

The Potential Benefits of a Tonnage-Based Corporate  
Tax to South Africa and the South African  
Shipping Industry

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## **Preface**

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## **Declaration**

Except for material specifically indicated in the text, and such assistance as I have acknowledged, this dissertation is my own work and has not been submitted for a degree in any other University.

**M.G.Chasomeris**  
**September 2000**

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## 1 Introduction and Context

*...negotiating a competitive tax regime for ship operation will be one of the greatest challenges yet to come before the distinctive South African flag is seen fluttering from too many more taffrails.*

[John Hare, 1998, University of Cape Town]

South Africa is a major sea trading nation with a relatively open economy of about 45 to 48 per cent of gross domestic product generated from aggregate import-export trade in non-gold products [Jones, 1999 and Floor Report, 1993: Summary pg. 3]. With more than 90 per cent of world trade seaborne, a study in 1991 showed South Africa to be ranked 21st - in terms of trade volumes - out of 100 countries [Stopford, 1997: 250-251]. Since then South Africa's trade volumes have continued to increase from the 114 million tons of cargo shown in the 1991 study to more than 173 million tons (including oil and petroleum products) in 1998 [Jones, 1999]. However, to compare a nation's share of world seatriade purely in terms of tons handled is misleading. A more accurate measure of seatriade is in terms of ton-miles.<sup>1</sup> Because of South Africa's geographical location, substantial transport hauls are required to link this country to its major international markets and suppliers. This generates approximately 1 310 billion ton-miles of "real" seatriade activity [Jones, 1999]. With a global seatriade of approximately 22 100 billion ton-miles, this means South Africa accounts for approximately six per cent of world seatriade, a performance that would place South Africa within the top 12 international maritime trading nations [Jones, 1999].

Even though South Africa is clearly a maritime trading nation, it is not, however, a significant shipowning or ship operating nation. The South African merchant marine is a small one [Working Group, 1995: 7]; in February 2000, there were 959 vessels, comprising 552 742 gross tons on the South African register [Staniland, 2000: 11].<sup>2</sup> Only six of these ships - owned by Safmarine - with a combined net registered tonnage of 87 140 can be considered South Africa's deepsea merchant marine, on the basis of flag or

formal registration.<sup>3</sup> Numerous factors have led to this phenomenon, not least of which was Apartheid and the restrictions placed upon South African vessels through sanctions. This historical fact has led to more than sixty South African beneficially owned ships being registered off-shore [van Niekerk, 1997: 6]. This means that South Africa has a ratio of trade share to tonnage flag share of about 150 to 1 [Jones, 1999]. Even if we include the beneficially owned fleet, Jones [1999] calculated that there is still a large imbalance of trade share to fleet share of greater than 20 to 1. Thus there is clearly an imbalance which if addressed, could create opportunities for South Africa and the South African shipping industry.

What kind of opportunities and benefits could emerge from addressing the imbalance of trade to fleet share? Arguably, the most pressing concern in South Africa today is unemployment. Statistics South Africa [2000] reported on the October household surveys 1998, which showed that whilst the official unemployment rate was 25,5 per cent, the expanded unemployment rate (including mining) was 37,5 per cent. Thus the creation of jobs is one of the key benefits that could arise from addressing this historical imbalance in South Africa's seatriade [see Section 5 for additional benefits].

So how can South Africa take advantage of this opportunity, rectify the imbalance and reap the potential benefits? One way is to create an environment conducive to shipowning and operating. This entails not only creating the right circumstances for foreign direct investment, but also putting together a coherent policy environment that promotes, supports and facilitates the shipping industry in South Africa. Shipping companies are subject to income and profits taxes in the state in which they are domiciled, and in this respect they are no different from any other undertaking. However, the shipping industry is more sensitive to the level of taxation than others owing to the enormous cost of ship replacement, which is continuing to rise [Branch, 1982: 219], and the fact that more than 70 per cent of the international shipping industry operates without paying normal income tax [Working Group, 1995: 10, van Niekerk, 1997: 3 and see Section 4]. This is one of the main reasons for investors registering ships under so-called flags of convenience. Countries like Liberia, Panama, Bahamas, Cyprus and St. Vincent

and the Grenadines, have a declared open registry policy and thereby encourage the registration of vessels whose beneficial owners reside elsewhere [Branch, 1982: 219]. In South Africa, legislative changes to be implemented in September by the Ship Registration Act of 1998, will help to promote a better legal environment, but this is not enough. International experience [see Section 4] shows that without the right fiscal environment, shipowners and operators are not persuaded to repatriate or switch tonnage. This does not mean that South Africa need become a flag of convenience; quite to the contrary, South Africa should remain a quality flag, but it does mean that the present shipping fiscal environment should be reconsidered in the context of the global shipping economy.

Internationally, the highly cyclical and extremely complex nature of the shipping market has highlighted the importance of the shipping fiscal environment. Consequently, many countries [see Section 4] have reconsidered their shipping policies, and at the heart of the reformation lie the fiscal incentives. Of the many forms of fiscal incentive available to support the shipping industry, the most internationally recognised and accepted form at present is the tonnage-based corporate tax. A tonnage-based corporate tax (commonly referred to as tonnage tax) contrasts with the generic corporation tax system under which a company's tax liability is based on the commercial profits that the company has made in the year. It ignores actual profit and instead computes a notional profit on the basis of the number and size of ships operated and taxes this profit, rather than the commercial profit, at the normal corporation tax rate. The tonnage rate is generally set so that notional profits, and hence actual corporation tax paid, are minimal. The mechanism seems to be an ingenious device for obtaining virtual tax exemption compatible with international tax treaty obligations. It departs from normal corporation tax principles of taxing actual profits to introduce a notional basis which bears no relationship to actual profits earned. It is widely recognised as a sensible and pragmatic way of achieving a low-tax regime, and is being implemented by some leading maritime nations [Lord Alexander, 1999: pt. 37 and see Section 4.4 and Section 4.5].

This paper considers the potential benefits of a tonnage-based corporate tax for South Africa and the South African shipping industry. This section briefly introduces the reader to the topic and provides a background and context before expanding on the main aims of the paper and methodology used. Section 2 briefly reviews the economic theory and principles underlying the shipping industry. The section also investigates necessary economic and corporate taxation concepts and perspectives. Section 3 investigates five investment theories behind the effects of corporate taxation on business investment. The section concludes that the neoclassical model of investment will be used to analyse the effects of the South African corporate tax environment on the user cost of capital. In Section 4, a critical review of the South African tax environment is made before investigating the alternative tonnage-based corporate tax system. The section then continues with an international review of the incidence of tonnage tax. In the light of the preceding sections, Section 5 investigates the potential benefits of a tonnage tax to South Africa and the South African shipping industry. Finally, Section 6 sets out the conclusions and identifies areas for future research.

## **1.1 Background**

The importance of South Africa's sea trade and associated maritime policy has long been recognised, and has evolved through the centuries. Historical, socio-economic and political factors unique to South Africa, as well as the international shipping environment, have helped to mould South Africa's present shipping policy.

The commercial shipping policy of a state is reflected in the legislative, administrative and economic measures which the state adopts towards shipowning and operation in the national economy and international markets for sea transport. While these measures may concern its own merchant fleet or be directed at foreign shipping, the effect will invariably have both domestic and international repercussions. For that reason, national shipping policies are not only domestic matters, but also matters of international concern [Floor, 1993: 5.1.1].

Jones [1987] produced a study entitled “The international shipping industry and South Africa’s seaborne trade.” The document analysed the South African shipping industry and governing maritime policy within the context of the international shipping arena at that time. A number of major shipping policy recommendations were proposed. Briefly, the potential regulatory measures which appeared to be impracticable or unnecessary at the time included: multi-lateral cargo sharing; direct cargo reservation; direct flag preference; direct subsidisation and the pursuit of discriminatory port tariffs [Jones, 1987: ix-xii]. The study recognised the benefits of the freest possible trade environment, but also recognised that “second best” interventions might at times be appropriate in an imperfect trading world where many trading nations practice unilateral maritime protectionism. Those “second best” policy avenues identified as more fruitful candidates at the time included: the pursuit of bilateral agreements with those of our trading partners who might otherwise practise unilateral cargo reservation; the placing on the statute books of potentially retaliatory measures aimed at those states that discriminate against our carriers; greater support for local carriers in respect of government cargoes; the pursuit of ‘package’ deals between landside transport operators and sea carriers; attempts to secure the shipment of a higher proportion of exports on a cif basis; and a change in the attitude of government towards the domestic shipping industry as a strategic asset whose reinforcement would be in the national interest [Jones, xii-xvi]. Since then, the international shipping industry has evolved, and with it, much of the shipping protectionism has evaporated.

Aside from the potential regulatory measure identified by Jones [1987], the then current fiscal policy environment facing shipowners was found to be a supportive one, “broadly comparable with the tax and incentives parameters facing western shipowners” [Jones, 1987: viii]. Consequently, no major policy changes were recommended. The sole suggested addition was to make tax allowances available where attempts to camouflage *de facto* South African vessel ownership (due to sanctions resulting from Apartheid) imposed higher costs on the shipowner [Jones, 1987: viii].

Since the paper by Jones [1987], the fiscal environment facing the international shipping industry has changed dramatically. In particular, the fiscal policy environment facing South African shipowners is no longer as supportive as it once was [see Section 5.1] and is most definitely not “broadly comparable with the tax and incentives parameters facing western shipowners” [Jones, 1987: iii]. Rather, as will be seen in Section 4, there is an international trend towards a user-friendly, clear, certain and internationally accepted form of taxation known as the tonnage tax.

Jones[1992] identified the policy concern for the South African shipping industry without - at that stage - making any specific policy recommendations. Of the many industry concerns raised by the document, the issues on differential taxation of South African shipowners versus their foreign counterparts was highlighted. The paper found that:

*For all practical purposes, then, foreign carriers pay no tax in South Africa, and since many 'convenience' flag operators also pay no taxes on income in their 'home' countries, such foreign owners can price more competitively than a domestic South African owner. This situation, in which South African operators are fully taxed while their foreign counterparts either wholly or partly avoid tax, places local operators in a disadvantaged commercial position, and is a serious source of concern to the industry [Jones, 1992: 3].*

This paper will consider the present tax environment facing South African shipping companies versus their foreign competitors [see Section 4], and will also compare the differential taxation of 'Republic' companies versus international branches operating from South Africa [see Section 5.1].

In 1993, a “committee of inquiry into a national maritime policy for the Republic of South Africa” was established under the chairmanship of Mr Bernal Floor. This committee was tasked to produce a definitive analysis of the circumstances and problems surrounding the shipping industry, and to chart an appropriate future course for national maritime policy. The Floor report [1993: 5.1.20] noted that:

*...it is recommended that the Government acknowledge that South Africa is a maritime country which must use its maritime resources in the strategy of restructuring the economy to the extent that such restructuring has become essential.*

The Shipowners' Association of South Africa (SASOA) [in Floor, 1993: 5.1.21] has stated that unfair foreign competition exists in both the coastal and international trades and that this be acknowledged by the Government and the concept of equity or level playing fields be supported.

Floor [1993: 5.1.6] comments that generally very few countries practice non-intervention, while liberalism in shipping is currently promoted more as a concept to be pursued by other countries than a policy which any country takes seriously. Apart from outright cargo reservation and flag discrimination, the contemporary methods of protection afforded to shipowners are mainly direct or indirect financial assistance or subsidies, and non-financial measures which may improve their competitiveness or inhibit or restrain their competitors. Floor [1993: 5.1.6] lists a number of these protection measures presently practised around the world, including "tax and depreciation allowances, which currently constitute one of the main forms of protectionism," albeit of a lesser direct nature than instruments such as cargo reservation or flag discrimination.

One of the key recommendations made by the Committee [in Floor, 1993: 5.1.83] was:

*That the existing fiscal incentives to encourage shipowning remain in place and that additional incentives be considered taking into account the fiscal incentives for shipowning in other countries which may impinge on the competitiveness of local shipowners...*

The nature of fiscal incentives for shipowning in other countries has changed dramatically since the introduction of a tonnage-based corporate tax in the Netherlands. Until 1995, the number of ships flying the Dutch flag was declining as a result of more beneficial dispensations for shipowners in other countries. Not only were the ships

leaving the Dutch register, but companies increasingly began to move off-shore. The Netherlands Government then decided to adopt a policy which rendered the business environment more favourable for shipping investment and operators, as contained in the Shipping Policy Memorandum (Parliamentary documents II, 1994/95, 24 164, no. 2) which lists a comprehensive package of measures to ensure that the Netherlands remains an attractive base for shipping activity [van Niekerk, 1997: 5]. The most important measure introduced concerned taxation of shipping, and aimed to provide within the corporate tax system, a simplified, fixed assessment of profits on shipping income, known as a tonnage tax [see Section 4.2.1 and Appendix C].

Meanwhile, back in South Africa, trade prospects improved dramatically in the wake of the first democratic elections in 1994 in which the African National Congress came to power. With South Africa's re-entry into the mainstream international trading community through the abolition of sanctions, and the country's enhanced international status, the potential for growth and expansion of our shipping industry was very real.

In late 1994, the Department of Transport appointed a series of specialist working groups to investigate the circumstances surrounding the principal transport modes in South Africa. The intention was to use the reports produced by these groups to provide an informed context for the formulation of appropriate transport policy. One such working group was the Maritime Transport Working Group (MTPWG), which in July of 1995 published its first report. The Group considered its terms of reference to be:

*An investigation and review of policy relating to or affecting coastal and foreign-going maritime transport, to identify and prioritise policy issues and to recommend action for the implementation thereof, with particular reference to the Reconstruction and Development Programme and to the modernisation of shipping administration in South Africa.*

Of the numerous policy issues identified, one of the most pressing was the policy context surrounding "the fiscal allowances and incentives given to SA shipowners by the SA

Income Tax Act.” It was noted that the objective of maritime policy here should be to ensure a level playing field for the domestic shipowner/operators vis-à-vis foreign competitors. It was also noted that in all instances, policy should take cognisance of international trends, and remarked with regard to taxation that “International shipping operations should be exempt from normal income tax, in line with over 70% of the World’s fleet. This could be coupled with a tonnage tax system” [Working Group, 1995: 10].

Finally, in 1997 there was a consultative process with the existing South African shipowners, potential shipowners, the South African Revenue Services and the Department of Finance. In particular, on the 1 September 1997, a meeting was held between these interested parties which resulted in a paper by van Niekerk [1997] on a “Proposed new tax regime for the SA shipping industry.” The parties involved were generally supportive of the tonnage tax, and they had hoped to table the final proposals in Parliament during the second session of 1998. This has not taken place thus far. Indeed, there were a number of outstanding issues identified which still needed to be addressed.

The issues identified were:

- (i) the treatment of deferred taxes.
- (ii) the transitional arrangements.
- (iii) the success of tonnage taxes world-wide.
- (iv) a sensitivity analysis based on real examples.
- (v) quantification of the secondary benefits.

[van Niekerk, 1997: 13].

Since then, numerous articles and papers have investigated many of the issues raised, in particular the proposals for a tonnage tax by Lord Alexander [1999] to the British government. This dissertation addresses some of these issues, and adds to the body of knowledge surrounding the effects of a tonnage tax.

Since the Netherlands implemented their tonnage tax in 1996, Norway (1996), Germany (1999), and The United Kingdom (2000) have all done likewise [see Section 4]. In light

of these changes, many additional countries have been re-considering their shipping tax environments. Finland's Government agreed to introduce a tonnage tax [Fairplay, 2000d], while India's surface transport minister is to seek cabinet approval [Fairplay, 2000c and see Section 4.3].

The new Ship Registration Act of 1998 will enter into force in September this year once its regulations have been promulgated [Interview 10]. The eligibility of shipowners to register their ships in South Africa has been changed - widened - without the loss of the "genuine link" required under the 1982 Law of the Sea Convention.<sup>4</sup> The changes are: (a) the introduction of majority ownership in respect of certain types of vessels; (b) the provision for the parallel registration of certain vessels on bareboat charter to qualified persons;<sup>5</sup> (c) the provision for South African vessels to be bareboat chartered-out under a foreign flag; and (d) the provision for the registration of small vessels, that is, vessels under 25 gross tons so as to secure the availability of ship mortgages, as a means of securing financing, for small vessels [Staniland, 2000: 11-12].

The Ship Registration Act, however, is only the first step in making the South African register attractive enough to bring its own prodigal owners back onto the flag, and possibly even lure foreign owners into the environment of a low-valued rand. Whilst these legislative measures are most certainly a step in the right direction, it is the fiscal measures, which include the creation of a competitive tax environment, that will have a greater impact on the success of South Africa's maritime policy initiatives. It is this context which lead Hare, the chairman of the Maritime Transport Policy Working Group [in Lloyd's List Africa Weekly, 1998: 4] to state:

*...negotiating a competitive tax regime for ship operation will be one of the greatest challenges yet to come before the distinctive South African flag is seen fluttering from too many more taffrails.*

In light of this dynamic background, it is clear that in the 1980's the fiscal policy environment facing South African shipowners was considered supportive and broadly

comparable with the tax and incentives facing western shipowners [Jones, 1987: iii]. At that point, foreign regulatory shipping interventions were the main source of concern. Since then, direct regulatory protectionism has all but disappeared, but more supportive fiscal policy measures have evolved to a point where South African shipowners and operators now compete internationally on an inequitable fiscal basis. South Africa's re-entry into the international mainstream trading community has the potential to create opportunities for a strengthening and expansion of the country's maritime community and the related benefits, but these opportunities need to be facilitated, most importantly through a levelling of this playing field. One way of helping to achieve this could be through the introduction of a tonnage tax that has been internationally accepted. This paper investigates the potential benefits of introducing such a tonnage tax system to South Africa and the South African shipping industry.

## **1.2 Objectives and Methodology of the Study**

This paper investigates the potential benefits to South Africa and the South African shipping industry of introducing a tonnage-based corporate tax system. It aims to stimulate discussion and alert those with a vested interest in South Africa and South Africa's shipping industry to: the present imbalance in South Africa's seatriade; the need for fiscal reform; the concept of a tonnage tax; and the potential benefits of a tonnage tax to South Africa and the South African shipping industry.

In conducting the study, key documents and relevant data on the tonnage tax and South Africa were identified and obtained. These were analysed and then summarised. Much of the information used in this exercise was sourced from a variety of previous international studies, most of which were only available on the internet. There are relatively few international studies on the tonnage tax, and it appears that there has only been one formal investigation into a tonnage tax for the South African shipping industry [see van Niekerk, 1997]. The methodology adopted by this paper begins by providing [in Section 1] the reader with a background, and placing the reader within the present fiscal

context of the international shipping industry. Section 1 also identifies the main aims and objectives of the paper. The paper proceeds in Section 2 to introduce to the reader some key concepts in economic theory, taxation and in the principles of shipping. With this understanding of some of the key concepts and issues, the paper investigates in Section 3 the effects of corporate taxation on business investment. Five prominent investment theories are investigated and compared with the result that the theory behind the neoclassical model of investment is chosen as the methodology to analyse the South African tax environment. Section 4 then reviews South Africa's past and present shipping tax environment before turning to review worldwide shipping tax regimes and the alternative tonnage-based corporate tax system. Section 5 draws together the literature review, theory and the neoclassical methodology investigated, and applies this to analyse the potential benefits of a tonnage-based corporate tax to South Africa and the South African Shipping industry. Section 6 draws together the conclusions and identifies areas for future research. Interviews were also conducted in which the author was able to tap into local expertise and sentiment from diverse backgrounds [see Appendix A].

## 2 Economic Theory and Principles of Shipping

The demand for vessel space is a derived demand; that is, transport services are demanded not for their own sake, but rather because transport has the ability to add value to commodities by moving them from areas of lower utility to areas of higher utility [Stopford, 1997: 226, Working Group, 1995: 5]. The fundamental purpose of transport is therefore to bridge the gap between producers and consumers, and the more successfully transport fulfils its role, the smaller that gap will be. Consequently, the main thrust of transport policy in all transport modes should be to ensure that transport services are able to function in as efficient and effective manner as possible. The primary goal of maritime transport policy should thus be to ensure the provision of the appropriate quantity and quality of vessel space, and the appropriate range of port facilities at minimum cost. A further and important goal of maritime transport policy is to secure for South African interests an equitable stake in the seaborne commerce of the region, and fair access to international cross trades [Working Group, 1995: 5], within an international market framework that is as free of impediments as possible.

