

Item	Optimal solution	Land tax (agricultural value of land)				Land tax (market value of land)			
		0.5%	1.0%	1.5%	2.0%	0.5%	1.0%	1.5%	2.0%
Land tax per ha (not deductible from income tax)	0.0	1.3	2.7	4.0	5.3	2.8	5.6	8.4	11.2
Objective funtion per ha (not deductible from income tax)	220	219	217	216	215	217	214	212	209
Land tax as a percentage of the objective function per hectare	0.00%	0.61%	1.23%	1.86%	2.49%	1.29%	2.61%	3.97%	5.36%
Land tax per ha (20% deductible from income tax)	0.0	1.1	2.1	3.2	4.3	2.2	4.5	6.7	9.0
Objective funtion per ha (20% deductible from income tax)	220	219	218	217	216	218	215	213	211
Land tax as a percentage of the objective function per hectare	0.00%	0.49%	0.98%	1.48%	1.98%	1.03%	2.08%	3.15%	4.24%
Land tax per ha (43% deductible from income tax)	0.0	0.8	1.5	2.3	3.0	1.6	3.2	4.8	6.4
Objective funtion per ha (43% deductible from income tax)	220	219	218	218	217	218	217	215	214
Land tax as a percentage of the objective function per hectare	0.00%	0.35%	0.70%	1.05%	1.40%	0.73%	1.47%	2.22%	2.99%
Land tax as % of gross income/LSU - livestock (not deductible)	0.00%	0.41%	0.82%	1.23%	1.64%	0.86%	1.72%	2.58%	3.44%
Land tax as % of gross income/LSU - livestock (20% deductible from income tax)	NA	0.33%	0.66%	0.98%	1.31%	0.69%	1.38%	2.07%	2.76%
Land tax as % of gross income/LSU - livestock (43% deductible from income tax)	NA	0.23%	0.47%	0.70%	0.94%	0.49%	0.98%	1.47%	1.96%
Land tax as % of gross income - dryland cash crops (not deductible from income tax)	NA	0.16%	0.32%	0.48%	0.64%	0.35%	0.69%	1.04%	1.39%
Land tax as % of gross income - dryland cash crops (20% deductible from income tax)	NA	0.13%	0.26%	0.38%	0.51%	0.28%	0.56%	0.83%	1.11%
Land tax as % of gross income - dryland cash crops (43% deductible from income tax)	NA	0.09%	0.18%	0.27%	0.36%	0.20%	0.40%	0.59%	0.79%
Land tax as % of gross income - irrigation crops (not deductible from income tax)	NA	0.38%	0.75%	1.13%	1.51%	0.53%	1.05%	1.58%	2.11%
Land tax as % of gross income - irrigation crops (20% deductible from income tax)	NA	0.30%	0.60%	0.91%	1.21%	0.42%	0.84%	1.26%	1.68%
Land tax as % of gross income - irrigation crops (43% deductible from income tax)	NA	0.22%	0.43%	0.65%	0.86%	0.30%	0.60%	0.90%	1.20%
Land tax as % of DAC/LSU - livestock (not deductible from income tax)	NA	1.35%	2.70%	4.05%	5.40%	2.83%	5.67%	8.50%	11.34%
Land tax as % of DAC/LSU - livestock (20% deductible from income tax)	NA	1.08%	2.16%	3.24%	4.32%	2.27%	4.54%	6.80%	9.07%
Land tax as % of DAC/LSU - livestock (43% deductible from income tax)	NA	0.77%	1.54%	2.31%	3.08%	1.62%	3.23%	4.85%	6.46%
Land tax as % of DAC - dryland cash crops (not deductible from income tax)	NA	0.30%	0.60%	0.90%	1.19%	0.65%	1.30%	1.93%	2.56%
Land tax as % of DAC - dryland cash crops (20% deductible from income tax)	NA	0.24%	0.48%	0.72%	0.96%	0.52%	1.04%	1.55%	2.06%
Land tax as % of DAC - dryland cash crops (43% deductible from income tax)	NA	0.17%	0.34%	0.51%	0.68%	0.37%	0.74%	1.11%	1.47%
Land tax as % of DAC - irrigation crops (not deductible from income tax)	NA	0.64%	1.28%	1.91%	2.53%	0.90%	1.78%	2.64%	3.50%
Land tax as % of DAC - irrigation crops (20% deductible from income tax)	NA	0.52%	1.03%	1.53%	2.03%	0.72%	1.43%	2.13%	2.82%
Land tax as % of DAC - irrigation crops (43% deductible from income tax)	NA	0.37%	0.73%	1.10%	1.46%	0.51%	1.02%	1.52%	2.02%
Shadowprices of land (natural pastures)									
Not deductable from income tax	0	69015	137979	206994	275957	144539	289078	433617	578156
20% income tax rate from income tax	0	68991	137982	206973	275964	144542	289083	433625	578167
43% income tax rate from income tax	0	24	-4	20	-7	-3	-5	-8	-10
Shadowprices of land (dry land)									
Not deductable from income tax	0	55171	110393	165564	220786	115611	231273	346883	462546
20% income tax rate from income tax	0	55193	110386	165579	220771	115633	231267	346900	462533
43% income tax rate from income tax	0	-22	7	-15	15	-23	6	-17	12
Shadowprices of land (irrigation land)									
Not deductable from income tax	0	39312	78675	117987	157299	82395	164789	247184	329578
20% income tax rate from income tax	0	39325	78650	117975	157300	82389	164777	247166	329555
43% income tax rate from income tax	0	-13	25	12	-1	6	12	17	23
Shadowprices of land (natural pastures)									
Not deductable	174.7	173.9	173.0	172.1	171.2	172.7	170.7	168.7	166.7
20% income tax rate	174.7	174.0	173.3	172.6	171.9	173.1	171.5	169.9	168.3
43% income tax rate	174.7	174.2	173.7	173.2	172.7	173.6	172.4	171.3	170.2
Shadowprices of land (dry land)									
Not deductable	921.2	916.4	911.7	906.9	902.2	910.8	900.5	890.2	879.8
20% income tax rate	921.2	917.4	913.6	909.8	906.0	912.9	904.6	896.4	888.1
43% income tax rate	921.2	918.5	915.7	913.0	910.3	915.3	909.4	903.5	897.6
Shadowprices of land (irrigation land)									
Not deductable	4293.7	4271.5	4249.3	4227.1	4204.9	4262.7	4231.7	4200.7	4169.7
20% income tax rate	4293.7	4276.0	4258.2	4240.4	4222.6	4268.9	4244.1	4219.3	4194.5
43% income tax rate	4293.7	4281.1	4268.4	4255.7	4243.1	4276.1	4258.4	4240.7	4223.0

Appendix B

Appendix B

Typical farming examples of CGT's impact

1. Selling of a Farm

Five years after implementation of CGT a farmer in the Free State took part in the following transaction: He sold one of his farms for an all inclusive amount of R2,1 million. Prior to the sale advertising costs of R1000 was incurred and agent's commissions amounted to R 80 000 which the farmer paid. The farmer did not value his farm on the effective date of CGT and pays tax at a marginal rate of 42%.

He bought the farm 12 years prior to CGT's introduction for R200 000 and costs of conveyance amounted to R10 000.15 years ago, two dams were built for R50 000 each and 100 ha of irrigable land was developed for a cost of R100 000. Additionally, he replaced the whole farms fencing for R20 000. Until the date of sale land taxes to the value of R20 000 and water licences to the value of R30 000 were paid.

Calculation of net CGT:

Base cost:	
Farm price	R200 000
Conveyance costs	R10 000
Improvements (two dams)	R100 000
Improvements (irrigable land)	R100 000
Improvements (fence)	R20 000
Advertising costs	R1 000
Agent's commission	R80 000
Total base cost	**R511 000**

(Note that the land taxes and water licences are seen to be on the revenue account and are therefore not permissible as base cost)

Total Capital Gains	R2 100 000
Less: Base Cost	R511 000
Net Capital Gain	**R1 589 000**

(a) How much CGT is payable?

- Since the farmer did not value his farm, time-based apportionment applies: R 1589 000 X (5/12+5) = R467 352.94 (this value is believed to be the gain during the five year period after CGT's imposition).
- Since the farmer is a natural person an inclusion rate of 25% is used resulting in:
  R467 352.94X 25% = R116 838.23
- To calculate the amount to be added to taxable income, the R10 000 primary exclusion is subtracted: R116 838 - R10 000 = R106 838. This amount is now added to the taxable income implying that the following amount of tax will be payable: R106 838 X 42% = R44 872.
- The effective tax rate is therefore: R44 872/R2 100 000 = 2,1% implying that after 5 years of CGT and 15 years without CGT, the effective tax rate is 2,1 %.
- Doing the same calculations as above, but saying that the farm is sold 10 years after CGT's introduction, but keeping inflation in mind the price is now presumed to be R2,5 million. The tax amount will now be R90 729 implying an effective tax rate of 3,6%.