Previous maritime policy studies have identified maritime priorities as being the promotion of maritime industries and defending the country's maritime interests [see for example Floor Report, 1993: 4, Section 2.3.1]. The working group took the wider view that the principal goal of maritime policy should be to promote all economic activity dependent upon maritime transport (including the activities of shipowners and operators), and should defend and promote the country's trading interests.

Economic theory suggests that the transport sector can function most effectively if four basic economic principles are adhered to. These principles are:

- (a) Freedom of transport users' choice across and within transport modes.
- (b) Reliance on a free enterprise systems in which market forces operate in as unconstrained a fashion as possible.

- (c) The removal wherever possible of market imperfections, such that markets operate on the basis of the correct price signals.
- (d) The equal treatment of all transport modes.

These principles underpinned all of the economic issues addressed by the Working Group [1995], and likewise are applicable in assessing what optimal tax system should be implemented in South Africa.

## **2.1 Supply, Demand and Market Cycles in the Shipping Industry**

Perhaps the most striking aspect of the shipping business to an outsider is the totally different character of the companies in different parts of the industry. For example, liner companies and bulk shipping companies belong to the same industry, but they seem to have little else in common. This diversity influences the way in which different operators approach the market [Stopford, 1997: 32]. Nevertheless, shipping companies, as firms, act and react to changes in demand and supply for shipping, and like most firms are influenced by the socio-economic and political environments in which they operate.

The market cycle pervades the shipping industry, and has long been accepted as part of the business. Peaks and troughs in the cycles are signs that the market is adjusting to supply and demand by regulating cashflow [Stopford, 1997: 40]. Fayle [1933, in Stopford, 1997: 41] suggested that “the build-up of a cycle is triggered by the world business cycle or random events such as wars which create a shortage of ships. The resulting high freight rates attract new investors into the industry, and encourage a flood of speculative investment, thus expanding shipping capacity.”

The perception of the cycle suggests a sequence of three events, a trade boom, a short shipping boom during which there is overbuilding, usually followed by a ‘prolonged’ slump. Cufley [(1972) in Stopford, 1997: 41] drew attention to three key events common to shipping cycles. First, a shortage of ships develops, second, high freight rates

stimulate over-ordering of the ships in short supply which finally leads to market collapse and recession. The response of supply to changes in market conditions is, however, lagged rather than immediate. Since the gestation period between the decision to invest in new tonnage and the actual delivery of that new tonnage is between one and three years, newbuildings frequently enter the market well after conditions have changed. This makes the shipping cycle more difficult to analyse, and leads Cufley to argue that the cycle is too irregular to predict:

*Any attempt to make long-term forecasts of voyage freights (as distinct from interpreting the general trend in growth of demand) is doomed to failure. It is totally impossible to predict when the open market will move upwards (or fall), to estimate the extent of the swing or the duration of the phase.*

Finally Hampton [1996] in his analysis of the shipping cycle notes the important part played by people and the way they respond to price signals received by the market. He argues that market sentiment plays an important part in determining the structure of cycles and that this can help to explain why the market repeatedly seems to over-react to price signals.

Thus the shipping cycle can be seen as a mechanism devoted to removing imbalances in the supply and demand for ships. If there is too little supply, the market rewards investors with high freight rates until more ships are ordered. When there are too many ships it squeezes the cashflow until owners give up the struggle and ships are scrapped [Stopford, 1997: 42].

Over the last twenty years, the industry has had to contend with a near-permanent oversupply of tonnage inherited from an ill-timed building boom that coincided with the unprecedented fall in seatriade demand in the aftermath of the 1978/79 oil "crisis." Recent shipping cycles have consequently oscillated around a base line that has offered operators poor profits, most notably in the bulk and tanker sectors. These decades of poor industry performance have undoubtedly accelerated "flagging out" practices by

shipowners in search of tax havens, and have also increased pressure on the governments of trading maritime nations to stem this tide with appropriate fiscal policies.

## **2.2 Introductory Theory on Ship Investment**

International economic theory views ship-owning as a matter of international resource allocation and nations which are capable of producing shipping services at the least cost will have competitive advantages and so accumulate the industry's capital. Thus, provided the opportunity cost of providing the least cost shipping service results in a net benefit for the economy of the countries affording that service, it will be worth their while to do so [van Niekerk, 1997: 1].

However, net benefit for a country does not necessarily mean an improvement in the Balance of Payments. The effect of shipping transactions on the Balance of Payments often does not satisfactorily reflect the benefits or otherwise of having a national fleet, because the foreign exchange saved through the shipment of imports in domestic carriers may be ignored. Furthermore, it is always necessary to take account of the movement of capital. The net benefit of domestic shipowning and operation is really the value added to the economy, which in accordance with conventional economic accounting, is the sum of the wages paid for domestic labour plus the profits earned. In other words, the net national benefit from the supply of shipping services by a domestic business undertaking, in common, with all other domestic business concerns, is reflected in its profitability and employment [Van Niekerk, 1997: 1].

With the globalisation of the shipping market, where most production factors can be drawn from any maritime country, countries which seek growth in their maritime industries must necessarily ensure that the national cost elements compare favourably with those in other countries. If not, shipowners have little alternative but to move the registration of their ships offshore. The present international trend sees shipowners transferring their ships to more financially favourable registers [Lord Alexander, 1999,

and see Section 4.3]. Thus, to compensate for comparatively higher costs of production factors, countries intent on promoting or maintaining their shipowning industries may have to consider tax incentives [see Section 4.3 and Section 4.4]

### **2.3 Why Tax Corporations?**

Before undertaking a description and analysis of the present South African shipping taxation policy, and the alternative tonnage-based corporate tax, we should ask whether it makes sense to have a special tax system for corporations in the first place.<sup>6</sup> Under the South African legal system certain institutions are treated as if they were people. Thus from a legal point of view, corporations are people, but from an economic standpoint, this notion makes little sense as real people - shareholders, workers, landlords, consumers, etc. - bear taxes. A corporation cannot. If this is so, why should corporate activity be subject to a special tax? Is it not sufficient to tax the incomes of the corporation owners via the personal income tax?

Rosen [1995: 429] lists a number of proposed justifications for a separate corporation tax. Firstly, contrary to the view just stated, corporations - especially very big ones - really are distinct entities. Large corporations have thousands of shareholders, and the managers of such corporations are controlled only very loosely, if at all, by the shareholder/owners. Most economists would certainly agree that there is separation of ownership and control in large corporations, and this creates important problems for understanding just how corporations function [see Koutsoyiannis, 1985, chapter 15 for a discussion on managerial theories of the firm]. Nevertheless, it does not follow that the corporation should be taxed as a separate entity.

A second justification for corporate taxation is that the corporation receives a number of special privileges from society, the most important of which is limited liability of the shareholders. The corporation tax can be viewed as a user fee for this benefit. However,

the tax is so structured that there is no reason to believe that the revenues paid approximate the benefits received.

Finally, the corporation tax protects the integrity of the personal income tax. Suppose that Andrew's share of the earnings of a corporation during a given year is R10 000. According to the standard convention for defining income, this R10 000 is income whether the money happens to be retained by the corporation or paid out to him. If the R10 000 is paid out, it is taxed in an amount that depends on his personal income tax rate. In the absence of a corporation tax, the R10 000 creates no tax liability if it is retained by the corporation. Hence, unless corporate income is taxed, Andrew can reduce his tax liability by accumulating income within the corporation.<sup>8</sup>

It is certainly true that if corporate income goes untaxed, opportunities for personal tax avoidance are created. Whilst a special tax on corporations is not the only way to include earnings accumulated in corporations [see Rosen, 1995: 452], it is an accepted worldwide practice.

#### **2.4 Income Tax, Subsidies and Excess Burden**

Taxes impose a cost on the taxpayer. It is tempting to view the tax burden as the amount of money that individuals or companies hand over to the tax collector. A simple example [adapted from Rosen, 1985: 275] illustrates, however, that this is just part of the story.

Consider Company X that uses transport services. This company typically consumes 10 units of maritime goods per year, at a price of R80 per unit. The government levies a 25 percent tax on the consumption of the maritime goods, so that Company X now faces a price of R100.<sup>7</sup> In response to the price hike, Company X reduces their consumption of the maritime good to zero, and spends the entire R800 per year on other goods and services. Obviously, because Company X consumes no units of the maritime good, the maritime tax yields zero revenue. Does this mean that Company X is not affected by the

tax? The answer is no. Company X is worse off because the tax has induced it to consume a less desirable bundle of goods than previously. We know that the after tax bundle is less desirable because, prior to tax, Company X had the option of consuming no maritime goods. Since they chose to buy 10 units per year, this must have been preferred to spending the money on other items. Thus, despite the fact that the tax raises zero government revenue, it made Company X worse off.

This example is a bit extreme. Normally, we expect that an increase in price will diminish the quantity demanded, but not drive it all the way to zero. Nevertheless, the basic result holds: because a tax distorts economic decisions, it brings about an excess burden.

Taxes generally impose an excess burden, which can be viewed as a loss of welfare or cost, above and beyond the tax revenue collected. The excess burden is caused by tax-induced distortions in behaviour. It may be examined using either indifference curves or compensated demand curves [see Rosen, 1985: 276-294]. Excess burden calculations typically assume that there are no other distortions. If other distortions exist, it is possible that an additional tax will reduce the welfare cost. In effect, such a new tax restores incentives distorted by the original tax.

For the sake of completeness, it should be noted that subsidies also create excess burden because they encourage people to consume goods valued less than the marginal social cost of production [Rosen, 1985: 296].

In order to investigate the direct or indirect effects of taxation, it is necessary to classify the tax as proportional, progressive, or regressive. The definition of proportional is straightforward. It describes a situation in which the ratio of taxes paid to income is constant regardless of income level. It is not as easy to define progressive and regressive and, unfortunately, ambiguities in definition sometimes confuse public debate. A natural way to define these terms is in terms of the average tax rate, the ratio of taxes paid to income. Thus, if the average tax rate increases with income, the system is progressive; if

it falls the tax is regressive [Rosen, 1985: 241-242]. In South Africa, the individual income tax may be considered a progressive income tax as the average tax rate increases with income. The South African corporate or company tax rate is fixed at 30 per cent and may be considered a proportional tax [see Section 4.1 and Section 5.1].

A lump sum tax, on the other hand, is independent of the taxpayer's behaviour. That is, a certain amount must be paid regardless of what the taxpayer does. Thus, since the amount of income an individual earns, and hence his tax liability, is at least in part under his control, the income-based tax is not a lump sum tax [Rosen, 1985: 280].

Ultimately, to achieve an equitable system of lump sum taxes, it would be necessary to base the tax on some underlying "ability" characteristic which measures individuals' potential to earn income. In this way high - and low - potential individuals or companies could be taxed differently. Because the base is "potential," an individual's tax burden would not depend upon his behaviour. Rosen [1985: 280] asserts that "even if such an ability measure existed, however, it could not possibly be observed by the tax authority. Thus, individual lump sum taxes are best viewed as standards of efficiency, but not as major policy options in a modern economy."

Rosen [1985: 281] comments that "perhaps then, lump sum taxation and income taxation are equivalent. In fact, if income were fixed, then an income tax would be a lump sum tax. However, once we explicitly consider choices with respect to income, it becomes clear that an income tax is not generally equivalent to a lump sum tax."

The tonnage-based corporate tax [see Section 4.2] may, however, be viewed as a lump sum tax. This form of taxation bases the profits of the shipping company on the ships net tonnage as an underlying "ability" characteristic which is an indication of "potential" and does not depend upon the corporation's behaviour. The corporate tax rate then applies to the fixed annual profits as calculated by the tonnage tax. The tonnage tax is also readily observable by the tax authorities as all ships must register their net tonnage at a recognised port in the country where the ship is flagged. Thus, a tonnage tax is most

efficient in that it has all the benefits like that of simplicity, transparency, and non-avoidance, associated with a lump sum tax.

## **2.5 The Economic Consequences of a Corporate Tax**

The economic consequences of the corporation tax are among the most controversial subjects in public finance. An important reason for the controversy is disagreement with respect to just what kind of tax it is. There are several views. Below we discuss the opposing theories of a tax on corporate capital with that of a tax on economic profits.

### **2.5.1 A Tax on Corporate Capital**

With the structure of South African corporation tax, the firm is not allowed to deduct from taxable income the opportunity cost of capital supplied by shareholders. Since the opportunity cost of capital is included in the tax base, it appears reasonable to view the corporation tax as a tax on capital used in the corporate sector.

Under a general equilibrium model, the predominant view is that the corporation tax is a partial factor tax.<sup>9</sup> In a general equilibrium model, the tax on corporate capital leads to a migration of capital from the corporate sector until after-tax rates of return are equal throughout the economy. In the process, the rate of return to capital in the non-corporate sector is depressed so that ultimately all owners of capital, not just those in the corporate sector, are affected. The reallocation of capital between the two sectors also affects the return to labour. The extent to which capital and labour bear the ultimate burden of the tax depends on the technologies used in production in each of the sectors, as well as the structure of consumers' demands for corporate and non-corporate goods [Rosen, 1995: 436].

With regard to efficiency, by inducing less capital accumulation in the corporate sector than otherwise would have been the case, the corporation tax diverts capital from its most

productive uses and creates an excess burden. For instance, Jorgenson and Yuri [1991: 503 in Rosen, 1995: 436] estimated that the increase in excess burden - the marginal excess burden - when one more dollar is raised via the American corporation tax is 45 cents. The Harberger model [1974c in Rosen, 1995: 436] assumes perfect competition and profit-maximising behaviour. Without these conditions, a tax on corporate capital may have quite different incidence and efficiency implications. Moreover, the model is static - the total amount of capital to be allocated between the corporate and non-corporate sectors is fixed. Suppose that over time, the tax on corporate capital changes the total amount of capital available to the economy. If the tax lowers the total amount of capital, the marginal product of labour, and hence the wage rate, falls. Thus, labour bears a greater share of the burden than otherwise would have been the case. If the tax increases the amount of capital, just the opposite results. Hence, if we accept the view of the corporation tax as a partial factor tax, its efficiency and incidence effects are not at all clear [Rosen, 1995: 436].

### **2.5.2 A Tax on Economic Profits**

An alternative view examined by Rosen [1995: 436-437] is that the corporation tax is a tax on economic profits. This view is based on the observation that the tax base is determined by subtracting costs of production from gross corporate income, leaving only “profits.”

The incidence of a tax on economic profits is straightforward. As long as a firm maximises economic profits, a tax on them induces no adjustments in firm behaviour; that is, all decisions regarding prices and production are unchanged. Hence, there is no way to shift the tax, and it is borne by the owners of the firm at the time the tax is levied. Moreover, by virtue of the fact that the tax leaves behaviour unchanged, it generates no misallocation of resources. Hence, the excess burden is zero. However, Rosen [1995: 436] points out that modeling the corporation tax as a simple tax on economic profits is almost certainly wrong. He notes that the base of a pure profits tax is computed by

subtracting from gross earnings the value of all inputs including the opportunity cost of the inputs supplied by the owners. Since no such deduction for the capital supplied by shareholders is allowed the base of the tax must include elements other than economic profits.

Nevertheless, there are circumstances under which the corporation tax is equivalent to an economic profits tax. Stiglitz [1973 in Rosen, 1995: 437] showed that under certain conditions, as long as the corporation is allowed to deduct interest payments made to its creditors, the corporation tax amounts to a tax on economic profits. To understand the reasoning behind Stiglitz's result, consider a firm that is contemplating the purchase of a machine costing R1 000. Suppose the before-tax value of the output produced by the machine is known with certainty to be  $G$  rands. To finance the purchase, the firm borrows R1 000 and must pay an interest charge of  $r$  rands. In the absence of any taxes, the firm buys the machine if the net return (total revenue minus depreciation minus interest) is positive. Algebraically, the firm purchases the machine if:

$$G - r > 0 \quad \textcircled{1}$$

Now assume that a corporation tax with the following features is levied: (1) net income is taxed at rate  $\theta$ , and (2) net income is computed by subtracting interest costs from total revenue. How does such a tax influence the firm's decision about whether to undertake the project? Clearly, the firm must make its decision on the basis of the after-tax profitability of the project. In light of feature 2, the firm's taxable income is  $G - r$ . Given feature 1, the project therefore creates a tax liability of  $\theta(G - r)$ , so the after-tax profit on the project is  $(1 - \theta)(G - r)$ . The firm does the project only if the after-tax profit is positive; that is if:

$$(1 - \theta)(G - r) > 0 \quad \textcircled{2}$$

Now note that any project that passes the after-tax criterion (2) also satisfies the before-tax criterion (1). [Just divide equation (2) through by  $(1 - \theta)$  to get equation (1)]. Hence,

imposition of the tax leaves the firm's investment decision unchanged - anything it would have done before the tax, it will do after. The owners of the firm continue to behave exactly as they did before the imposition of a corporate tax: they simply lose some of their profit on the investment to the government. In this sense the tax is equivalent to an economic profits tax. And like an economic profits tax, its incidence is on the owners of the firm, and it creates no excess burden.

This conclusion depends critically on the underlying assumptions, and these can easily be called into question. In particular, the argument assumes that firms finance their additional projects by borrowing. There are several reasons why they might instead raise money by selling shares or using retained earnings. For example, firms may face constraints in the capital market and be unable to borrow all they want. Alternatively, if a firm is uncertain about the project's return, as is often the case in ship investment, it might be reluctant to finance the project by borrowing [Stokes, 1997]. If things go wrong, the greater a firm's debt, the higher the probability of bankruptcy, *ceteris paribus* [Rosen, 1995: 438 and see Section 2.1].

Hence, the main contribution of Stiglitz's analysis is not the conclusion that the corporate tax has no excess burden. Rather, the key insight is that the way in which corporations finance their investments has a major influence on how the corporation tax affects the economy [Rosen, 1995: 438 and see Section 6.1].

This section has introduced the reader to some of the key concepts in economic theory, taxation and in the principles of shipping. With this understanding and background, Section 3 moves on to investigate the theory behind the effects of corporate taxation on business investment.

### **3 The Effects of Corporate Taxation on Business Investment:**

#### **A Theoretical Excursion**

This section investigates the theory behind the effects of a change in the corporate tax environment on the level of capital investment. The investment theory behind the accelerator, cash flow, neoclassical, Tobin's  $q$ , and time series models are investigated. The neoclassical model is ultimately chosen to calculate the impact of a change in the South African tax environment on the user cost of capital [see Section 5.1]. A comparative study by Kopcke [1977, 1982 and 1985 in Berndt, 1991: 270-277] on the five models is summarised. This study shows that at present, due to our inability to measure expectations, none of the econometric models investigated are suitable for analysing the relationship between a change in the user cost of capital and the effect on business investment. Numerous studies have shown, however, that there is an inverse relationship between the user cost of capital and business investment; that is, the lower the user cost of capital, the higher the investment [Feldstein, 1987]. Hence the theory behind the neoclassical calculation of the user cost of capital is explained. This theory is used later in Section 5.1 to show the effects of a change in the South African tax environment on the user cost of capital.

#### **3.1 Corporate Tax Effects on Business Investment**

The corporation tax influences a wide range of corporate decisions on:

- the total amount of physical investment to make;
- the types of physical assets to purchase; and
- the way to finance these investments.

[Lumby, 1994: 13 and Rosen 1995: 438].

In a sense, it is artificial to discuss these decisions separately, because presumably the firm makes them simultaneously. However, it is possible to discuss these topics separately as each of these areas could require a paper. The types of physical assets to

purchase and the way to finance these investments are suggested as areas for future research [see Section 6.1]. This Section investigates the theory behind how a change in the corporate tax environment influences the total amount of physical investment to make.