(b) What would have happened if the farm were in a Closed Corporation?

- Since a CC is a legal person, this would imply an inclusion rate of 50% would apply with no primary exclusion allowed. Consequently, the tax amount (in the case where the farm is sold 10 years after introduction of CGT and for R2,5 million) would be R452 045 X 42% = R189 859 implying an effective tax rate of 7,6% compared to the 3,6% in the case of a natural person.

(c) What would have happened if the farmer, upon the effective date of CGT, decided to let his farm be valued? Say the valuation was R1,0 million and valuation costs amounted to R18 000 (only arbitrary).

- In this case the capital gain will be the difference between the selling price less the disposing and valuing costs:

Selling price	**R2 100 000**
Less Base costs being:	
Valuation	R1 000 000
Valuation costs	R18 000
Agent's commission	R80 000
Advertising costs	R1 000
Net Capital Gain	**R1001 000**

In the above case the tax amount will be ((R1 001 000 X (5/12+5) X 25%) - R10 000) X 42%) = R26 713 implying an effective tax rate of 1,3%.

(d) What would have happened if the farmer sold this farm with the intention of buying another farm closer to him for R2,5 million.

- The same calculations as in (a) above are used to calculate the base cost being R511 000. Net Capital Gain is therefore R1 589 000. Since the farmer wants to re-invest the capital in a similar asset, rollover relief applies. Consequently, for the current year's assessment of CGT, the farmer is only taxed on 20% of the net capital gains being R1 589 000 X 20% = R317 800. However, the inclusion rate and primary exclusion is still applicable implying that only (R317 800 X (5/12+5) X 25%) - R10 000) X 42% = R5 614 is payable. Comparing this amount to the R44 872 in (a) above implies that the rollover relief is quite significant. However, it should be kept in mind that the R317 800 will be included in the calculation of net capital gains for the succeeding 4 years as well. Nevertheless, unless the farmer takes part in other capital transactions, aggregating the 5 payments, 5 X R5614 = R28 072, is still significantly less than R44 872.
- It's important to note that the base cost of the replacement asset must be equal to, or higher than the proceeds from selling the initial asset and the capital proceeds must be re-invested within one year.

(e) What would have happened if the farmer died before he sold the farm?

- The draft legislation states that a deceased estate's assets will be deemed to be disposed of. Consequently, all the farmer's assets will be valued at market related prices and the net capital gain will be calculated by subtracting the base cost of all assets. In terms of the tax amount payable, the 25% inclusion rate and R10 000 primary exclusion will be applicable. Since the assets will be valued upon the farmer's death, the time-based apportionment basis does not apply.

2. Selling farming equipment

One year after the effective CGT date a farmer in the Mpumalanga Highveld advertises (advertising costs = R1000) one of his tractors and is presented with an offer of R200 000. The concerned tractor was bought two years ago for R300 000 and depreciation was written off for two years according to the 50:30:20 rule. He intents on selling the tractor and replacing it with a new one for R350 000. During the past 2 years he paid R50 000 of interest and R100 000 in capital. Maintenance amounted to R20 000.

Calculation of net CGT:

Base cost:	
Initial acquisition cost:	R300 000
Less: Amount written off from income tax	R240 000 (50:30:20 rule)
Advertising cost	R1 000
Total base cost	**R61 000 (300000 - 240000 + 1000)**
Total Capital Gains	R200 000
Less: Base cost	R61 000
Net Capital Gain	**R139 000**

- Financing costs and maintenance is not allowable in the base cost, neither the capital repayments. Since the farmer intents to replace the asset only 20% of the capital gain is taxable for this year's assessment: R139 000 X 20% = R27 800

per annum for 5 years. Applying the inclusion rate and primary exclusion: (R27 800 X 25%)-R10 000 = Nil.

- In this example the farmer pays no CGT, since the CGT amount is lower than the R10 000 primary exclusion. However, in cases where the net capital gains is relatively high, CGT will be payable.