## **3.2 Total Physical Investment**

A firm's net investment during a given period is the increase in physical assets during that time. The main policy question is whether features such as accelerated depreciation and the investment tax credit (ITC) stimulate investment demand. The question is important. For example, when President Clinton proposed reinstating the investment tax credit in 1993, he argued that it would increase investment substantially. His opponents asserted that it would not have much effect [Rosen, 1995: 438]. Who was right? The answer depends in part on your view of how corporations make their investment decisions. Many different models have been proposed, and there is no agreement on which is the best. This section briefly reviews five investment models that have received substantial attention.

### **3.2.1 The Accelerator Model**

Suppose the ratio of capital to output in production is fixed. For example, production of every unit of output requires three units of capital. Then for each unit increase in output, the firm must increase its capital stock by investing three units of capital. Thus, the main determinant of the amount of investment is changes in the level of output [Rosen, 1995: 439]. This theory, sometimes referred to as the accelerator model, was put forward by Clark in 1917 as a possible reason to rationalise the volatility of investment expenditure [Berndt, 1991: 233]. The theory implies that depreciation allowances and ITCs are for the most part irrelevant when it comes to influencing physical investment. It is only the quantity of output that influences the amount of investment, because technology dictates

the ratio in which capital and output must be used. In other words, tax benefits for capital may make capital cheaper, but in the accelerator model this does not matter, because the demand for capital does not depend on its price <sup>10</sup> [Rosen, 1985: 435].

### 3.2.2 The Neoclassical Model

Earlier, it was noted that one highly restrictive assumption embodied in the accelerator model of investment is that the capital output ratio is fixed, an assumption that implies that substitution possibilities among capital, labour, and other inputs are constrained to be zero. Similarly, in the cash flow model (as described in Section 3.2.3), only internal cash flow affects the optimal capital stock, and again there is no role for input substitution. By contrast, economic theory textbooks have long emphasised the role of input substitution as a critical element in the economic theory of cost and production. This inconsistency has been highlighted by Dale Jorgenson [1963, 247 in Berndt, 1991: 242]: “There is no greater gap between economic theory and economic practice than that which characterises the literature on business investment in fixed capital.” In the decade that followed, Jorgenson and his associates worked at closing this gap, and their pioneering studies resulted in a model that is widely used to this day, namely the neoclassical model of investment [Berndt, 1991: 242].

The distinguishing feature of the neoclassical model is that it is based on an explicit model of optimisation behaviour that relates the desired capital stock to interest rates, output, capital prices, and tax policies.

The major pitfall of the neoclassical model is that while it provides a clear framework for understanding factors affecting the firm's optimal demand for capital, it does not rationalise investment or movements towards the optimal capital stock. More specifically, as early as 1960, Nobel Laureate Trygve Haavelmo explained that “demand for a finite addition to the stock of capital can lead to any rate of investment, from almost zero to infinity, depending on the additional hypotheses we introduced regarding the

speed of reaction of capital users.” As a result, although econometric models of investment based on the neoclassical paradigm have explicit theoretical foundations concerning the optimal capital stock, their empirical implementation has until very recently required appending to this demand model an *ad hoc* specification of the adjustment process from real investment or capital stock to the optimal capital stock. Recent developments, however, allow the speed of adjustment to be a choice variable in the firm’s overall optimisation process.

The neoclassical model currently receives the greatest attention from econometricians, [Berndt, 1991: 247] and since the model provides a clear framework for understanding factors affecting the firm’s optimal capital investment, this study uses the neoclassical model to achieve a better understand of how South Africa’s tax environment affects ship investment [see Section 3.3 for the theory behind the model calculations, and Section 5.1 for the application of the model to the South African tax environment].

### **3.2.3 The Cash Flow Model**

If you ask people in business what determines the amount of investment they make, they likely will mention cash flow - the difference between revenues and expenditures for inputs. The more money that is on hand, the greater the capacity for investment. Thus it has long been postulated that the availability of funds has a significant impact on investment behaviour. In turn, it has also been argued that internal cash flow is the pre-eminent source of investible funds and, in particular, is more important than the availability of external debt or equity financing.

In contrast, cash flow is irrelevant in the neoclassical investment model. In that model, if the return on owning a ship exceeds the opportunity cost, the firm will invest in the ship, whether it has to borrow the money or use internal sources. But if the return on the ship investment is below the opportunity cost, the firm will not invest in the ship because the borrowing cost will be higher than the return. Further, even if the firm has internal funds

on hand, it will not invest in the ship, because the firm can make more money by lending the funds to someone else than by investing in a substandard project. By contrast, the cash flow model posits investment spending as a variable proportion of internal cash flow. Since the supply of internal funds is obviously affected by the current level of profits, it has been suggested that the optimal capital stock should be made to depend not on the level of output, as in the accelerator framework, but instead on variables capturing the level of profits or expected profits [see Berndt, 1991: 239].

A critical assumption behind the neoclassical story is that the cost to the firm of internal and external funds is the same. Many economists believe that this is a bad assumption. To see why, suppose that the managers of the firm have better information about the prospects for the ship investment than the potential lenders do. In particular, the lenders may view the project as being more uncertain than management and so charge a very high interest rate on the loan. Or they might not be willing to lend any money at all. Thus, the cost of internal funds is lower than the cost of external funds, so the amount of investment depends on the flow of these internal funds, the cash flow [Rosen, 1995: 442 and see Peters, 1993 for a fuller discussion of ship financing].

There does indeed seem to be a statistical relationship between cash flow and investment [see Fazzari, Hubbard, and Petersen, 1988 in Rosen 1995: 442]. However, the interpretation of this finding is not quite clear - do firms invest because their cash flow is high, or do successful firms have both high cash flow and investment? In any case, if the cash flow theory is correct, it has major implications for the impact of taxes on investment behaviour. For example, in the neoclassical model, a lump sum tax on the corporation would have no effect on investment [as is calculated in Section 5.1]. In contrast, in a cash flow model, investment would fall. Currently cash flow models are an active subject of research.

### 3.2.4 Tobin's q Model

James Tobin [1969 in Berndt, 1991: 256-263] has generalised the cash flow model of investment and has provided a rigorous framework for an investment model in which net investment depends on the ratio of the market value of business capital assets to their replacement value, a ratio known as "q." The theory underlying Tobin's q model is relatively straightforward and in fact is closely related to the neoclassical investment model considered in Section 3.2.2 [Berndt, 1991:256].

On the basis of the expected profitability of an investment project, managers reckon the price they are willing to pay for it; call this the demand price for an asset. The demand price for an entire firm is the market value of all its securities, that is, the market value of all its debt and equity in securities markets. The cost of producing all new capital goods is the supply price and is typically measured by assessing the replacement cost of a firm's assets. In equilibrium, the demand and supply prices for plant and equipment must be equal. If the ratio of the market value of the firm to the replacement value of its assets were unity, then there would be no incentives for the firm to invest [Berndt, 1991: 257].

Suppose, however, that a firm was operating in a relatively profitable environment and that if it added R1 to its capital stock of plant and equipment, its expected profitability would increase sufficiently that its market value would increase by more than R1. In this case the value of the marginal q ratio would be greater than unity, and the firm should invest in the plant and equipment in order to maximise the return to its shareholders. According to Tobin, such investment should continue until the incremental market value just equalled the incremental cost of the plant and equipment, that is, investment should continue until marginal q equals unity [Berndt, 1991: 257].

A similar argument could be made for a firm operating in a relatively unprofitable environment. Suppose that the firm were already overly capital intensive and that if it added R1 to its capital plant and equipment stock, its expected profitability would increase negligibly, so that its market value would increase by less than R1. In this case

the value of the marginal  $q$  ratio would be less than unity, and the firm should not invest in the plant and equipment; its shareholders could earn a higher return elsewhere. Indeed, the firm might work better on behalf of its shareholders if it sold off part of its capital plant and equipment [Berndt, 1991: 257]. The above considerations suggest that in its naive form the Tobin's  $q$  model of investment implies that whenever marginal  $q$  is greater (less) than unity, there are incentives for net investment (disinvestment) in capital plant and equipment [Berndt, 1991: 258].

An attractive feature of the  $q$  investment model is that because the market's expectations concerning future profitability are summarised completely by the securities market evaluation of the firm, with  $q$  as a regressor the lag distribution excludes delays due to expectational lags. Rather, lagged values of  $q$  represent only order, delivery, and gestation delays. Although the theory underlying  $q$  is seemingly persuasive, in fact, aggregate investment does not always respond to changes in market value consistent with the simple  $q$  theory [Berndt, 1991: 259]. Additional remarks concerning the empirical performance in estimation and forecasting of the models is given in Section 3.4.

### **3.2.5 Time Series and Autoregressive Models of Aggregate Investment.**

In contrast to the four competing theories of investment discussed in the previous sections, the time series and autoregressive approaches do not directly use output, cash flow, market value, prices, or taxes as determinants of investment expenditures. Rather, in its simplest form, investment is merely regressed on a series of previous investment expenditures. Such a model with  $m$  lagged investment terms could of course be interpreted as resulting from a specification in which  $I_t = a + u_t$ , where  $u_t$  followed an autoregressive process of degree  $m$  [Berndt, 1991: 263]

Viewed in such a manner, the autoregressive model of investment would seem to be a classic example of measurement without theory, and indeed practitioners of time series modelling have encountered many such criticisms. Proponents of the time series

approach have argued, however, that despite the superficial elegance of some of the economic theory-based competing models of investment, their empirical implementation requires making a number of arbitrary statistical assumptions [Berndt, 1991: 263].

Critics of the time series approach contend that autoregressive equations are not very useful in that they do not permit forecasters or policymakers to assess directly the effects of changes in business conditions or economic policy on investment. Such criticisms merely highlight the fact that unless such models are specified within a more explicit structural model, and unless appropriate cross-equation restrictions are imposed, the interpretation of the parameter estimates is essentially unclear. Considerations such as these once led Zvi Griliches [1974, p. 3351 in Berndt, 1991: 264] to venture a “law” stating that “any time series regression containing more than four independent variables results in garbage.”

Defenders of the more structural models of investment, however, are also somewhat vulnerable to specification issues. For example, in the accelerator and neoclassical models, output affects investment. But causality can plausibly be argued to run in the other direction from investment to output. Similarly, interest rates and market value might be influenced by investment and so might be endogenous rather than exogenous. However, time series practitioners take the view that the potential for misspecification is very real in the more structural models and that difficult pitfalls in model building might best be mitigated by analysing the underlying dynamics embedded in investment outlays alone [Berndt, 1991: 264. Also see Veenstra, 1999 for an application of the autoregressive technique to shipping markets].

### **3.3 Tax Analysis and the Neoclassical Model of Investment**

Under the neoclassical model, as described in Section 3.2.2 above we found that to the extent that tax policy reduces the user cost of capital, it can increase the amount of capital that firms desire, and hence increase investment. This leaves open two important

questions: (1) how do changes in the tax system change the user cost of capital; and (2) just how sensitive is investment to changes in the user cost of capital? To examine these points, we must first calculate the user cost of capital.

### 3.3.1 The Neoclassical Calculation of the User Cost of Capital

This Section follows Rosen's [1985: 436-438] approach to calculating the neoclassical user cost of capital. Assume first that there are no taxes, no depreciation, no inflation, and the firm can borrow and lend at the market rate of interest,  $i_g$ . (The subscript  $g$  reflects the fact that this is the gross or before-tax rate of interest). Suppose the firm purchases an asset, such as a ship, for  $q$  dollars. Because the asset does not depreciate, the firm can sell it back for exactly  $q$  at the end of a year. Then the only cost to the firm of owning the asset is the money it could have made if it had lent the  $q$  dollars instead of tying the money up in the asset. Specifically, the firm could have earned  $i_g \times q$  dollars, which is the user cost of capital in this simple example. Notice that the firm will purchase the asset only if the value of the product produced during the year is at least as great as the user cost. Thus, in the neoclassical model, firms desire to invest up to the point where the marginal return to capital assets just equals the opportunity cost of owning them. Now assume that the asset experiences economic depreciation at an annual rate  $\delta$ . For example, if a machine is worth \$100 at the beginning of the year ( $q = \$100$ ) and economic depreciation is 12 percent per year ( $\delta = 0.12$ ) then it will be worth \$88 at the end of the year. Depreciation thus costs the firm \$12, or more generally,  $\delta \times q$  dollars. Adding this to the interest cost above, the user cost of capital,  $C$ , is

$$C = i_g q + \delta q = (i_g + \delta)q \quad \textcircled{3}$$

Using our example with  $q = \$100$ ,  $\delta = 0.12$ , and assuming  $i_g = 0.08$ , the user cost is \$20. The firm will purchase assets until the marginal revenues per asset are \$20 - just sufficient to cover the opportunity cost. Now enters the corporation tax, which we will assume is 40 percent ( $\theta = 0.40$ ). What, now, does it cost the firm to earn the same \$20 as before? Note that the firm must generate more before-tax revenue, \$33.33, to end up

with \$20. The increase from \$20 to \$33.33 - a factor of 1.67 - is just sufficient to offset the tax. More generally, because the tax collector is leaving the corporation only  $(1-\theta)$  of each dollar earned, then before-tax revenues must increase by a factor of  $1/(1-\theta)$  for after-tax revenue to stay unchanged. But if the firm needs to increase revenue by a factor of  $1/(1-\theta)$ , it requires an asset whose productivity is higher by a factor of  $1/(1-\theta)$ , which in turn, will have a price that is higher by a factor of  $1/(1-\theta)$ . In terms of our example, because the initial acquisition cost was \$100, the firm now needs to purchase an asset with a value of \$166.67 ( $= \$100 \times 1/(1-0.4)$ ) to receive the same \$20 that it formerly received from a \$100 asset. In short, if an asset costing  $q$  was initially required to produce a given amount of revenue, now an asset costing  $q/(1-\theta)$  is required.

What is the opportunity cost of acquiring this \$166.67 asset? As before, there is an interest component and a depreciation component. Since interest received by the corporation is taxed (or, equivalently, interest payments are tax deductible) the opportunity cost of interest foregone is not the market rate of 8 percent, but rather the market rate times one minus the firm's marginal tax rate. Algebraically, the effective interest rate is  $(1-\theta)i_g$ , where  $i_g$  is the before-tax rate of interest.<sup>11</sup> Recalling that the effective asset cost is now  $q/(1-\theta)$ , it follows that the interest component of the opportunity cost is:

$$[(1-\theta)i_g] \times [q/(1-\theta)] = i_g q \quad \textcircled{4}$$

In terms of our numerical example, this is \$8.

Turning now to the depreciation component, we note that economic depreciation is computed as the depreciation rate of 12 percent times the asset cost of \$166.67, or about \$20. Algebraically, the depreciation component is now:

$$[\delta] \times [q/(1-\theta)] \quad \textcircled{5}$$

Thus, the user cost in this example is now \$28 ( $= \$8 + \$20$ ) which is the result of adding together the interest and economic depreciation components:

$$\begin{aligned}
 C &= [(1 - \theta)i_g] \times [q/1 - \theta] & + & & [\delta] \times q/1 - \theta & \text{⑥} \\
 & \uparrow & & & \uparrow & \\
 & \text{Interest component} & + & & \text{Depreciation component} & \\
 & & & & & \\
 & = [(1 - \theta)i_g + \delta] \times [q/1 - \theta] & & & & \text{⑦}
 \end{aligned}$$

According to [Rosen, 1985: 438], the corporation income tax raises the user cost of capital by forcing firms to purchase more expensive assets than otherwise needed to generate the same after-tax revenue. These more expensive assets raise the value of the sum of foregone interest and economic depreciation.

We are not yet done however, because the tax also affects the user cost of capital via depreciation allowances and the investment tax credit,  $\psi$  is defined as the present value of the depreciation allowances that flow from an asset whose acquisition cost is \$1. If depreciation allowances lower the cost of a \$1 investment to  $(1 - \psi)$  dollars, then they lower the cost of a  $q$  dollar asset to  $(1 - \psi)q$  dollars. Similarly, we showed that an investment tax credit (ITC) at rate  $k$  reduces the cost of a \$1 acquisition to  $(1 - k)$  dollars. Putting the depreciation allowances and the investment tax credit together, the effective acquisition cost of a  $q$  dollar asset is lowered from  $q$  dollars to  $(1 - k)q$  dollars.<sup>12</sup> Hence, Equation 7 must be adjusted to:

$$C = [(1 - \theta)i_g + \delta] \times [q/1 - \theta] \times (1 - \psi - k) \quad \text{⑧}$$

In summary, the corporate tax system influences the firm's user cost of capital in several ways. By taxing corporate income, the tax makes devoting resources to capital investment more expensive, other things being the same. However, depreciation allowances and ITCs tend to lower the user cost. Any change in the corporation tax

system will influence some combination of  $\theta$ ,  $\delta$ , and  $k$ , and hence change the user cost of capital.

### 3.3.2 The Effects of User Cost on Investment

After determining how the tax system affects the user cost of capital, the next step is to ascertain how changes in the user cost influence investment. If the accelerator model is correct, even drastic reductions in the user cost have no impact on investment. On the other hand, if investment is responsive to the user cost of capital, depreciation allowances and ITCs can be powerful tools for influencing investment. Jorgenson [1963 in Rosen, 1995: 441] estimated a regression equation in which the right-hand side variables include (among others) the user cost of capital and concluded that the amount of investment is indeed quite sensitive to tax-induced changes in the cost of capital.

Substantial controversy has swirled around Jorgenson's conclusion that accelerated depreciation and investment tax credits are potent inducements to investment. His analysis has been criticised on a number of grounds. One of the most important is that it takes no account of the importance of expectations. Compare scenario 1, in which firms expect the investment tax credit to be raised considerably next year, and scenario 2, in which investors expect it to be reduced. According to Jorgenson's model, the amount of capital that firms desire depends only on the user cost of capital in this period. Therefore, the value of  $C$  is identical under both scenarios. This result is implausible: if firms expect the investment tax credit to go up next period, it would make sense to defer some investment until then and vice versa. The fact is that we cannot observe individuals' expectations, and as of now there is no really satisfactory way for estimating how expectations affect behaviour. Given that different assumptions concerning expectations formation can have quite different implications for the effectiveness of tax policy, the validity of Jorgenson's results is thrown into question. Other criticisms of Jorgenson's model have also been raised. The key point of the critics is that when some of Jorgenson's assumptions are modified in reasonable ways, the implications for tax policy

can differ substantially [see Chirinko, 1993 in Rosen, 1995: 441]. Nevertheless, it is difficult to choose among models based on different assumptions using standard statistical criteria. Apparently, the sheer complexity of the investment process has stymied attempts to reach a consensus with respect to how sensitive investment is to tax incentives.

Finally, we must remember that South Africa is, to a large extent, an open economy [Jones, 1992: 1]. If the tax structure makes investment in South Africa more attractive to foreigners, saving from abroad can finance investment in this country. Thus the possibility of domestic saving flowing out of the country makes it harder to stimulate domestic investment indirectly by manipulating saving, but the possibility of attracting foreign capital makes it easier to stimulate investment through direct manipulation of the user cost of capital [Rosen, 1995: 442].

### **3.4 Kopcke's Comparison of the Five Investment Models**

The theoretical investment literature is voluminous, and so it is not surprising that researchers have frequently compared the empirical estimation and forecasting properties of alternative investment models. Rather than survey the literature, however, we now compare results of three "horse races" reported by Richard Kopcke [1977, 1982, 1985] in Berndt (1991: 270-277). It would be comforting if this series of comparisons produced a consistent set of winners or losers, but as we shall see, this is unfortunately not the case, since the relative rankings of the five models change dramatically from one study to the next.

Kopcke compares the five models on the basis of three aspects of performance: estimation, static forecast properties, and dynamic forecast properties. Table 1 shows the results of the study.<sup>13</sup> One point from Table 1 is abundantly clear: no investment model consistently dominates its competitors. In particular, the relative rankings of the models change dramatically from one study to the next. Further, although the accelerator, cash

flow and time series each put in one very good effort, they also each put forth at least one very bad performance. It is also the case that Tobin's q model is reasonably consistent at second or third place and outperforms the neoclassical model in each of these *ex post* forecasts. However, the usefulness of *ex ante* forecasting is rather limited, since the ability to forecast overall stock market movements is still severely circumscribed.

In summary, this series of empirical comparisons of five investment models indicates that econometricians are still a long way from reaching a consensus on what form of investment equation is most preferable. "There is much - very much - that still needs to be learned" [Berndt, 1991: 277].

**Table 1: Rankings of Five Investment Models Based on the % RMSE Dynamic Forecast Criterion for Kopcke's Series of Three Quarterly U.S. Investment Studies**

<b>Investment Model</b>					
<b>Study Forecast Period</b>	<b>Accelerator</b>	<b>Cash Flow</b>	<b>Neoclassical</b>	<b>Tobin's q</b>	<b>Time Series</b>
<b>Study (I) 1973:4-1976</b>	1	4	3	2	5
<b>Study (ii) 1978:1-1981:4</b>	2	5	4	3	1
<b>Study (iii) 1980:1-1984:4</b>	4	1	3	2	5

(% RMSE: percent root mean squared error measure of fit.)

### 3.5 Concluding Theoretical Remarks

There is an old saying, “we are so close, and yet so far.” While theoretical and computational developments in expectations formation and in the understanding of gestation lags (adjustment costs) have provided us with necessary tools, successful measurement and forecasting still elude us. As we observed in Section 3.4, we are still not able to predict investment to a reasonably precise level, nor can we even conclude on the basis of empirical performance what form of the investment equation is preferable and stable. Progress has occurred, but it has been slow. It is difficult to reduce the very complex investment process to a limited number of variables and parameters with any success [Berndt, 1991: 277].

This study therefore uses the clear theoretical foundations of the neoclassical model of investment [see Section 3.2.2 and Section 3.3] to investigate the effects of a change in the South African shipping tax environment on the user cost of ship capital [see Section 5.1]. Although the neoclassical model of investment provides a clear theoretical foundation for determining the effects of a tax on the user cost of capital, none of the econometric models investigated are able to predict the effects of a change in user cost of capital on investment to a reasonably precise level.

Fortunately, the analysis of investment continues to attract great attention. Researchers today are attacking investment issues from a variety of vantage points. Berndt [1991: 277] concludes that in respect of understanding and predicting the investment process:

*There is still very much to be learned. The challenge is great, the opportunities are enormous, and the pace of ongoing research is furious.*

## **4 Worldwide Shipping Tax Regimes**

1994 ushered in a new era of hope for South Africa and the South African shipping industry. Under a new democratic South Africa, world markets continue to open their doors to South African goods and services. However, unlike the 1980s where the fiscal policy environment facing shipowners was found to be a supportive one, “broadly comparable with the tax and incentives parameters facing western shipowners” [Jones, 1987: iii], now the South African shipowner had to compete internationally on an ‘unlevelled playing field’. This Section reviews the present South African corporate shipping tax environment, before turning to investigate an alternative tonnage-based corporate tax system. Characteristics of both the Dutch and British tonnage tax systems are looked at, along with some arguments for and against a tonnage tax. An international review of those countries that have considered a tonnage tax is carried out, and some results of the tonnage tax implementation are reported.

### **4.1 The South African Corporate Shipping Tax Environment**

The impetus to change the fiscal regime might suggest that the overall tax burden on the shipping industry is oppressive. This is not necessarily true because whereas under normal accounting rules depreciation rates are calculated on the useful life of a long-life asset (which in many cases a ship could well be classified as being), and for tax purposes are assumed to be 6% a year, shipping is permitted for tax purposes a “straight-line” depreciation rate of 20% per annum [Meyerowitz, 1999: 24.5].<sup>14</sup> The ability to write-off the capital asset within five years is not unique to the South African shipping industry, and in fact is on a par, and in some cases, below the average accelerated depreciation concession granted in respect of capital investments for industry in general [see Meyerowitz, 1999: 12.24].

Also, although income carried to a reserve fund is in general not deductible, there is a special provision for this in the case of future repairs to the ship. Meyerowitz [1999: 24.17] states that:

*If the taxpayer satisfies the Commissioner that he is likely to incur expenditure, within five years from the end of the year of assessment, on repairs to any ship used by him for the purposes of his trade he may deduct an allowance of such amount as the Commissioner, having regard to the estimated costs of repairs and the date on which they are likely to be incurred, may make each year. Such allowance must be included in the taxpayer's income for the following year and in respect of that year the Commissioner may make a fresh allowance.*

The purpose of this provision is to spread, for tax purposes, the expenditure, which may be heavy, over a number of years and so even out the taxpayer's income from shipping operations [Meyerowitz, 1999: 24.17], and this may be seen as the authorities recognition of the highly cyclical and volatile nature of the industry.

The importance of the capital allowance regime is heightened by the fact that the capital charge associated with a new vessel is almost always the major cost element in running a ship, claimed by one company often to be four or more times the operating costs [Lord Alexander, 1999: pt. 22]. In cash-flow terms, this allows shipping companies to benefit by deferring tax through continually investing in new ships, using tax losses arising in the first few years to offset profits from the general company activities. The allowances can also be claimed by a financial institution which has bought a ship to lease to a shipping company, in which case the shipping industry benefits to the extent that the tax allowances are shared with it in the form of lower interest repayments. But for capital allowances (including those to which the shipping industry would be entitled to like any other industry, as well as those which apply specially to it), the corporation tax currently paid by the industry might be substantially larger in South Africa (no figures available from Safmarine nor the South African Revenue Services) and calculated to be of the order of £80 million a year in Britain [Lord Alexander, 1999: pt. 22].

Table 2 summarises the major corporate taxes paid by South African shipping companies. Table 3 shows a comparison of how South Africa's effective corporate tax rates for 'Republic' companies and branches of foreign companies are calculated in 1994 and 2000.

**Table 2: Summary of the Major South African Corporate Taxes 2000**

Tax	Rate
Normal company tax	30%
Secondary tax on companies (STC) (Dividend tax)	12,5%
Capital gains tax	None
Withholdings taxes - dividends	Nil
Withholding taxes - royalty & know-how payment	12%
Value added tax	14%
Stamp duties – marketable securities tax	0.25%
Personal Income Tax for seafarers	Nil – if four 182 days at sea

Table 3 shows that in South Africa, there is a dual system for the taxation of companies, one part being levied on taxable income and the other part on distributed profits. In addition to the 30 per cent tax rate on taxable income, 'Republic' companies also have to pay a secondary tax on companies (STC) of 12,5 per cent on all profits distributed by companies in the form of dividends. Table 3, makes the assumption that all profits are distributed, and therefore calculates the maximum 'effective' corporate tax rate. Apparently [Interview 1], the reason for this tax is to discourage investors from withdrawing their money from companies and as we saw in Section 2.3, tax deferred is tax saved.

**Table 3: A Comparison of South Africa's Effective Corporate Tax Rates for 'Republic' Companies and Branches of Foreign Companies: 1994 and 2000**

'Effective' Corporate Tax Rate	'Republic'	'Republic'	Branch	Branch
	company	company	2000	1994
	2000	1994	2000	1994
	%	%	%	%
Taxable income	100,00	100,00	100	100
Normal tax payable	<u>30,00</u>	<u>35,00</u>	<u>35</u>	<u>40</u>
After-normal-tax income	<u>70,00</u>	<u>65,00</u>	<u>65</u>	<u>60</u>
Dividend declared (100/112,5)	62,22	57,78	65	60
STC rate	<u>x 12,5</u>	<u>x 12,5</u>	<u>x 0</u>	<u>x 0</u>
STC payable	<u>7,78</u>	<u>7,22</u>	<u>0</u>	<u>0</u>
Normal tax	30,00	35,00	35	40
STC	<u>7,78</u>	<u>7,22</u>	<u>0</u>	<u>0</u>
'Effective' corporate tax rate	<u>37,78</u>	<u>42,22</u>	<u>35</u>	<u>40</u>

[Adapted from Tselentis & Collett, 1997: 21, and Mitchell & Mitchell, 1999: 8].

The combined effect of the corporate tax on profits and STC - if all after tax profits are distributed - yielded an effective tax rate of 42,22 per cent in 1994, which has been decreased to 37,78 per cent in 2000. In Section 5.1 we see how these changes impacts upon the user cost of capital.

The existing South African tax regime is clearly based on a longstanding acknowledgement that the shipping sector, due to its unique characteristics and international context, is worthy of differential treatment. It has the potential to reduce the effective rate of tax close to zero. The Inland Revenue estimates that the average effective tax rate for the industry in Britain is currently 1.5% compared with 15-20% typically for other British industries [Lord Alexander, 1999: pt. 28]. To date, South

Africa has not made such comparisons, however, the South African Revenue Services (SARS) believes the type of information necessary to make such calculations should be readily available in the near future. The access to special allowances, however, inevitably introduces tax planning into the industry's financial calculations in a way which may distort what would otherwise be a more straightforward commercial decision-making process. This is one reason why the shipping industry has been seeking an alternative.

## **4.2 The Alternative Tonnage-Based Corporate Tax Regime**

Increasingly, the majority of the international shipping industry has come to favour the availability of an option for individual companies of a different tax structure, called the tonnage tax (shorthand for a tonnage-based corporation tax). It suggests that this basis of tax should be available as an option for the shipping industry, but leaving it open to individual shipping companies to pay normal corporation tax. Once the option is exercised it is accepted that the company will normally need to remain in the tonnage tax regime for a substantial period of, say, 10 years.

This section investigates the motivation and characteristics behind the Dutch tonnage tax, before turning to analyse the characteristics of the British tonnage tax. This section then considers some of the criticisms raised against the British tonnage tax regime. Arguments for and against a tonnage tax are investigated before taking a look at international shipping tax regimes and the worldwide incidence of tonnage tax.

### **4.2.1 Motivation and Characteristics of the Dutch Tonnage Tax**

Until late 1995, the number of ships flying the Dutch flag was declining as a result of more beneficial dispensations for shipowners in other countries. Because of the mobility of the shipping business it soon became a regular occurrence for Dutch shipowning

companies to move off-shore. The Netherlands Government then undertook to adopt a policy which rendered the business environment more favourable for shipping investment and operations, as contained in the Shipping Policy Memorandum (Parliamentary documents H, 1994/95, 24 164, no 2) which lists a comprehensive package of measures to ensure that the Netherlands remains an attractive base for shipping activities [van Niekerk, 1997: Appendix]. The first measure concerns the taxation of profits and aims to improve establishment conditions for shipping companies, while the second involves doubling the existing tax and national insurance credits for shipping, so enabling wage deductions for shipowners. The latter provision will lead to a further reduction in wage costs for crewmen whose wages are not tax exempt and/or the payment of national insurance contributions in the Netherlands.

The Netherlands Government in consultation with the Royal Association of Netherlands' Shipowners (KVNR) also studied all the tax allowances in the European Union (EU) Member States and many countries outside the EU before providing, within the income tax and corporation tax system, a simplified, fixed assessment of profits on shipping income, to be known as a tonnage tax. The tonnage tax is determined on the basis of a ship's net tonnage, using a sliding scale of charges. The annual lump sum for each vessel is then taxed at the normal corporate tax rate [see Appendix C].

The existing allowances for depreciation remains in force for taxpayers who do not choose to be taxed on the basis of tonnage and so does the possibility of applying for depreciation allowances on the reducing balance. Furthermore, the opportunity for accelerated depreciation is introduced by ministerial regulation, whereby, using the straight-line depreciation method, a ship may be depreciated until the residual value is reached in five years. That method of accelerated depreciation is only possible insofar as there is a profit from the use of ships for the tax year, equivalent at least to those depreciation costs [van Niekerk, 1997: 5].

Regular consultations are to take place between the government departments involved in shipping and representatives from the industry, in order to evaluate the efficiency and

effectiveness of the measures. Following those consultations, the measures may be adjusted as necessary [van Niekerk, 1997: 5].

#### **4.2.2 The British Tonnage Tax**

British shipping handles about 4% of the world's shipping business and owns 1.5% of the world's fleet [Infomare, 2000b]. Until recently, the UK direct-owned fleet was in long term decline - down to one-fifth the size it was in the late 1970s - and there was also a heavy decline in the number of seafarers [Infomare, 2000b]. The British Government was concerned about the decline, and sought to address the issue in a number of ways. The following chronological list of events is compiled from Lord Alexander [1999] & Inland Revenue [1999].

In late 1997, a Shipping Working Group involving representatives from the industry, trade unions and Government was established. In its report in March 1998, it was suggested that one of the key steps that the government could take to revive the shipping industry would be to introduce a tonnage tax. In July 1998, the Government published a White Paper on the Future of Transport which included a section on an integrated shipping policy. In December 1998, the UK Government published "British Shipping – Charting a New Course" – a paper which set out the Government's policy and objectives for the shipping industry. In March 1999, The Chancellor of the Exchequer commissioned from Lord Alexander of Weedon an independent enquiry into the case for and the design of a tonnage tax regime for shipping. The conclusion was that a tonnage tax regime should be introduced in the United Kingdom as an essential element of UK maritime policy in order to create a positive fiscal environment for shipping in line with other major maritime countries. Finally, the Deputy Prime Minister announced the intention to introduce a tonnage tax in the UK on 12 August 1999. The legislation for the regime will be introduced in the year 2000 Finance Bill, to have effect so that companies may opt in for accounting periods starting on or after 1 January 2000 [Inland Revenue, 1999].

At the heart of Britain's new shipping policy lies the opportunity for shipping companies in the United Kingdom to opt for a new form of taxation based not on their actual profits, but on the size of their company's fleet. Essentially, an artificial or "deemed" level of profit is calculated according to an agreed formula [see Appendix B] that relates directly to the tonnage of individual ships, which is then subjected to the standard rate of corporation tax. Although the level of tax payments that many companies currently pay may not be significantly affected in practice, a tonnage-based tax enables the company to have the advantages [as identified in Inland Revenue, 1999 and Lord Alexander, 1999] of:

**certainty**, since the level of tax will be known and minimal, which will reduce the need to make provision for deferred tax and increase earnings per share;

**flexibility**, since companies will have more freedom to choose when to buy ships and how to finance them;

**clarity**, since the company's tax position will be more readily understood by and attractive to investors, analysts, and potential business partners; and

**compatibility and competitiveness** with other countries' regimes for companies in international partnerships.

The main features proposed for the UK regime [Inland Revenue, 1999] are:

**Optionality**. Companies will have the choice between continued taxation under the existing regime and opting for the tonnage tax.

**Group election**. All the qualifying shipping activities within a group must be taxed on the same basis.

**Qualifying presence and activities**. Companies opting for the tonnage tax regime must undertake the "strategic and commercial management" of their ships from the UK. Qualifying shipping activities include all types of seagoing shipping services, subject to specific decisions which have yet to be taken concerning the

interface between shipping activities and oil and gas exploration and exploitation in the North Sea. Ancillary activities, such as provision of ship management or technical services to third parties, may also be covered under defined circumstances.

**Entry and exit.** Elections will have to be made within 12 months of the adoption of the legislation (which will be in the Finance Act, July 2000). Under exceptional circumstances, taking account of the particular position of individual companies, joining at a later stage may be possible. Any election will be for a minimum of 10 years, renewable annually.

**Allowances.** The tonnage regime will be subject to balancing charges should companies sell previously acquired ships, but only for a limited period as the charges are phased out. The treatment of shipping assets if a company chooses to leave the tonnage regime after the 10-year commitment is still under discussion.

**Tax Rates.** The formula will be designed to produce an end tax charge similar to those applicable in other North European countries which have tonnage regimes. It will be at a very low level which will make clear that the level of shipping taxation in the UK is on a par with world norms.

**Tonnage Tax Rate.** Article 8c [see Dutch tax law in van Niekerk, 1997: Appendix] states that: "...profits from ocean shipping shall, at the request of the taxpayer, be determined on the basis of the tonnage of those ships earning the profits. Profits earned during a calendar year from ocean shipping shall then be assessed per ship on the basis of the amounts per day."

Table 4 shows the Dutch tonnage tax profits per day. The British used this figure as the rate which they would use to ensure a competitive tax environment, and converted the rate into Pounds.

**Table 4: Tonnage Tax Rates for Britain and the Netherlands**

<b>Amount per day per 100 net tons:</b>	<b>Dutch</b>	<b>Britain</b>
- up to 1,000 tons	HFL 2.00	£ 0.60
- between 1,000 and 10,000 tons	HFL 1.50	£ 0.45
- between 10,000 and 25,000 tons	HFL 1.00	£ 0.30
- above 25, 000 tons	HFL 0.50	£ 0.15

[Dutch rates from van Niekerk, 1997: Appendix, British rates from Inland Revenue, 1999]

**Clearances.** A non-mandatory system of prior clearance will be available to companies planning election.

**Leasing.** The degree to which allowances can be claimed by companies leasing ships to companies within the tonnage tax regime will be limited through the application of a cap to the value of the vessel leased - the precise details of this have yet to be finalised.

**Foreign subsidiaries.** The direct holding of shares in overseas shipping companies by tonnage tax companies is expected to count as a qualifying activity and their dividends included in the tonnage regime.

**Training link.** Uniquely, companies within the UK tonnage tax regime will have to accept a minimum training obligation which will require the practical training or sponsorship of a specified number of new cadets each year. Lloyd's Ship Manager [1999: 9] reports that companies will undertake recruitment of one cadet for every 15 officers they employ or contribute £400 a month to an industry training fund.

**Enforcement, Sanctions and Review.** Tonnage tax is administered as part of the

normal system of self-assessment for companies in the UK, as subject to the normal audit procedures built into that system. The regime contains anti-avoidance provisions, so that companies abusing the regime may be expelled from it. The Tonnage Tax Team, in conjunction with the Department of Environment, Transport and the Regions (DETR) is expected to make a preliminary evaluation of the success of the regime after it has been operating for two years [Draft regulatory impact assessment in Inland Revenue, 1999].

#### **4.2.3 British Tonnage Tax Critique**

Perhaps the most comprehensive critique of the tonnage tax comes from the Chartered Institute of Taxation [2000]. It comments on the draft clauses issued in December 1999 [Chartered Institute of Taxation, 2000], and begins with a bold statement: “The tonnage tax regime appears to be a form of state aid dressed up as tax legislation.” They then note that where shipping companies elect to pay a levy rather than meeting the Minimum Training Obligation, there is no requirement that the government should actually use the money for the purposes of training people for the industry. Furthermore, they point out that “the draft legislation is fifty pages long, but nevertheless refers to regulations and statements of practice. Undoubtedly, it will add significantly to the complexity of the tax system as a whole” [Chartered Institute of Taxation, 2000].

The Institute concedes that the draft legislation is generally well drafted; however, they have concerns that the approach, initially intended as an incentive, has come out as a regime that has a number of issues that will detract from it. The approach is seen as a radical departure in terms of business taxation, even though similar approaches have been taken by some other EU Member States such as the Netherlands, and departs from the trend of the previous British Government towards low tax rates and a broad base [Chartered Institute of Taxation, 2000]. This latter criticism may itself be questioned, in fact, it could be argued that the nature of the tonnage tax is exactly that - a low tax rate levied on a broad base.

Nevertheless they feel that if the regime is to be introduced, then it should work as an incentive. If it does not serve to attract shipping to the United Kingdom, then there is no point in having such a radical departure from the usual rules [Chartered Institute of Taxation, 2000]. The rest of the critiques are detailed comments on the draft clauses. While not so important for this study, those involved in drawing up tonnage tax legislation would be well advised to acknowledge them [see Comments on Draft Legislation in Chartered Institute of Taxation, 2000].

### **4.3 International Shipping Tax Regimes**

At present more than 70 per cent of the international shipping industry operates without paying normal income tax [Working Group, 1995: 10, van Niekerk, 1997: 3]. Some maritime countries do not tax the profits from shipowning while others allow taxation to be avoided. It is therefore no surprise that shipowners have flagged out vessels to these tax havens to a point where well over 50 per cent of the world fleet is presently flagged under “flags of convenience.” Table 5 shows the current top ten ship registers and the percentage of the world fleet registered with them.

**Table 5: Top Ten Ship Registers**

World Ship Registers			
Country	No. of Vessels	Total Dwt '000	Percent of World Fleet
Panama *	4,816	158,021	19.79
Liberia *	1,662	104,178	13.04
Bahamas *	1,077	40,914	5.12
Malta *	1,435	40,410	5.06
Cyprus *	1,465	37,693	4.72
Singapore #	920	33,170	4.15
China	1,461	23,470	2.94
Japan	1,461	23,022	2.88
St. Vincent & Grenadines *	886	10,999	1.38
Russia	1,310	8,509	1.07
Others	14,775	318,266	39.85
Total	31,268	798,651	100

[Lloyd's Shipping Index, February 19, 2000].