Appendix C

CROP BUDGET FOR	MSc Model				for the period		Oct-2000	to	Sep-2001								
CROP (1)	Maize Dry land																
TOTAL AREA PLANTED	800																
INCOME	PER HA	TOT HA	Mth No.		Total Months	Oct	Nov	Dec	Jan	Feb	Mch	Apr	May	Jun	Jul	Aug	Sep
Total Yield (t)	3.00	2400															
Price/Unit (R)	600.00	600															
Total Sales (R)	1800.00	1440000	7		1440000	0	0	0	0	0	0	0	0	0	1440000	0	0
GROSS VAL of PROD	1800.00	1440000	Mth	Cash/	Total												
EXPENSES	PER HA	TOT HA	No.	Credit	Months	Oct	Nov	Dec	Jan	Feb	Mch	Apr	May	Jun	Jul	Aug	Sep
Seed	58.80	47040	11	1	47040	0	47040	0	0	0	0	0	0	0	0	0	0
Seed treatment	0.00	0	11	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Fertiliser-lime	109.20	87360	10	1	87360	87360	0	0	0	0	0	0	0	0	0	0	0
Fertiliser-establish	163.50	130800	11	1	130800	0	130800	0	0	0	0	0	0	0	0	0	0
Fertiliser-topup	125.40	100320	1	1	100320	0	0	0	100320	0	0	0	0	0	0	0	0
Irrigation cost	0.00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Herb/control-plant	46.08	36864	11	1	36864	0	36864	0	0	0	0	0	0	0	0	0	0
Herb/control-post germinate	49.50	39600	12	1	39600	0	0	39600	0	0	0	0	0	0	0	0	0
Pest control-establish	160.80	128640	11	1	128640	0	128640	0	0	0	0	0	0	0	0	0	0
Pest control-protect	21.40	17120	12	1	17120	0	0	17120	0	0	0	0	0	0	0	0	0
Contract transport	0.00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Packaging material	0.00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Marketing cost	0.00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Cut,rake,bale	0.00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Casual Labour	30.00	24000	6	1	24000	0	0	0	0	0	0	0	0	24000	0	0	0
Insurance	79.50	63600	2	1	63600	0	0	0	0	63600	0	0	0	0	0	0	0
Transport	77.76	62208	7	1	62208	0	0	0	0	0	0	0	0	0	62208	0	0
Fuel	250.00	200000	111	1	200000	16667	16667	16667	16667	16667	16667	16667	16667	16667	16667	16667	16667
Sundry	0.00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL EXPENSES	1171.94	937552															
GROSS MARGIN	628.06	502448															

CROP BUDGET FOR		MSc Model				for the period		Oct-2000		to	Sep-2001						
CROP (2)		Sunflower															
TOTAL AREA PLANTED		500															
INCOME	PER HA	TOT HA	Mth No.		Total Months	Oct	Nov	Dec	Jan	Feb	Mch	Apr	May	Jun	Jul	Aug	Sep
Total Yield (t)	1.50	750															
Price/Unit (R)	1100.00	1100															
Total Sales (R)	1650.00	825000	6		825000	0	0	0	0	0	0	0	0	825000	0	0	0
GROSS VAL of PROD	1650.00	825000	Mth	Cash/	Total												
EXPENSES	PER HA	TOT HA	No.	Credit	Months	Oct	Nov	Dec	Jan	Feb	Mch	Apr	May	Jun	Jul	Aug	Sep
Seed	46.80	23400	11	1	23400	0	23400	0	0	0	0	0	0	0	0	0	0
Seed treatment	19.50	9750	11	1	9750	0	9750	0	0	0	0	0	0	0	0	0	0
Fertiliser-lime	153.36	76680	10	1	76680	76680	0	0	0	0	0	0	0	0	0	0	0
Fertiliser-establish	73.50	36750	11	1	36750	0	36750	0	0	0	0	0	0	0	0	0	0
Fertiliser-topup	85.50	42750	2	1	42750	0	0	0	0	42750	0	0	0	0	0	0	0
Irrigation cost	0.00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Herb/control-plant	143.50	71750	11	1	71750	0	71750	0	0	0	0	0	0	0	0	0	0
Herb/control-post germinate	22.56	11280	12	1	11280	0	0	11280	0	0	0	0	0	0	0	0	0
Pest control-establish	0.00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Pest control-protect	0.00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Contract harvesting	120.00	60000	6	1	60000	0	0	0	0	0	0	0	0	60000	0	0	0
Packaging material	0.00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Marketing cost	0.00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Cut,rake,bale	0.00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Casual Labour	0.00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Insurance	62.20	31100	2	1	31100	0	0	0	0	31100	0	0	0	0	0	0	0
Transport	77.76	38880	6	1	38880	0	0	0	0	0	0	0	0	38880	0	0	0
Fuel	250.00	125000	111	1	125000	10417	10417	10417	10417	10417	10417	10417	10417	10417	10417	10417	10417
Sundry	0.00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL EXPENSES	1054.68	527340															
GROSS MARGIN	[redacted]595.32	[redacted]297660															