\* = Open Registers or flags of convenience

# = National flag with some f.o.c. dimension

Table 5 clearly shows that tax havens such as Panama, Liberia, Malta, the Bahamas and Cyprus have a large share of the world trading fleet registered with them. These top five flags of convenience registers have registered with them 47.73 per cent of the world fleet. Van Niekerk [1997, 3] notes that most countries also exempt shipowners and operators from indirect taxes.

Table 6, gives a summary of the fiscal regimes for various countries as at 1997 as laid out in van Niekerk [1997: 4]. In Greece and Hong Kong, income from shipping investments are exempted from tax, although in Hong Kong the exemption is for any investment, not only shipping.

Since 1997 there have been many changes in the international shipping tax environment, and the tonnage tax has been making its presence felt with a number of countries seriously considering and many adopting the tonnage tax regime. A literature review has revealed some of the other countries which presently have a tonnage tax system, their results under the tonnage tax system, and further countries reported to be considering a tonnage tax for their shipping industries. These country specific findings are set out below.

**Table 6:**  
**Outline of Fiscal Regimes for Shipping in Various Countries**

COUNTRY	TYPE OF TAX SYSTEM	CORP. TAX RATE	METHOD OF DEPRECIATION	RATE OF DEPRECIATION	INV. GRANT	TAX LAG	PROPORTION OF TAX LAGGED	CREDIT TERMS	OTHER MEASURES	NOTES
BELGIUM	Imp.	45%	S.L. R.B.	8 yrs*		0	0%	20% @ 5% over 15 (2) yrs		*20% 15% 15% 5 x 10%
DENMARK	Imp.	50%	Pooled R.B.	30%		8mnths	100%	60% @ 4% over 14(4) yrs + 20% @ 8% over 8.5 yrs	Advanced depreciation Investment reserves	
FRANCE	Imp.	50%	S.L. R.B.	20yrs 12.5%	15%*	3mnths	19%	80% @ 8% over 8.5 yrs	Tax free reserves	
GERMANY	S.R.	36% 56%	S.L. R.B.	8.33% 25.0%			0%	80% @ 8% over 12 yrs	Tax free reserves	
GREECE	Special shipping tax in lieu of corporation tax based on age and size of vessel									
ITALY	Imp.	36%**	S.L.*	9%	25.5% of 80 of cost	6mnths	25%	80% @ 8.5 % over 8.5 yrs	Tax free reserves	
JAPAN	S.R.	32% 42%	S.L. R.B.	6.5% 14.2%		2mnths	50%	50% @ 5.1% over 13 (3) yrs	Tax free reserves Special depreciation allowance*	*12 – 18%
LIBERIA	Initial and annual registration fees									
NORWAY	S.R.	23% 50.8%	S.L. R.B.	8.33% 25.0%		0	0%	80% @ 6.5 % over 8.5 yrs	Investment reserves advanced depreciation*	*25% but no more than 15% p.a.
SPAIN	C.	35%	S.L.	4%		6mnths	100%	85% @ 8 % over 12 (2) yrs	Tax free reserves	
U.K.	Imp.	35%	R.B.	25%		18mnths	100%	60% @ 6 % over 8.5yrs		

Notes: Types of Tax Systems are Imputation (Imp.), Split Rate (S.R.) or Classical (C).  
Methods of Depreciation are Straight Line (S.L.) or Reducing Balance (R.B.)  
The investment subsidy in Italy has been removed.

[van Niekerk, 1997: 4]

## Germany

German policy makers have been pre-occupied with overarching political and economic issues related to re-unification; and because of this, the shipping industry received scant attention. It took more than two years of pleading before the government acted to stem the flow of tonnage away from the flag [The Baltic, 1999: 45]. Historically, containership investors have used the shipping sector to offset tax, rather than boosting prospects for shipping. The introduction of the tonnage tax at the beginning of 1999 has been hailed as a life-line thrown to a sinking industry. Bernd Kroger of the German Shipowners' Association commented that, "the new laws on company taxation have set the proper course for growth and employment in the shipping industry if the companies have their central place of business in Germany. Numerous shipping companies have started to adjust their corporate structures to the new requirements and will probably opt for the system" [The Baltic, 1999: 45].

The main tax proposal was the introduction of a ship tonnage tax under which ships will pay a set tax based on size regardless of profitability. Shipping companies would receive 40 per cent of income tax paid by crewmen employed in international shipping for at least 183 days a year. Crews will be open to foreign nationals, including officers' positions, for which there would be pension and social security payment exemptions. The master however, should be a German national [Informare, 2000a]. It was estimated in Fairplay [1998d : 9] that the tonnage tax would be between Dm0.45 and Dm1.80 per tonne depending on ship size, producing an estimated Dm120 million annual tax cut for shipowners. Transport Minister Matthias Wissmann said the package would stop the flagging out trend in Germany, encourage lines to employ German crews and also encourage training of young people [Fairplay, 1998d: 9].

## **Ireland**

Although it is not a shipowning or ship operating nation, Ireland is considering setting up a tonnage tax regime as an option to make the Irish ship register more competitive. But tonnage tax is just one option being considered, and no decision has yet been taken on whether ships will have to use the Irish flag to benefit from it [Fairplay, 1999e: 17].

## **Denmark**

Denmark's government was to study the way other countries have tackled taxation of shipping companies before it embarked on its own reform [Fairplay, 1999a: 7]. According to economic affairs minister Pia Gjellerud, "it's clear that we must study how various countries have done this. However, the situation has been different in Denmark because we have not lost much of our merchant fleet, unlike the Netherlands and Norway" [Fairplay, 1999a: 7]. One might argue that the reason for this may be that shipping companies in Denmark already pay a fixed amount in tax per tonne, and the figure is not linked to the profitability of the company in question. Thus it could be argued that Denmark is already operating on a *de facto* tonnage tax system [Fairplay, 1999a: 7].

## **Finland**

In June 1998, it was reported [Fairplay, 1998e: 9] that Finnish shipping leaders were increasing pressure on the government for tax reforms in the lead up to the 1999 draft budget. They were demanding that the Finnish government follow the example of the Netherlands and Norway and adopt a tonnage tax. Finnlines managing director Andy Lagerroos asserted that "it is essential for the competitiveness and future of Finnish shipping that the European trend is followed in Finland" [Fairplay, 1998e: 9].

In August that year the finance ministry squashed shipowner's hopes of changes to the country's tax laws. The finance ministry apparently thought that the move would reduce the government's tax revenue and that it would mean offering special treatment to one sector of the economy. The transport ministry believes that a tonnage tax would enable Finnish shipping companies to compete [Fairplay, 1998f: 15]. The transport ministry therefore had to study what other options were left to ease the position of the country's shipowners, many of which had said they would consider leaving the country if the tax reform was not introduced.

Finally, in June 2000, Finland's government agreed to introduce the tonnage tax instead of corporate taxing of shipping companies, and to refund social security contributions paid by cargo shipping companies in a move to stop the haemorrhage of ships from the national flag. Under heavy pressure from the country's shipping community, owners and unions alike, the influential Economic Affairs Committee agreed that a draft bill would be presented to parliament this autumn [Fairplay, 2000d]. Leading companies such as Finnlines, Neste Shipping and Viking Line have estimated that the Swedish flag is about 15 per cent, and the German flag about 30 per cent, cheaper than Finland under the current terms. The government's proposal is based on the Norwegian model, whereby earnings from shipping kept in the company for future investment can be made subject to a tonnage tax, based on the size of the vessel rather than its earnings [Fairplay, 2000d].

## **China**

China Communications News [in Fairplay, 1998c:14] revealed that more than one third of Chinese ships are flying foreign flags. The paper also showed that 36 per cent of the country's tonnage, aggregating more than 10m dwt, is flagged out. The percentage is growing as owners try to counter the impact of heavy taxation. Ships brought into the Chinese fleet from overseas incur a 27.5 per cent charge for customs tariffs and VAT. The result, the report continued, is that some owners have built up debts amounting to 60-

70 per cent of assets. Owners also claimed that benefits given to overseas operators have pushed the cost of operating under the Chinese flag beyond their ability to compete [Fairplay, 1998c: 14].

## **India**

The Indian finance minister announced in March 2000 that Indian shipping companies' profits were to be totally exempt from income tax if they are accumulated in a reserve to be used for ship acquisitions over five years [Fairplay, 2000a]. Until now, shipping companies were entitled to 50 per cent tax exemption. Shipping industry sources welcomed the announcement but expressed dissatisfaction that the Minister had not conceded other demands such as higher depreciation for ships (from the present rate of 20 per cent to 40 per cent), income tax exemption for seafarers employed on Indian ships, and shipping companies' exemption from minimum alternate tax [Fairplay, 2000a].

In June 2000, the introduction of a tonnage tax in India to replace corporate and other taxes for the domestic shipping industry moved closer to reality as the surface transport minister was to seek 'in-principal' cabinet approval of the proposal. According to the scheme, shipping companies would pay tax at a flat rate on the basis of their tonnage and not on the profits earned by their vessels. The proposal builds on the hope that shipping companies will increase their tonnage by acquiring more vessels when they are in sound financial health [Fairplay, 2000c].

Section 4.5 now turns to consider those countries that have proceeded further down the road towards full implementation of a tonnage tax regime for their national shipping industry.

#### **4.4 Tonnage Tax Results from The Netherlands, Norway and Britain**

Since the Netherlands and Norway implemented the tonnage tax in 1996, there have been marked improvements in the respective economies. These improvements are not only shown through increased ship registrations, but also in terms of shipbuilding and employment. This Section reviews the available literature from the Netherlands, Norway, and most recently Britain, on the results attributed to the implementation of a tonnage tax, as the key reform in the countries' shipping policy.

##### **4.4.1 The Netherlands**

The Dutch and Norwegian regimes are most frequently quoted as cases where a tonnage tax has been introduced successfully. The Dutch arrangement, introduced in 1996, focused on ownership of vessels through an optional tonnage-tax alongside flag-related wage subsidies and increased flexibility in manning rules, according to the United Kingdom's Department of Environmental, Transport and the Regions (DETR) [Informare, 2000b and see Section 4.2.1].

Table 7 compares various indicators of economic activity and employment in the Netherlands shipping industry in 1995, before the implementation of the tonnage tax, and from the end of 1998. The tonnage tax has brought significant increases in ships on the Dutch register over the three years with an increase of 142 ships totalling 1.1 million gross tons. Over the same period, employment in the shipping industry increased by 5219, and domestic investment in shipbuilding (that is Dutch orders at Dutch shipyards) increased by 133 vessels with a deadweight tonnage of 0.49 million.

**Table 7: The Netherlands Shipping Industry 1995 and 1998**

	1995	1998
Ships on Dutch register		
- number	383	525
- million gross tons	2.8	3.9
Employment		
- in the shipping industry	22,781 (1994)	28,000
Shipbuilding – Dutch orders at Dutch Shipyards		
- number	33	166
- million dwt	0.15	0.64

[Chamber of Shipping in Lord Alexander, 1999: Appendix].

The success of the Dutch tonnage tax in bringing ships back to the register has been applauded by senior policy makers in the United Kingdom such as deputy prime minister John Prescott [Informare, 2000b] and by the DETR [Informare, 2000c] who comment that the tonnage tax has:

*lead to a 25 percent increase in the Dutch merchant fleet, full employment for Dutch seafarers, renewed shipbuilding activity and the relocation of about 40 shipowning or management companies.*

#### **4.4.2 Norway**

The Norwegian shipping industry operates under special tax rules which are designed to support this highly competitive, global industry. If certain conditions are met, the owners pay no corporate tax. They only pay tax on their net financial income and dividends, together with a special tax on freight tonnage. The tonnage tax was introduced to Norway in 1996. Information at mid-year 1996 and end-year 1998 is shown in Table 8, which shows that the tonnage tax has helped to bring significant increases in ships under the Norwegian-controlled fleet, with an increase of 229 ships totalling 5.5 million deadweight tons. Over the same period, employment in the shipping industry increased

by 2 200, and domestic investment in shipbuilding, that is Norwegian orders at Norwegian shipyards, increased by 17 with a deadweight tonnage of 0.02 million.

**Table 8: The Norwegian Shipping Industry 1996 and 1998**

	1996	1998
Norwegian-controlled fleet		
- number	1,393	1,622
- million dwt	47.0	52.5
Employment		
- number of seafarers	15,600	17,800
Shipbuilding – Norwegian orders at Norwegian shipyards		
- number	15	32
- million dwt	0.25	0.27

[Chamber of Shipping in Lord Alexander, 1999: Appendix].

The total tax levied on Norwegian shipowners in 1998 was NOK 173.5 million compared with NOK 131.5 million the previous year. Despite this the number of shipowners who fulfil the criteria for zero corporate tax nearly trebled, from 213 in 1996 to 670 in 1997. Total taxable income in 1997 was NOK 480.7 million, an increase of NOK 366.9 million over the previous year, reports Aftenposten [The Norway Post in Informare, 2000d]. Thus these tax figures would seem to indicate that although there has been a dramatic increase in the number of shipowners who have elected into the tonnage tax, government revenues through the tax levied on shipowners has actually increased.

#### **4.4.3 United Kingdom**

By the late 1990s, the United Kingdom's flag fleet had declined to only 20 percent of its size in the late 1970s. The industry has campaigned for incentives to halt its decline since the early 1980s, saying it was too expensive to operate with British seafarers and under the UK tax laws [Informare, 2000b].

The DETR points out that after the withdrawal of the very generous accelerated depreciation rate of 100% first-year capital allowances against corporation tax in 1984 the tonnage of UK direct-owned ships fell by over 20% in two years. Tonnage has further dropped by 25% over the past three years following the introduction of tonnage tax regimes elsewhere in Europe. These examples appear to demonstrate neatly the importance of fiscal competition [Lord Alexander, 1999: pt. 31].

The UK shipping industry, which is regarded as a critical catalyst for generating employment and skills, was in long-term decline at the rate of about 4% a year. Tonnage fell from a peak of 50 million dwt (deadweight tonnes) in 1975 to only 9.7 million dwt in 1998. The UK registered fleet had declined even more. Only 20% of the UK-owned trading fleet is registered in the UK, while until the late 1970s it was almost unknown for UK-owned ships to be registered elsewhere. The Chamber of Shipping had forecast “further decline in ship owning” under the pre-tonnage tax environment [Lord Alexander, 1999: pt. 10].

The leading British shipping company - P&O - represents 40% of the UK industry on a gross earnings basis. They have declared their commitment to supporting the Government’s policy by stating at the time of the 1999 Budget that, if a satisfactory tonnage tax were to be introduced, they would bring an additional 49 of their ships to the UK register, increasing at once the tonnage on the register by 75%. They would also over the next three years raise the number of British cadets in training from 170 to 310 and “would expect to go beyond this over time”. Lord Sterling, Chairman of P&O, confirmed to Lord Alexander [1999: pt. 34] that his intention to take these steps would be regarded as a firm commitment if Britain were to announce promptly in favour of a decision to introduce a satisfactory tonnage tax regime in the next Finance Bill with appropriate backdating. This repatriation to the British flag by P&O is well under way at the time of writing.

In addition to the increased ship registrations by domestic shipowners, many foreign shipowners have switched to the United Kingdom's registry. For example, Prescott [in Fairplay, 1998g: 15] announced news that four of Maersk's feeder containerships, totalling 85,000 dwt, were to be flagged in the United Kingdom. Maersk's decision to reflag is directly linked to the company's approval of the government's White Paper. The Belgian-operated Cobelfret has also reflagged from the Luxembourg registry to the United Kingdom's registry.

The international trend in favour of a tonnage tax system, and the benefits arising from the enhanced competitive shipping fiscal environment through a tonnage-based corporate tax, are clearly visible from the international review of Section 4.4 and Section 4.5. In the light of the preceding discussions and observed international trends, Section 5 investigates the potential benefits of a tonnage-based corporate tax to South Africa and the South African shipping industry.

## **5 The Potential Benefits of a Tonnage-Based Corporate Tax to South Africa and the South African Shipping Industry**

South Africa is leading Africa into what has been called the African Century. In 1993, foreign direct investment in South Africa amounted to R941 million as compared with just under R6,5 billion in 1998 [President Mbeki, 2000]. This is a clear indication that investors are beginning to view South Africa as a country in which to invest. One way in which South Africa can encourage investment in the shipping industry is to create and sustain an environment that is investor friendly. As has already been pointed out, the most internationally recognised and accepted form of ensuring an investor-friendly shipping fiscal environment is at present the tonnage-based corporate tax. This section begins by using the neoclassical model of the user cost of capital to analyse and compare the South African tax environment for the years 1994, 1997, 2000 and under a potential tonnage tax regime. It then moves on to calculate an example of how the tonnage tax would affect government revenues and the tax liability of ships on the South African register currently owned by Safmarine (Pty) Ltd. Shipping company views on the tonnage tax are reviewed before turning to list the potential benefits of a tonnage tax to the South African shipping industry. Finally, this Section investigates additional benefits of a tonnage tax for South Africa.

### **5.1 Analysis of the South African Tax Environment for 1994, 1997, 2000 and under a Tonnage Tax Regime**

On the basis of an investigation of five alternative models of investment carried out in Section 3, it was decided that for the purposes of this study the theory underlying the neoclassical model of investment was most appropriate. The theoretical model was ultimately shown to be of the form:

$$C = [(1 - \theta)i_g + \delta] \times [q/1 - \theta] \times (1 - \psi - k) \quad \textcircled{9}$$

This indicates that the corporate tax system influences the firm's user cost of capital ( $C$ ) in several ways. By taxing corporate income, the tax makes devoting resources to capital investment more expensive, other things being the same. However, depreciation allowances ( $\psi$ ) and investment tax credits ( $k$ ) tended to lower the user cost. Any change in the corporation tax system would influence some combination of corporate tax variable ( $\theta$ ), economic depreciation ( $\delta$ ), and investment tax credit ( $k$ ), and hence change the user cost of capital [see Section 3.3.1 for a revision].

However, since the South African corporate tax system does not allow for investment tax credit ( $k$ ), the model used to calculate the user cost of capital for South Africa is:

$$C = [(1 - \theta)i_g + \delta] \times [q/1 - \theta] \times (1 - \psi) \quad \textcircled{10}$$

Applying this model to the South African tax environment for the years 1994, 1997 and 2000, we are able to calculate in Table 9 and Table 10, the impact on the user cost of capital brought about by the changes in the South African tax environment [see Section 4.1].

In order to aid analysis of the effects of changes in the tax and depreciation environment, it is necessary to hold constant the economic depreciation variable, and the market rate of interest. Each of the values used for the variables shown in the application of the model deserve a brief explanation. The asset price variable has been placed at 100 units. The model can be used with any currency, but there needs to be consistency in that if the variables are in US dollars (as most ship acquisitions are), then the results must be interpreted in dollars. Also, the round figure of 100 is convenient for use in multiplication in the case of fluctuating ship prices, and in terms of interpreting the results as a percentage of asset value.

**Table 9: Variables and Results on the User Cost of Capital for South Africa: 1994, 1997, 2000 and under a Tonnage Tax.**

Variables							Results			
Case	Asset Price	Economic Depreciation	Corporation Tax Rate	Market rate of interest	Present value of depreciation allowances	Investment tax credit	Interest component	Depreciation component	Total	User Cost of Capital
1994	100	0.06	0.35	0.15	0.236919	0	15	9.230769	24.23077	18.49004
1997	100	0.06	0.35	0.15	0.2346509	0	15	9.230769	24.23077	18.545
2000	100	0.06	0.30	0.15	0.2011293	0	15	8.571429	23.57143	18.83052
Tonnage Tax	100	0.06	0.30 of fixed profit	0.15	0	0	15	6	21	21

**Table 10: Variables and Results on the User Cost of Capital for South Africa: 1994, 1997, 2000 and under a Tonnage Tax Using the Effective Tax Rate**

Variables							Results			
Case	Asset Price	Economic Depreciation	Corporation Tax Rate	Market rate of interest	Present value of depreciation allowances	Investment tax credit	Interest component	Depreciation component	Total	User Cost of Capital
1994	100	0.06	0.422	0.15	0.2857921	0	15	10.38422	25.38422	18.12961
1997	100	0.06	0.422	0.15	0.283056	0	15	10.38422	25.38422	18.19906
2000	100	0.06	0.3778	0.15	0.2532888	0	15	9.643202	24.6432	18.40135
Tonnage Tax	100	0.06	0.30 of fixed profit	0.15	0	0	15	6	21	21

The prime rate is used as the indication of the market interest rate variable. As of 01/02/2000 the prime rate was 14.5 per cent. This is unusually low for South Africa since the prime rate has not fallen below 15 per cent since 05/05/1988 [First National Bank, 2000]. In order to simplify, and add clarity to the model calculations, Table 9 and Table 10 use the rounded figure of 15 per cent as the market rate of interest. Although interest rates do vary, the model investigated is static and the calculated results are for the variables values as indicated in the tables.

Whilst freight rates are the primary influence on ship prices, a second influence on a ship's value is age. *Ceteris paribus*, a ten-year-old ship is worth less than a five-year-old ship. As mentioned in Section 4.1, the normal accounting practice is to depreciate merchant ships down to scrap over 15 or 20 years. Brokers who value ships take much the same view, generally using a 'rule of thumb' that a ship loses 5 or 6 per cent of its value each year [Stopford, 1997, 101-102]. Therefore, it seems reasonable to use either 5 or 6 per cent as the value for the economic depreciation variable to be used in the neoclassical model of investment.

The present value of depreciation allowances variable for Table 9 and Table 10 is calculated using the accelerated depreciation allowance provided for by the South African tax legislation [see Section 4.1]. For ships acquired before 1 April 1995 the accelerated depreciation allowed was 40 per cent in the first year, and 10 per cent thereafter. Ships acquired on or after 1 April 1995 face a new set of depreciation laws that allow for 20 per cent straight-line depreciation [Meyerowitz, 1999: 24.4]. The accelerated depreciation, may be seen as a subsidy, but generally in line both with other South African industries, and foreign tax practices. Table 11 later investigates the impact of this subsidy on the user cost of capital.

Finally, whilst Table 9 and Table 10 may be interpreted in the same manner, the major difference between the two tables is that the results of Table 9 are calculated using the corporate tax rate, whilst the results of Table 10 are calculated using the effective tax rate [see Table 3 for revision].

Having reviewed an explanation of, and justification for, the variables used in the model shown in Table 9 and Table 10, an analysis of the results is in order. Firstly, the interest component is clearly the same value as the market rate of interest variable which is 15 per cent. Thus the corporate tax and depreciation laws do not directly affect this value. Rather, it is the market interest rate derived from the macroeconomic context that determines the magnitude of this component of the user cost of capital. Therefore, if the neoclassical model of investment is correct, in general the lower the market rate of interest, the lower the user cost of capital, and the greater business investment in South Africa [see Section 3.2 to review alternative views]. Although foreign investors have access to international capital markets, many South African investors are at a disadvantage in this respect. As South Africa has been subject to high interest rates, it would seem necessary that access to international finance be made more easily available [see Section 6.1].

The second result is the calculated depreciation component. The depreciation component should be equal to the economic depreciation variable, that is 6 per cent for Table 9 and Table 10. However, this is not the case as the depreciation component takes into consideration both the economic depreciation value, and the corporate tax rate which raises the user cost of capital as is clearly shown in both Table 9 and Table 10.

So what have been the effects on the user cost of capital of the changes in tax and depreciation laws for the South African shipping industry? Table 10 is used to explain how the results may be interpreted from both Table 9 and Table 10. The total column is calculated as the sum of the interest and depreciation components. Remembering that the model is looking at changes in the tax and depreciation laws, *ceteris paribus*, in 1994 and 1997, with an effective tax rate of 42,22 per cent, the total taxation effect for each US\$100 was to add US\$25,38 which would mean that ship investment would need an even higher marginal rate of return in order to be considered as a feasible investment [for a revision see Section 3.2.2 and 3.4]. Although these figures are the same, the actual user cost of capital (for the static values given in the model) in 1994 was US\$18,129, whereas

for 1997 it was US\$18,199. The small increase in user cost of US\$0,07 is attributed to the change in 1995 of the depreciation laws as noted above.

The year 2000 brought with it a welcome decrease in the corporate tax rate from 35 per cent to 30 per cent and an associated decrease in the effective tax rate from 42,22 per cent to 37,78 per cent. How did this affect the user cost of capital? Surprisingly, the user cost of capital, incorporating accelerated depreciation, further increased to US\$18,401. This represents an increase of more than US\$0,2 [as already mentioned, the reader may want to review Section 3.4].

Rosen [1995: 442] states that “in the neoclassical model, a lump sum tax on the corporation would have no effect on investment.” Thus, as we have established the tonnage tax to be a lump sum tax [see Section 2.4], in the neoclassical model of the user cost of capital, the tonnage tax will have no effects on business investment. The observant reader will have noticed that under a tonnage tax, as shown in Table 10, the user cost of capital is US\$21, far greater than the past and present user cost. It must be noted however, that some of the main benefits of a tonnage tax are to be found elsewhere as presented in the rest of Section 5. Also, the US\$18 user cost figures have been calculated with an accelerated depreciation allowance. If we were to look only at the tax effects on the user cost of capital before any depreciation allowance, then it becomes clear that the South African tax environment caused the user cost of capital to be US\$25,38 for the years 1994 and 1997, and then to decrease to US\$24,64 in 2000 as a result of the lower tax rate. A key point is that the effective tax rate for 1994 and 1997 raised the user cost of capital by US\$4,38. Whereas the present effective tax rate increases the user cost of capital by a somewhat more modest US\$3,64.

In Section 3.3.1 it was stated that in the neoclassical model, firms desire to invest up to the point where the marginal return to capital assets just equals the opportunity cost of owning them [Rosen, 1985: 436]. Thus as the shipping industry has generally experienced low rates of return [Stopford, 1997: 69], the higher the user cost of capital,

the more difficult the justification for investing in the industry. Conversely, the lower the user cost of capital, the greater the investment in the shipping industry, *ceteris paribus*.

Boskin's results from his paper entitled: "Tax Policy and the International Location of Investment" [in Feldstein, 1987:73-80] showed that tax effects on the international location of investment are important. Boskin finds that tax policies such as accelerated depreciation and ITC's, which raise the after-tax rate of return on new investment without losing revenues from previous investment, not only stimulate domestic fixed investment, but also attract additional investment from abroad. The additional investment supplements the impact of domestic investment on productivity and raises corporate tax revenue. However, he warns that his results should be taken as preliminary estimates, and not as definitive statements about the long-run impacts of tax policy [Boskin in Feldstein, 1987: 80].

In order to investigate what the effects of a real ship investment would be under the South African fiscal environment, the case of SA Marine Corporation is used. The SA Shipping News and Fishing Industry Review [2000: 4], recently reported that SA Marine Corporation, owned by Capital Finance SA of Greece, had announced a US\$200 million (approximately R1,4 billion) fleet expansion. Newbuilding orders for two Capesize vessels of 172 000 tonnes, plus options for a further two vessels which were to be exercised by December 1999, were placed with Hyundai Heavy Industries, while two Panamax vessels of 75 000 tonnes each were ordered from Daewoo. Contracts were signed in Athens with the Korean yards during October last year and the vessels will be delivered in 2001. Stamatis Restis, President of Capital Finance SA [in The SA Shipping News and Fishing Industry Review, 2000: 4], said:

*" These orders demonstrate the commitment of our company to expansion of SA Marine Corporation and the role of Safbulk and SafOre in the bulk trades of South Africa. We believe that it is vital that more South African exports are carried by local operators, increasing not only foreign exchange income, but also invisible earnings; creating job opportunities and expanding the SA skills base in the bulk business. "*

These and other benefits as discussed in Section 5.4 and Section 5.5 can be attributed to an expansion of the South African shipping industry. If the SA Marine Corporation investment in fleet expansion were to take place under the South African fiscal environment, what would be the observed impact of the distortionary effects on the user cost of capital?

Under the present South African tax environment with the assumption of 5 per cent economic depreciation and a market interest rate of 15 per cent as shown in Table 11, Case 1, it can be seen that if market forces are allowed to prevail, without the distortionary effects of taxation and depreciation, the user cost would be US\$20 as is seen in the case of the tonnage tax (T. Tax) scenario. However, when the distorting effect of taxation is taken into account it further increases the user cost by more than US\$3 to US\$23,04.

In Section 2.4, it was stated that subsidies create excess burden because they encourage people to consume goods valued less than the marginal social cost of production. Accelerated depreciation may be viewed as a subsidy to the shipping industry. Case 1, 2000a shows that the accelerated depreciation allowance lowers the user cost by US\$5,84 to US\$17,20. One might at first be inclined to consider the US\$5,84 as the subsidy given by the government to the ship investor. However, in South Africa, if capital does not fall under an accelerated depreciation allowance, the law still makes allowances for economic depreciation. Case 1, 2000b calculates the user cost of capital using the real economic depreciation. The difference between the user cost calculated in 2000a with accelerated depreciation, and 2000b without the accelerated depreciation subsidy is US\$3,11. What this means is that for every US\$100 spent on ship acquisition, the government offers a subsidy of US\$3,11.

**Table 11: Alternative Scenario's and Model Sensitivity Testing on the User Cost of Capital for South Africa**

Variables							Results			
Case	Asset Price	Economic Depreciation	Corporation Tax Rate	Market rate of interest	Present value of depreciation allowances	Investment tax credit	Interest component	Depreciation component	Total	User Cost of Capital
<b>Case 1:</b>										
2000a	100	0.05	0.3778	0.15	0.2532888	0	15	8.036001	23.036	17.20124
2000b	100	0.05	0.3778	0.15	0.1182388	0	15	8.036001	23.036	20.31225
T. Tax	100	0.05	Lump sum	0.15	0	0	15	5	20	20
<b>Case 2:</b>										
2000c	100	0.05	0.3778	0.24	0.2074412	0	24	8.036001	32.036	25.39041
2000d	100	0.05	0.3778	0.24	0.0776428	0	24	8.036001	32.036	29.54864
T. Tax	100	0.05	Lump sum	0.24	0	0	24	5	29	29
<b>Case 3:</b>	100	0.06	Lump sum	0.15	0	0.20	15	6	21	16.8
<b>Case 4:</b>	100	0.06	0.3778	0.05	0.3271353	0	5	9.643202	14.6432	9.852894

Therefore, if the SA Marine Corporation investment in fleet expansion were to have an asset price of US\$200 million, and take place under the present South African fiscal environment as outlined in Case 1, the end result would show that the user cost of capital would be US\$40,63 million (see 2000b) of which the government would have to subsidise through accelerated depreciation US\$6,22 million (approximately R43,54 million). This result is not unique to investment in shipping, and a similar exercise could be carried out for many other South African industries with an accelerated depreciation allowance.

At its peak on the 2/09/98, the prime rate in South Africa was 24 per cent. What would be the effect of a sustained higher interest rate on the user cost of capital, the government subsidy, and on ship investment in South Africa? Case 2 may be interpreted in a similar manner as Case 1 was, however Case 2 uses an interest rate of 24 per cent to investigate the impact of a sustained high interest rate on the user cost of capital and the government subsidy. Notice that in comparing Case 1 with Case 2, the depreciation component showing the tax effect is the same, it is only the interest rate that has caused a direct increase of US\$9 (due to 15-24 per cent interest rates) in the Total column for the user cost of capital. The government subsidy, has increased from the US\$3,11 under Case 1 to US\$4,16 in Case 2. This means that as the interest rate rises and becomes more of a burden on ship investment, so the subsidisation of ship investment may become a greater burden for the government. Again, these findings are applicable not only to ship investment, but also other industries afforded accelerated depreciation.

In contrast, under a tonnage tax system (if no allowances for depreciation are allowed), the economic depreciation and market determined interest rate dictate the user cost. Both Case 1 and Case 2 show the user cost under such a tonnage tax (T.Tax) system to be lower than what the user cost of capital would be under a South African tax law which does not support ship investment through a subsidy like accelerated depreciation.

Case 3 shows a scenario in which the tonnage tax is used with an investment tax credit of 20 per cent. This case shows how the user cost under a tonnage tax might look with a 20 per cent ITC. Sensitivity testing with the neoclassical model shows the effect of an investment tax credit of say 20 per cent to have the same effect on the user cost as an accelerated depreciation allowance of 20 per cent. However, whilst the effect on the user cost of both measures seems to be the same, the author is doubtful that industries would consider both these forms of government subsidisation in a similar light. In addition, in the tonnage tax countries, accelerated depreciation has been done away with as a part of the new system of taxation [see Section 4.2].

Finally, Case 4 shows what happens when say either the interest rate falls to 5 per cent, which is most unlikely for South Africa at this point in time, or, if an investor were able to gain access to international capital markets and in this way be able to finance the investment at a 5 per cent interest rate, *ceteris paribus*. In such a scenario as Case 4, the taxation effect plays a larger role for the ship investor. Under a tonnage tax the user cost of capital would have been US\$9, whereas South Africa's present effective tax effect would have caused the user cost to increase to US\$14,64. Even with the accelerated depreciation subsidy of 20 per cent per annum, the user cost is still shown to be 0.85 units higher than under a tonnage tax system.

In summary, under the neoclassical model of investment we see that the lower the user cost of capital, the greater the investment in the shipping industry, *ceteris paribus*. This section has shown that a change in the accelerated depreciation laws to the present 20 per cent straight-line depreciation caused only a slight increase in the user cost of capital. Without the impact of accelerated depreciation included, the decrease in the corporate tax rate from 35 per cent to 30 per cent, and the corresponding maximum effective tax rates, caused a decrease in the user cost of capital. Due to the nature of the neoclassical model however, contrary to what might be expected, the decrease in tax rates, taken together with the depreciation allowance, further increased the user cost. It was shown that accelerated depreciation may be viewed as a subsidy, and a hypothetical example of fleet expansion by SA Marine Corporation under the present South African tax laws showed

the potential magnitude of this subsidy. The effects of a sustained higher interest rate on the user cost of capital, the government subsidy and ultimately on ship investment in South Africa were investigated. It was shown that with a sustained higher interest rate, the user cost of capital is increased proportionately, which deters ship investment. Also, as the interest rate increases, so the subsidy increases, thereby lowering the user cost and making ship investment more attractive. Further sensitivity testing with the model under alternative scenarios revealed that the effect on user cost of a 20 per cent investment tax credit is the same as a 20 per cent present value of depreciation allowance. Finally, Case 4 showed that taxation has a greater distortionary impact on the user cost under a low interest rate environment. In this case it was shown that even with an accelerated depreciation allowance of 20 per cent per annum, the user cost is still higher under the present system of taxation than under a tonnage tax system. Even so, many of the more important benefits of a tonnage tax may be found to lie elsewhere [see Section 5.2, Section 5.4 and Section 5.5]. This Section has used the neoclassical model of investment to investigate the effects past, present and potential tonnage tax on the user cost of capital. Section 5.2 now calculates an exercise using South African Marine Corporation to contrast the present tax liability of a typical liner ship with that under a tonnage tax system.

## **5.2 Tonnage Tax Example with South African Marine Corporation**

Much of the information on SA Marine Corporation contained in this section comes from answers to questions posed to Mr. Heesom-Green on the Trade Development Executive of Safmarine [Interview 2].

During 1999, the SA Marine Corporation was divided into a number of separate parts each sold-off to buyers independent of each other:

- The container line activities were branded Safmarine and sold to A.P. Møller/Maersk Group (of Denmark).

- The towage/salvage activities were sold to Smit as Smit Pentow Marine (of Holland).
- The reefer operations (Cool Carriers) were sold to Hoegh of Norway.
- The bulk operations (now incorporated as SA Marine Corporation) were disposed of to Enterprises Shipping Capital Finance S.A. of Greece.
- The shareholding in Unicorn Lines was sold to Grindrod Unicorn.

Safmarine Container lines carries some 400 000 TEUs (twenty-foot-equivalent-units) per annum on deep sea trades and has an operated fleet of some 40 container vessels. Only six of these vessels, however, are owned by Safmarine (Pty) Ltd and fly the South African flag. Unfortunately, the tonnage of cargo carried by these six ships is not possible to determine accurately as the six owned vessels are operated in trades (Europe/Saecs and Far East/Safari) with partner lines as part of Safmarine's vessel contribution to these trades which also include vessels from the partner lines (such as P&O Nedlloyd). Safmarine's and the partner lines cargo is carried on all vessels within the respective Conference services. Consequently, it is not possible to determine the freight revenues generated by the South African flagged vessels as freight revenues are earned by Safmarine on all of its cargo regardless of which vessel carries the cargo [Interview 2].

Ideally, the author would have liked to make a comparison of the present shipping related taxes paid to the Receiver of Revenue by Safmarine to those that would have been paid under a tonnage tax. That exercise was not possible as the six South African vessels are an integrated part of the total fleet of 40 vessels, all of which are employed on Safmarine's global container trades. As such it is not possible to isolate the revenue, costs and net profits related to those six vessels alone [Interview 2].

Although the actual revenues, costs and net profit figures for the South African Safmarine registered ships are not available, a synthetic exercise, based on reasonable assumptions, was conducted to determine what could be the approximate revenues, profitability and tax liability of a typical liner ship under the present system of taxation in South Africa.

Table 12 shows the typical TEU (twenty-foot-equivalent-unit) prices of both outward and inward bound containers on the three main liner trade routes.

**Table 12: Container Freight Rates on Liner Trade Routes**

Trade Route	Outward	Inward
Far East	US\$ 900	US\$ 1,500
USA	US\$ 2,400	US\$ 2,200
North West Continent	US\$ 1,100	US\$ 1,300

[Interview 2 and Interview 3]

For the purposes of this exercise, we will calculate the approximate freight revenue earned by a typical liner vessel, for instance Safmarine's SA Helderberg. The SA Helderberg operates on the European trade route. Taking an average TEU rate from Table 12 for the European trade route, we can assume an average rate of US\$1 200. Typically, the liner ship would be able to conduct approximately 15 voyages within a year, and has the capacity to carry about 2 900 boxes per voyage. If we assume a capacity utilisation of 80 per cent [Interview 2], we are able to calculate a rough estimate of total revenue per year:

$(\text{No. voyages p.a.}) \times (\text{total capacity}) \times (\text{capacity utilisation}) \times (\text{US\$ per box}) =$ $(\text{Approximate total revenue})$
---

$15 \times 2.900 \times 0.80 \times \text{US\$}1,200 = \text{US\$}41\,760\,000$ <span style="float: right;">①</span>
--

Thus the total revenue earned by the SA Helderberg under the above realistic assumptions is approximately US\$42 million. Historically, profits and rates of return on investment have been considered low for the shipping industry [Stopford, 1997: 69], but

assuming, say, a 10 per cent operating profit [from Interview 2 and Interview 3 and in line with the estimates in Stopford for the UK 1970 to 1990 period], this means that taxable income generated by this vessels activities would be US\$4,2 million. At the present company tax rate of 30 per cent, the tax calculates to be US\$1,26 million (or approximately R8,82 million).

The company's tax liability arising from the vessel's activities however may not be as high as this because of the influence of accelerated depreciation allowances early in the life of the vessel. There is also provision for a tax loss to be carried forward thus extending the tax shield. However, all of the South African flagged vessels are well beyond any potential accelerated depreciation benefits, and for a ship like the SA Helderberg which was completed in 1977, the risk of a deferred liability crystallising, which might otherwise occur if the company does not continue with its investment programme is very real, and thus the advantages of a tonnage tax regime are more appealing.

Alternatively, under a tonnage tax system, what would be the tax liability of a ship like the SA Helderberg? In Section 4.2.2, Table 4 showed the Dutch tonnage tax profits per day. The British used this figure as the rate which they would use to ensure a competitive tax environment, and converted the rate into Pounds. Likewise, using an approximated average exchange rate of R10,50 to the Pound, for the first quarter of 2000, Table 13 generates what the South African tonnage tax rate could look like [rounded off to the nearest cent], if the same formulae were to be followed.