CROP BUDGET FOR		MSc Model					for the period		Oct-2000		to	Sep-2001					
CROP (3)		Peanuts															
TOTAL AREA PLANTED		200															
INCOME	PER HA	TOT HA	Mth No.		Total Months	Oct	Nov	Dec	Jan	Feb	Mch	Apr	May	Jun	Jul	Aug	Sep
Total Yield (t)	1.80	360															
Price/Unit (R)	2000.00	2000															
Total Sales (R)	3600.00	720000	0		0	0	0	0	0	0	0	0	0	0	0	0	0
GROSS VAL of PROD	3600.00	720000	Mth	Cash/	Total												
EXPENSES	PER HA	TOT HA	No.	Credit	Months	Oct	Nov	Dec	Jan	Feb	Mch	Apr	May	Jun	Jul	Aug	Sep
Seed	320.00	64000	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Seed treatment	7.20	1440	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Fertiliser-lime		0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Fertiliser-establish	114.00	22800	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Fertiliser-topup	0.00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Irrigation cost	0.00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Herb/control-plant	72.00	14400	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Herb/control-post germinate	62.50	12500	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Pest control-establish	162.50	32500	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Pest control-protect	3.80	760	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Contract	0.00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Packaging material	165.00	33000	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Marketing cost	0.00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Cut,rake,bale	0.00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Casual Labour	67.00	13400	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Insurance	168.00	33600	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Transport	75.00	15000	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Fuel	321.00	64200	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Sundry	0.00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL EXPENSES	1538.00	307600															
GROSS MARGIN	2062.00	412400															

OVERHEAD BUDGET				Oct-2000	to	Sep-2001									
EXPENSES	Amount Budgeted	Mth No.	Amount Months	Oct	Nov	Dec	Jan	Feb	Mch	Apr	May	Jun	Jul	Aug	Sep
Fuel, Oil and Grease(Harv)	30000	111	30000	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500
Rep.+M/nance Veh+Mach(Gen)	67497	111	67497	5625	5625	5625	5625	5625	5625	5625	5625	5625	5625	5625	5625
Rep.+M/nance Fixed Imp	36000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ins, Lic Veh+Mach	1850	1	1850	0	0	0	1850	0	0	0	0	0	0	0	0
Ins, Lic Fixed Imp	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital Improvements//Value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Purch. Veh+Mach Deposits//Value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sundry Expenses															
Tel and Post Box	10000	111	10000	833	833	833	833	833	833	833	833	833	833	833	833
Accounting+Legal Costs	10000	111	10000	833	833	833	833	833	833	833	833	833	833	833	833
Bank charges	6000	111	6000	500	500	500	500	500	500	500	500	500	500	500	500
Electricity	12000	111	12000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Other Taxes	0	111	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverse	12000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Regular Labour															
Cash wages	36000	111	36000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
Bonus	6000	12	6000	0	0	6000	0	0	0	0	0	0	0	0	0
Sundry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hired Management															
Cash salary	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bonus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hired Management:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rent of land	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Income Tax	69300	2	69300	0	0	0	0	69300	0	0	0	0	0	0	0
Non Farming Expenses															
Medical	6000	111	6000	500	500	500	500	500	500	500	500	500	500	500	500
Insurance and Annuity	6000	111	6000	500	500	500	500	500	500	500	500	500	500	500	500
Household	55000	111	55000	4583	4583	4583	4583	4583	4583	4583	4583	4583	4583	4583	4583
Repayment Short Term Ct:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Repayment Medium+Long Term Ct:															
Hire purchase & Lease payments	181128	0	181128	181128	0	0	0	0	0	0	0	0	0	0	0
Term Loan:Interest	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Term Loan:Capital	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other:Interest	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other:Capital	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bonds	82115	0	82115	82115	0	0	0	0	0	0	0	0	0	0	0
Investments	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Purchase of Land Deposits//Value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0