**Table 13: Tonnage Tax Rates for South Africa, Britain and the Netherlands**

Amount per day per 100 net tons:	Dutch	Britain	South Africa
- up to 1,000 tons	HFL 2.00	£ 0.60	R 6.30
- between 1,000 and 10,000 tons	HFL 1.50	£ 0.45	R 4.73
- between 10,000 and 25,000 tons	HFL 1.00	£ 0.30	R 3.15
- above 25, 000 tons	HFL 0.50	£ 0.15	R 1.58

[Dutch rates from van Niekerk, 1997: Appendix, British rates from Inland Revenue, 1999]

Thus under the tonnage tax system, a ship, such as the SA Helderberg, with a net registered tonnage of 16 879, is liable for the following annual tax:

**Table 14: Annual Tonnage Tax Calculation**

Tonnage	Year 1
1 – 1000	22 995
1 001 – 10000	155 380
10 001 – 25 000	79 091
Above 25000	-
<b>Total taxable income</b>	<b>257 466</b>
<b>Normal corporate tax rate</b>	<b>30%</b>
<b>Normal cash tax i.t.o tonnage tax</b>	<b>77 239.8</b>

With the determination of the tonnage tax, neither the actual turnover nor the associated costs of the shipping company will be taken into account, which means tax revenue irrespective of profits or costs. The annual tonnage tax liability of the SA Helderberg, as calculated in Table 13, would be approximately R77 240.

In comparing the tax liability resulting from a ship such as the SA Helderberg under the alternative tax systems, it is clear that the annual tax liability (using the assumptions of the exercise above) may vary from between zero tax liability to R8,4 million per annum (without the benefit of depreciation or deferred losses). In contrast, under a tonnage tax, the tax liability or revenue received by the government from the SA Helderberg would be a definite R77 240 per annum. As we saw with the case of Norway in Section 4.4.2, government revenues from the tax levied on shipowners have actually increased since the implementation of the tonnage tax.

One might question what happens when the Company makes an overall loss? Despite recording a record R66 million loss for 1999 (R27 million profit in 1998) the Durban-based shipowner and operator Grincor was confident it would soon return to profitability [SA Shipping News and Fishing Industry Review, 2000: 6]. Since a tonnage tax is independent of whether a company makes a profit or loss, under such circumstances, if the company had elected into a tonnage tax, the tax would have to be paid. Although, assuming the aim of the firm is to make a profit, a loss may be considered an exception to the rule.

For a vessel such as the SA Helderberg, the total taxable income would have to be lower than R257 466 per annum in order for the present tax system to offer a lower liability than under a tonnage tax. This effectively translates into a profit rate of 0,8 per cent. Thus the tonnage tax system is appealing at all but very low profit levels.

Heesom-Green [Interview 2] believes:

*...it could be argued that a simple South African tonnage tax system levied on the South African owned/operated vessel would be appropriate for a complex, international business such as container shipping.*

In terms of government revenue, over a period of five years, the fiscus will receive R386 199 compared to potentially no tax revenue for the first five years the with existing

depreciation allowances for new ship investment. Thus, as an indication of government revenue, for the six commercial ships at present on the South African Ships' Register, the fiscus would have received R4 446 285 [see Table 14] over the nine year period under a tonnage tax system.

Thus although the level of tax payments that many companies currently pay may not be significantly affected in practice, a tonnage tax enables the company to have the benefits of certainty, flexibility, clarity and competitiveness [see Section 4.2.2] in a highly cyclical and volatile industry. Also, as mentioned above, it removes the risk of a deferred liability crystallising; investment can be undertaken on a commercial basis and does not form the basis for virtual tax-exemption; and tax considerations do not provide artificial incentives for the existence of diversified groups [see Section 5.4.1 for further fiscal benefits].

**Table: 15: Government Revenue from a Tonnage Tax Exercise over the Period 1992 to 2000**

Name	NRT	1992	1993	1994	1995	1996	1997	1998	1999	2000
SA Helderberg	16 879	257 466	257 466	257 466	257 466	257 466	257 466	257 466	257 466	257 466
SA Sederberg	16 879	257 466	257 466	257 466	257 466	257 466	257 466	257 466	257 466	257 466
SA Waterberg	16 879	257 466	257 466	257 466	257 466	257 466	257 466	257 466	257 466	257 466
SA Winterberg	16 879	257 466	257 466	257 466	257 466	257 466	257 466	257 466	257 466	257 466
SA Vaal	10 192	180 137	180 137	180 137	180 137	180 137	180 137	180 137	180 137	180 137
SA Oranje	9 432	145 574	145 574	145 574	145 574	145 574	145 574	145 574	145 574	145 574
<b>Taxable income</b>		1355575	1355575	1355575	1355575	1355575	1355575	1355575	1355575	1355575
<b>Normal corporate tax rate</b>		48%	40%	35%	35%	35%	35%	35%	35%	30%
<b>Normal Cash tax i.t.o. Tonnage System</b>		650 676	542 230	474 451	474 451	474 451	474 451	474 451	474 451	406 673

The above are nominal revenues received by government and taxes paid by shippers.

Above Table is calculated from conversion of British rates by using realistically assumed exchange rate from first quarter of 2000 at R10.50 per Pound.

[Adapted from van Niekerk, 1997: 11].

### 5.3 Shipping Company Views on Tonnage Tax

The working meeting held 1 September 1997 [van Niekerk, 1997: 6] believed that under the right circumstances, it was possible for South Africa not only to recover the shipping business that has been located off-shore, but also to attract new investors including those who confirmed their genuine interest at the meeting. These circumstances will be facilitated if policy is created with an aim to 'level the playing field' for South African shipowners and operators.

Applying the arguments for Britain to the case of the South African shipping industry, it is clear that action is needed because of:

- the increasing trend towards cross-national companies, where the South African partner is competing with a partner in another country which treats shipping more favourably;
- ever growing shortages of well qualified seafarers; and
- imminent decisions by companies on location, employment and registration.

These views were supported by the National Union of Marine, Aviation and Shipping Transport Officers (NUMAST): "The tonnage-based tax is of critical importance to our industry and, we believe, to providing the environment that will stop the haemorrhaging of our maritime skills and the decline of our merchant fleet." The Rail and Maritime Transport union (RMT): "sees the tonnage tax as essential to assisting the revival of British shipping" [Lord Alexander, 1999: pt. 29].

As the South African government has no official position on the tonnage tax, the view of the DETR (Lord Alexander, 1999: pt. 30) is considered below:

*Without a tonnage tax it seems likely that any new investment and much existing shipping business will be lost to the UK; indeed, the indications are that this process could happen relatively quickly as those companies which have held investment decisions pending finally "jump ship". Without securing a significant*

*UK industry there seems little prospect of developing the maritime skills base and employment ... In short, a tonnage tax is widely regarded as integral to the success of the Government's shipping policy. If we fail to create an appropriate environment for British shipping, the industry - both shipowners and unions - will consider that we have defaulted on our side of the partnership. In these circumstances, we believe that there would be a poor prospect of securing the objectives set out in "Charting a new course."*

The DETR supported this argument by pointing out that after the withdrawal of 100% first-year capital allowances against corporation tax in 1984 the tonnage of UK direct-owned ships fell by over 20% in two years. Tonnage has further dropped by 25% over the past three years following the introduction of tonnage tax regimes elsewhere in Europe. These examples appear to demonstrate neatly the importance of fiscal competition [Lord Alexander, 1999: pt. 31]. The DETR's representatives confirmed to Lord Alexander [1999, pt. 31] that a more attractive fiscal environment was critical and that the only proposal that had been made to achieve this was the tonnage tax.

The importance of a competitive fiscal regime is confirmed by the submission of P&O to Lord Alexander [1999: pt. 33]. They draw attention to the rationalisation taking place among shipping companies seeking to develop worldwide operations and enhance their scale of activity. Pressures from partners are necessarily driving such merged activities to locate in the most favourable tax environments. In 1996 P&O merged their container business with the Dutch major Royal Nedlloyd to form P&O Nedlloyd, a UK parent company, with Dutch and UK operating companies. This conflated company is now the second largest container carrier in world shipping, behind Maersk-Sealand, yet another merged global operation [Interview 3]. Inevitably, the incentive is to locate new investment by the combined group in the most favourable tax regime. P&O indicated that expansion of their partnership was under active consideration. Prospective partners would currently not expect the parent company to be in a "full tax" regime or any part of the shipping profit to be subject to UK tax. They would wish to ensure that the existing shipping profits were not subject to corporation tax, to prevent a tax liability arising on

dividends paid up to a parent company from overseas subsidiaries, and to guard against UK tax on newly merged activities as a result of a British participant. P&O and Royal Nedlloyd have stated an intention to seek a listing for P&O Nedlloyd and say that a structure which is internationally competitive is a prerequisite. In the view of P&O, all these considerations would mean that South Africa's current tax regime would be perceived as comparatively unfavourable as was Britain's tax regime. As Lord Alexander [1999, pt. 33] argues, "this would result in pressure towards locating management and investment overseas." One might be tempted to consider the corollary which would mean that if South Africa fulfils the above conditions, management and investment would be tempted to locate in South Africa. However, the author would like to point out that whilst fulfilment of the above considerations might be considered necessary for South Africa to encourage investment, compliance with the above is not sufficient to ensure investment in the South African shipping industry. There are many other factors that determine investment, some of which are discussed in Section 5.1 and Section 6.1.

In June of 1998, it was reported [Fairplay, 1998e: 9] that Finnish shipping leaders were increasing pressure on the government for tax reforms in the lead up to the 1999 draft budget. They were demanding that the Finnish government followed the example of the Netherlands and Norway and adopt a tonnage tax. Finnlines managing director Andy Lagerroos asserted that: "It is essential for the competitiveness and future of Finnish shipping that the European trend is followed in Finland" [Fairplay, 1998e: 9]. As noted in Section 4.4, the Finnish Government has responded to this pressure by agreeing to introduce the tonnage tax in a move to stop the haemorrhage of ships from the national flag.

In South Africa, Captain Dave Rennie, Chief Executive of Unicorn Lines [Interview 7] expressed support for initiatives like that of a tonnage tax; however, he highlights the issue of motive. The motivation for a tonnage tax must not be revenue, but rather employment for South Africa within the maritime industry and for South African seafarers. He feels a tonnage tax alone would not have much effect, and that South Africa needs to create and promote an environment that is conducive to shipowning. Our

discussion brought to the fore a number of other factors which affect where an owner or operator decides to register a ship. These conditions included: the country's geographic location, communication, infrastructure, a facilitating legal environment and the availability of skills, or the ease with which one can acquire them from overseas. Interestingly, he also adds that as tax havens and flags of convenience are under scrutiny, he does not think that the tonnage tax will last [Interview 7]. In contrast, this view may be questioned, in that even though tax havens and flags of convenience have been under scrutiny for many decades, more than half the world fleet is registered in these countries [see Table 5], and it would seem that there has been little success in persuading investors not to registering their vessels in such countries. Also, with respect to the permanency of the tonnage tax, the nature of the international shipping industry, the current international trends, and the tonnage tax legislation itself, leads the author to believe that the tonnage tax will endure, and indeed spread as countries seek to level the playing field and make their shipping industry's more internationally competitive.

It is clear from these extracts that the industry favours the increasingly fashionable tonnage tax. But why, given that the present previous British, and present South African tax structure produces such a low effective tax charge, does the industry regard it as so essential? The first reason concerns the nature of the fiscal environment which it would create. The second relates to the sustenance of a climate of partnership between business, trades unions and the Government to regenerate shipping.

Heesom-Green, Trade Development Executive for Safmarine [Interview 2 and see Section 5.2], favours a tonnage tax for the sector of the industry with which he is familiar and says:

*...it could be argued that a simple South African Tonnage tax system levied on the South African owned/operated vessel would be appropriate for a complex, international business such as container shipping.*

## **5.4 Potential Benefits of a Tonnage Tax to the South African Shipping Industry**

Section 4 showed that there is an international trend of countries adopting a tonnage tax system as an important component of their shipping policies. Many governments have initially been reluctant to implement a tonnage tax regime, but have ultimately conceded to the pressure and needs of their shipping sectors. So why does the shipping industry regard a tonnage tax as so essential? There are many potential benefits to a shipping industry of operating under a tonnage tax system, which can be discussed under two separate headings: the fiscal environment, and partnerships.

### **5.4.1 The Fiscal Environment**

For many companies the tonnage regime may not significantly affect the level of tax payments. Their liabilities may currently be deferred indefinitely if a high enough level of investment is maintained. Instead, as noted by the Lord Alexander Report [1999: pt. 38], it would appear that the tonnage tax would have particular structural advantages for shipping over the existing corporation tax system, on the grounds that:

- it benefits the profit and loss accounts and balance sheets because there is no deferred tax liability. For public companies, it would directly increase earnings per share, which is an important yardstick by which performance is judged, to the extent of what would, under the existing regime, have been a provision for deferred tax; [see Section 6.1]
- investment can be undertaken on a commercial basis and does not form the basis for virtual tax-exemption, and tax considerations do not provide artificial incentives for the existence of diversified groups;

- it brings certainty and clarity about costs and liabilities. It is argued that investors and analysts would more readily be able to understand the tonnage tax and would find it more attractive;
- it removes the risk of a deferred liability crystallising, which might otherwise occur if the company does not continue with its investment programme or if accounting principles are changed to require even more prudence than currently required; and
- depending on its design, it would facilitate international structures and arrangements not least by providing a level playing field between partners so enabling the centre of gravity of partnership activities to be located in South Africa.

All these are cogent advantages that may well be more important to the perception of South Africa as a tax-friendly environment than the simple difference in the level of tax payable. The tonnage tax has widespread support within the international shipping industry as a sensible and pragmatic way of achieving a low-tax regime for shipping but also offering some other important advantages. The industry stresses that the cost of the change need not be high and the advantages are principally structural [Lord Alexander, 1999: pt. 39].

#### **5.4.2 Partnership**

If a revival of the South African shipping industry is to be successful, there is a need for a potent and committed partnership between the Government, business and trades unions in order to strengthen the industry. Jones [1987 and Jones and Kennedy 1991] identify a need for the promotion of “sea-mindedness” in the trading community. They note shipper attitudes of relative indifference towards a greater involvement with the sea transport of their products as a serious stumbling block in the path of a larger role for South African carriers. All of the relevant parties should aim for a package of measures that makes

South Africa's shipping industry internationally competitive. Government, in partnership with business and the trade unions needs to create a package of measures to ensure that South Africa is able to take advantage of the present environment and reap the benefits of a more internationally competitive industry. Conversely, it seems probable that many sectors would lose conviction that the Government is truly committed if it were to reject a fiscal incentive like the tonnage tax. A shipping policy without a fiscal incentive "would be perceived to be holed below the waterline before it left port" [Lord Alexander, 1999: pt. 40].

### **5.5 Additional Benefits of a Tonnage Tax for South Africa**

Aside from the potentially substantial increase in tax revenues received by the Government if additional tonnage is attracted to the national shipping industry [see Section 5.2], the supportive views of the international and South African shipping industry [in Section 5.3], and the specific benefits to the shipping industry as set out above, there are still further benefits to South Africa which are discussed in this section.

South Africa has done little analysis into the benefits of a tonnage tax, but in Britain, the DETR concluded "on balance that the economic case for the tonnage tax is sound" [Lord Alexander, 1999: pt. 65]. According to a report produced by Bimco and the International Shipping Federation [in Lloyd's Daily Shipping Report, 2000], worldwide demand for seafarers in 2000 was estimated at 420,000 officers and 599 000 ratings. The supply figures were put at 404,000 officers and 823,000 ratings. This implies a shortfall of 16,000 or 4 per cent in officer numbers, and a total excess of 224,000 ratings, some 27 per cent above requirements. Predictions for the future are predicated on the conservative assumptions that the number of ships in the world fleet will grow at 1 per cent per annum, and that recruitment and outflow remain at the level seen over the last five years. On this basis, there will be a shortage of 46,000 officers, or 12 per cent, by 2010, while the excess of ratings will increase to 255,000, or 30 per cent in that same year.

*The clear message is that the current moderate shortage for officers will worsen unless training is increased or measures are taken to address the rate at which seafarers leave the industry* [Lloyd's Daily Shipping Report, 2000].

Understood in this context, the key to revival of the British industry is seen as more direct UK ownership of shipping leading to more training of UK seafarers, especially officers, with consequent substantial benefit to the shore-based related industries. They envisaged that there would be more registration of vessels which is likely, in turn, to increase the employment of both officers and ratings [Lord Alexander, 1999: pt. 65].

In South African, the economy differs fundamentally from the economies of many traditional maritime nations and indeed, most developed countries, by having an absence of maritime protectionist measures directed specifically at the industry, as well as a vast pool of unemployed labour. With an increasing unemployment rate, and official unemployment figures in 1998 of over 25,2%, and an expanded unemployment rate of 37,5%, measures that bring about substantial reduction in unemployment are indispensable [Statistics South Africa, 2000. 3-5]. Reliance on the presently structured South African market alone is unlikely to stimulate the economic growth to absorb even the existing unemployment. It is therefore essential that the Government facilitate job creation wherever such opportunities may exist. The prospects for generating employment in the maritime related industries afford one such opportunity.

South Africa arguably has a comparative advantage in that it has relatively cheap labour in terms of officers (for which there is a world shortage), and shore-based labour, which provides an additional incentive to re-locate companies to operate from South Africa. The Working Group [1995: 7] stated that "South Africa's shipping policy is more liberal than protectionistic which has resulted in an efficient shipowning and operating sector. This sector has capacity for substantial growth." This growth, however, needs to be facilitated by the South African government in order to create a level playing field for South African shipowners and operators.

The arguments for a tonnage tax would be less potent if subsidies and tax concessions for the industry elsewhere were only temporary. The value of preserving an industry during a stormy period until it could flourish in a non-distortionary environment with its comparative edge would be high. But it is unrealistic to suppose that internationally shipping industry subsidies and tax concessions will be eliminated in the near future to level the playing field. What these measures do suggest however, is that if our industry is granted a package of measures which enable it to compete with other countries it will be better positioned to compete successfully in the international shipping markets.

Government's policy was clearly to "render(ing) the business environment for shipowning on the South African Ships' Register more favourable to new investment from abroad and to induce the repatriation of ships owned directly or indirectly by South African companies" [van Niekerk, 1997: 1]. This involves seeking a more effective, user-friendly way of creating a more benign fiscal regime, and the tonnage tax seems to be the most internationally accepted way of doing so [Lord Alexander, 1999: pt. 71]. Lord Alexander [1999: pt. 72] concludes for the British industry that:

*All the material that I have seen convinces me that without improving the fiscal environment with a firm and swift commitment to a tonnage tax the chance of success of that policy [to revive the shipping industry] will be minimal.*

The current high mobility of international shipping firms creates opportunities for South Africa which will not last forever. By ensuring that the maritime environment allows South African businesses to operating on a level playing field, South Africa might not only recover the shipping business that has been located offshore, but may attract new investors including those who confirmed their genuine interest at the working meeting held on 1 September 1997 [van Niekerk, 1997]. With sixty South African-owned ships registered off-shore and four potential new shipowners, South Africa could gain the registration of some one hundred ships. With a crew of approximately 25 each, direct job opportunities for 5000 or more seafarers would be created, apart from the employment of those who indirectly derive their living from seafaring. Seafarers often leave their

employment after three years at sea, which could mean that some 10 000 workers would be trained over a period of ten years [van Niekerk, 1997: 6].

Some of the secondary benefits identified by van Niekerk [1997: 6 and others like Jones and Kennedy, 1991] which would ensue from the expansion of the shipping industry include:

- savings in foreign exchange when cargo is carried in domestic ships instead of foreign ships;
- increased foreign earnings from domestic ships trading between foreign countries;
- increased foreign earnings from the remittances of domestic seafarers who take up employment on foreign ships; and
- increased domestic investment by foreign shipowners or operators relocating to the country.
- increased employment opportunities in ancillary industries associated, *inter alia*, with ship finance, shipbroking and crew supply.

Also, recall from Section 1 that this country's share of world seaborne trade exceeds its share of world shipping supply by a factor of more than 20 to one, with the result that the bulk of the commodities handled in South African ports are carried in foreign-owned and foreign-controlled ships. Jones [1991: 1] points out that "a clear consequence of this is that a high percentage of the sub-continent's sea freight payments accrues to foreign shipowners, a situation which is immediately apparent from the shape of the services account of the South African balance of payments." Thus should these expansionary expectations be realised, there is every reason to anticipate that the already powerful positive net impact of the shipping industry on the balance of payments [Jones, 1991: 9] will be further strengthened.

Adopting a tonnage tax may be able to level the playing field not only for shipowners, but also ship operators. Floor [1993: 5.1.60] states that ship operators will invariably earn foreign exchange for South Africa when their businesses are successful. The amount will

be equivalent to the difference between their payments in foreign currencies for time charters, fuel and port services, and their freight income in foreign currencies. Foreign exchange will also be saved when voyages are undertaken for local shippers, who otherwise would transact with foreign owners or operators, and payment is received in Rands. While ship operators do not create direct employment for local seafarers, their activities do lead to other employment in the maritime community.

The environmental argument, now routinely deployed in support of so many causes, has been argued by Lord Alexander [1999: pt. 48] to be fairly slight in this case. Significant environmental benefits could only be achieved he argues, by transporting more goods by sea than by road. He further asserts that “the tonnage tax is not designed to achieve this and I have seen no evidence that it would do so.” In South Africa, however, there is coastal competition between road, rail and sea transport for domestic and regional carriers, but its impact on deepsea activity is minimal [see Jones, 1997: 55-67 and Jones 1992: 7-13]. Further research will have to be carried out in this respect in order to establish the impact of a tonnage tax on the share of goods carries by land or sea [see Section 6.2]. Furthermore, since nearly all major maritime environmental “incidents” are associated with ships registered under flags of convenience, a move towards safer national flags could have significant environmental advantages [see McConville, 1999: 209-241 for a discussion on the economics of safety in shipping].

The British have linked their tonnage tax with a minimum training obligation which will require the practical training or sponsorship of a specified number of new cadets each year. Presently, South African companies are faced with the skills training levy which could perhaps be adapted for similar purposes to ensure a pool of skilled South African seafarers. Van Niekerk [1997: 3] notes that the most important circumstance must be a pool of South African seafarers for employment at wages which afford their employers cost advantages in the international market for shipping. If the employment prospects are able to be realised, then “substantial employment for South African seafarers can be created at little or no cost to the Government” [van Niekerk, 1997: 3]. Not only will jobs be created for seafarers, but also within the land based maritime industry. If this is the

case, then every effort should be made to create an environment for shipowners and operators that will facilitate ship registration and administration for national and international investors.

Thus a key determinant as to whether a tonnage tax will benefit South Africa lies in the policy's ability to strengthen and expand South African shipowners and operators. For it is through the strengthening and expansion of this sector of the shipping industry that the benefits reviewed above, and the potential for increased job creation will be achieved.

## 6 Conclusions

*God must have been a shipowner. He placed the raw materials far from where they were needed and covered two thirds of the earth with water.*

[Erling Naess, in Stopford, 1997: 291]

At present more than 70 per cent of the international shipping industry operates without paying normal income tax, and in addition, the shipping industry is considered more sensitive to the level of taxation than others owing to the enormous cost of ship replacement. There was a time in the 1980's when the South African fiscal policy environment was considered supportive and broadly comparable with the tax and incentives facing western shipowners, but the international shipping arena has moved on, leaving South African shipowners and operators to compete internationally on an inequitable fiscal basis. South Africa's re-entry into the international mainstream trading community has the potential to create opportunities for a strengthening and expansion of the country's maritime community and the related benefits, but these opportunities need to be facilitated, most importantly through a levelling of the playing field. One way of helping to achieve this could be through the introduction of a tonnage tax that has been accepted and adopted internationally. This paper has investigated the potential benefits of a tonnage-based corporate tax for South Africa and the South African shipping industry. The paper provided a background and context in which the aims, objectives and methodology could be understood. It provided a brief review of economic theory and principles underlying the shipping industry, as well as the necessary corporate tax concepts and perspectives. Section 3 then investigated five investment theories that explain the effects of corporate taxation on business investment. The section concluded that the neoclassical model of investment would be used to analyse the effects of the South African corporate tax environment on the user cost of capital. Section 4, gave a critical review of the South African tax environment, and argued that the present tax structure in the context of the international shipping arena is unsatisfactory. Accelerated depreciation provisions embody an element of subsidy, yield comparatively little tax, and in traditional policy frameworks offers little to attract companies or investors. The section

then continued to investigate the alternative tonnage-based corporate tax system, and an international review of the incidence of tonnage tax was conducted.

Section 5 investigated the potential benefits of a tonnage tax to South Africa and the South African shipping industry in some detail. Under the neoclassical model of investment we saw that the lower the user cost of capital, the greater the investment in the shipping industry, *ceteris paribus*. Section 5.1 showed that a change in the accelerated depreciation laws to the present 20 per cent straight-line depreciation caused only a slight increase in the user cost of capital. Without the impact of accelerated depreciation included, the decrease in 2000 of the corporate tax rate from 35 per cent to 30 per cent, and the corresponding maximum effective tax rates, caused a decrease in the user cost of capital. Due to the nature of the neoclassical model however, contrary to what might be expected, the decrease in tax rates, taken together with the depreciation allowance, further increased the user cost. It was shown that accelerated depreciation may be viewed as a subsidy, and a hypothetical example of fleet expansion by SA Marine Corporation under the present South African tax laws showed the potential magnitude of this subsidy. The effects of a sustained higher interest rate on the user cost of capital, the government subsidy and ultimately on ship investment in South Africa were investigated. It was shown that with a sustained higher interest rate, the user cost of capital is increased proportionately which deters ship investment, and as the interest rate increases, so the subsidy increases. This lowers the user cost and makes ship investment more attractive. Further sensitivity testing with the neoclassical model under alternative scenarios revealed that the effect on user cost of a 20 per cent investment tax credit is the same as a 20 per cent present value of depreciation allowance. Finally, it was shown that taxation has a greater distortionary impact on the user cost under a low interest rate environment. In this case it was shown that even with an accelerated depreciation allowance of 20 per cent per annum, the user cost is still higher under the present system of taxation than under a tonnage tax system.

The results from Section 5.2 showed that although the level of tax payments that many shipping companies currently pay may not be significantly affected in practice, a tonnage tax enables the company to have the benefits of certainty, flexibility, clarity and

competitiveness in a highly cyclical and volatile industry. Also, the tonnage tax removes the risk of a deferred liability crystallising, and investment can be undertaken on a commercial basis rather than forming the basis for virtual tax-exemption.

Section 5.3 presented views of shipowners and operators from around the world that have expressed support for the tonnage tax regime. Section 5.4 set out further important fiscal benefits of a tonnage tax that include: benefits to profit and loss accounts and balance sheets because there is no deferred tax liability; certainty and clarity about costs and liabilities; and depending on its design, facilitating international structures and arrangements not least by providing a level playing field. This section also stressed the need for a potent and committed partnership between the Government, business and trade unions. Section 5.5 identified additional direct and indirect benefits to South Africa, most notably a strengthening of the balance of payments and increased job creation.

Thus the aims of this paper which included alerting the reader to the need for fiscal reform, and investigating the potential benefits to South Africa and the South African shipping industry of introducing a tonnage tax have been addressed. The evidence suggests that without seriously addressing the South African fiscal shipping environment, there is little prospect of creating a level playing field which is necessary for South African shipowners and operators to compete internationally on a more equitable basis. In order for the fiscal reform to be successfully achieved, a comprehensive package of policy measures needs to be put in place with the option of a tonnage tax as a key policy. A tonnage tax can be implemented at minimal cost to the government. With an improved fiscal environment, a more cohesive set of partnerships between traders, carriers, the financial sector and the state should result, and these in turn are likely to confer significant benefits on the wider South African economy.

## 6.1 Future Research

This paper has researched many areas pertaining to the effects of corporate taxation on business investment, the international shipping fiscal environment, and the potential benefits of a tonnage-based corporate tax system for South Africa and the South African Shipping industry. In the process of investigating the potential benefits of the tonnage tax, many questions have been addressed, and in the process new questions and areas for future research have emerged.

Section 3.1 stated that the corporation tax influences a wide range of corporate decisions on: (1) the total amount of physical investment to make; (2) the types of physical assets to purchase; and (3) the way to finance these investments [Lumby, 1994: 13 and Rosen 1995: 438]. This paper has only investigated the corporate tax effect on the total amount of physical investment. Areas 2 and 3 are potential areas for future research. Also, it was decided that for the purposes of this paper, the neoclassical model of investment would be used. Future research may be conducted using an alternative theory of investment. As the characteristics of the shipping industry heighten the importance of cash flow, the author would suggest, as an important alternative, the use of the cash flow model of investment for future analysis.

Progress needs to continue to be made in the field of understanding and predicting the effects of taxation on business investment. Some researchers believe that we may be asking too much from our data, whose construction deserves considerably more attention, particularly with respect to timing issues (expenditures versus installation), quality adjustment, tax impacts (marginal and average, effective and statutory), and the measurement of other components of the cost of capital. Others are working on the theory of risk and focusing more attention on the stochastic nature of the investment process. Still others are investigating aggregation problems over firms, the homogeneity of capital, the implications of irreversible investments, and the effects of imperfect competition [Berndt, 1991: 277]. As our understanding of the investment process continues to improve, so will the quality of research results and hopefully government policy.

The paper also noted that one goal of tax policy is the efficient allocation of resources. From the perspective of real capital, efficiency translates into the familiar “level playing field” on which different forms of capital investment would compete on equal terms. A relevant question then is, would the changes in the shipping fiscal environment render the domestic field between road, rail and sea more level? What would be the direct and indirect impact of a change to the tonnage tax? Further research will have to be carried out in this respect in order to establish the impact of a tonnage tax on the share of goods carries by land or sea.

Section 5.4.1 stated that one of the fiscal benefits is that a tonnage tax benefits the profit and loss accounts and balance sheets because there is no deferred tax liability. For public companies, it would directly increase earnings per share, which is an important yardstick by which performance is judged, to the extent of what would under the existing regime had been a provision for deferred tax [Lord Alexander, 1999: pt. 38]. Although it may be considered early, the author has not observed any increase in P&O share prices to indicate company benefits of the tonnage tax. Rather, share prices have followed the market trend in line with other cruise companies [Wavelength, 2000: 2]. Consideration of the effects of a tonnage tax on company share prices is another area for future research.

Finally, although the tonnage tax should be kept close to its original form in order to facilitate a more equitable fiscal environment, there is room to fine tune a tonnage tax to the South African context. Further research needs to be conducted in this regard, and to determine what the additional policy measures should be in order to implement an optimal maritime policy package for South Africa. In particular, the difficult task of how to fashion a more functional relationship between the trading, shipping, seafaring and financial communities, must receive attention.

## Appendix A

### Persons interviewed during this study

<b>Interview Number:</b>	<b>Name of person</b>	<b>Affiliation</b>
1	George Chasomeris	Statewide (Pty) Ltd., Director
2	Ivan Heesom-Green	Safmarine (Pty) Ltd., Trade Development Executive
3	Trevor Jones	University of Natal Durban, Professor in the Department of Economics
4	Tax Evasion Manager	South African Revenue Services, Tax Evasion Manager
5	Maynard McLaren	Unicorn Tankers, Commercial Operations
6	Dr. van Niekerk	University of Cape Town, Maritime Economist
7	Captain Dave Rennie	Unicorn Lines, Chief Executive
8	Louis Pereira	Safmarine (Pty) Ltd, Financial Manager – Durban
10	Michael Schmulevitz	Maritime Advocate, University of Natal Durban

## **Appendix B: British Tonnage Tax Calculation**

The following extract is taken from the “Draft Clauses / Schedules” in Inland Revenue [1999].

### **3 Tonnage tax profits**

A3.-(1) A company’s tonnage tax profits are calculated by reference to the net tonnage of the qualifying ships operated by the company.

(2) The tonnage tax profits of a company are brought into charge to corporation tax in place of the company’s relevant shipping profits (see Part F).

(3) A company’s tonnage tax activities and relevant shipping profits are ring-fenced for tax purposes (see Parts G to J).

(4) Special provisions apply in relation to ships engaged in certain offshore activities (see Part K).

### **4 Tonnage tax profits: method of calculation**

A4.-(1) A company’s tonnage tax profits for an accounting period are calculated in accordance with this paragraph.

For the purposes of the calculation the net tonnage of a ship is rounded down (if necessary) to the nearest multiple of 100 tons.

(2) The calculation is as follows:

#### **Step One**

Determine the notional daily profit for each qualifying ship operated by the company by reference to the following table and the net tonnage of the ship:

For each 100 tons up to 1,000 tons	£ 0.60
For each 100 tons between 1,000 and 10,000 tons	£ 0.45
For each 100 tons between 10,000 and 25,000 tons	£ 0.30
For each 100 tons above 25,000 tons	£ 0.15

### *Step Two*

Work out the ships notional profit for the accounting period by multiplying the notional daily profit by-

- (a) the number of days in the accounting period, or
- (b) if the ship was operated by the company as a qualifying ship for only part of the period, by the number of days in that part.

### Step Three

Follow steps One and Two for each of the qualifying ships operated by the company in the accounting period.

### Step Four

Add together the resulting amounts and the total is the amount of the company's tonnage tax profits for that accounting period.

### *Tonnage tax profits: calculation in case of joint operation etc.*

A5.-(1) If two or more companies fall to be regarded as operators of a ship by virtue of sharing the same interest in the ship, the tonnage tax profits of each are calculated as if each were entitled to a share of the profits proportionate to its share of that interest.

(2) If two or more companies fall to be treated as the operator of a ship otherwise than by sharing the same interest in the ship, the tonnage tax profits of each are computed as if each were the only operator.

## Appendix C: Dutch Legislation

Act of 21 December 1995. Amendment to the Income Tax Act 1964, the Corporate Tax Act 1969 and the Tax and National Insurance Credit for Shipping Act 1995 (amendment to some Tax Acts in the interest of ocean shipping).

To all those whom it may concern:

With regard to Dutch shipping activities, we consider it beneficial to amend the taxation of profits from shipping and to extend the scope of the "Tax and National insurance credits for shipping Act";

And so, on the advice of the Council of State, and upon joint consultation with the States General, we have approved and agreed, as we approve and agree the following:

### ARTICLE I

The following amendments have been made to the Income Tax Act 1964.

A. The following shall be inserted after Article 8b:

#### Article 8c

1. Contrary to the provisions laid down from Articles 7 to 8b inclusive and 9 to 18 inclusive, profits from ocean shipping shall, at the request of the taxpayer, be determined on the basis of the tonnage of those ships earning the profits. Profits earned during a calendar year from ocean shipping shall then be assessed per ship on the basis of the amounts per day shown in the following table.

Amount per day per 100 net tons

HFL 2	up to 1000 net-tons
HFL 1.50	for amounts exceeding this up to 10 000 net tons
HFL 1	for amounts exceeding this up to 25 000 net tons
HFL 0.50	for amounts exceeding 25 000 net tons

2. For the purposes of this Article profits from ocean shipping shall be taken to be profits earned, from the exploitation of a ship for the transport of cargo or passengers in international traffic over sea or for the transport of cargo or passengers over sea on behalf of exploration or exploitation of natural resources at sea, as well as profits earned from the use of a ship for towing or the provision of general assistance at sea to ships as mentioned in Article 1, paragraph 2, Schepenwet. Profits from ocean shipping also include profits earned from those activities directly related to the use of a ship referred to in the previous sentence.

3. For the purposes of this article exploitation of a ship takes place if the taxpayer:
- a. has, in the Netherlands substantial control over a ship which he:
    1. owns or jointly, owns, except for ships that he has given into bare boat charter, or
    2. holds under bare boat charter;
  - b. has in the Netherlands principal commercial control over a ship on behalf of another person, provided that the annual total of the net daily tonnage's of the ships for which he performs these activities does not amount to more than three times the annual total of the net daily tonnage's of the ships that he manages as referred to in part a, whereby the ships which he jointly owns are only included if the co-ownership amounts to at least 5 percent;
  - c. holds a ship under a time or voyage charter, provided that the annual total of the net daily tonnage's of the ships which he holds under time or voyage charter does not amount to more than three times the annual total of the net daily tonnage's of the ships that he manages as referred to in part a, whereby the ships which he jointly owns are only included if the co-ownership amounts to at least 5 percent.
4. In the event that a company is run on behalf of more than one person, paragraph three applies with respect to that company; if, where there is a company of this kind, the actual control of a ship is carried out by one or more of the persons on whose account the company is run, this counts as control by the company. If, in a company which is run on behalf of more than one person, exploitation of a ship takes place, this also applies for the persons on whose account the business is run.
5. The request referred to in the first paragraph shall be made for each company in the first year in which the taxpayer earned profits from ocean shipping from the company in question or in the tenth year or in a subsequent year which is multiple thereof. The tax inspector shall respond to the request by a decision which may be appealed. If the request is granted this applies from the year in which the request was made and until further notice by the taxpayer where further notice is only possible from the tenth year or from a subsequent year which, is a multiple thereof after the year in which the profits from ocean shipping were determined on the basis of tonnage.
6. If the request is granted the profit from the year in which the request is made shall also include the total amount determined according to the position during the period immediately preceding that year - of:
- a. the company's reserves which are related to ocean shipping activities, build up on the basis of articles 13 and 14; and
  - b. a sum amounting to the positive difference between the market values attached to the assets used by the company to earn profits from ocean shipping and the book value of these assets at that moment.
7. The total amount referred to in paragraph six - or the sum of the total amounts in the event that the taxpayer has made an request for more than one company as referred to in paragraph one - shall not be taken into account insofar as this exceeds the amount for which the taxpayer at the moment specified at the

beginning of that paragraph can claim carry forward for losses. The tax inspector shall determine the amount which is not taken into account by company by a decision which may be appealed.

8. The amount which is not taken into account on the basis of paragraph seven shall still be included in the profits if the taxpayer, within ten years after the period from which profits from ocean shipping were determined on the basis of tonnage, discontinues (otherwise than by death) the company through which profits from ocean shipping were earned in the Netherlands either wholly or in part. In the event of the cessation of part of the company, the amount referred to in the previous sentence shall only be included in the profits to the extent that it relates to that part of the company. The amount which is still included in the profits is held to have been earned at the time of the cessation.

9. For the purposes of paragraph eight, a transfer as described in Article 17 paragraph two shall not be considered as a cessation nor shall a sale as referred to in Article 18 paragraph one, provided that this is requested by the taxpayer, and, in the event of a transfer also by the party to whom the transfer is made. In that case the party to whom the transfer is made or the company into which the business is converted is for the purposes of paragraph eight, takes the place of the party which has transferred or sold the business.

10. Assets used to earn profits from ocean shipping shall be recorded at market values when following notice by the taxpayer, paragraph one no longer applies.

11. For the purposes of this Article further rules may be laid down in ministerial regulations.

B. Article 14c ceases to be applicable.

C. The following shall be inserted after Article 70a:

#### Article 70b

1. For the purposes of Article 8c paragraph five the year 1996 shall with regard to a business from which the taxpayer earned profits from ocean shipping in 1995, be taken as the first year in which he earned profits from ocean shipping from that business.

2. At the request of the taxpayer who has a loss arising from a shipping deduction, as described in Article 11 paragraph five of the Incentives for Shipping Act, which is not fully covered by income earned before 1 January 1996, the Minister may contrary to paragraph one under provisions to be-set by him deem a later year than 1996, but not later than 1998, to be the first year in which the taxpayer earned profits from ocean shipping from the business. The request shall be submitted during 1996.

#### Article II

The following amendments have been made to the Corporation Tax Act 1969.

A. In Article 8 paragraph one. "8a, 9 to 14c inclusive, 16 and 44b of the income Tax Act 1964 (Law Gazette 1990 103)" shall be replaced by: 8a, 8c, 9 to 14b inclusive, 16 and 44b of the Income Tax Act 1964.

B. Article 31b shall be replaced by:

Article 1b Articles 70a and 70b of the Income Tax Act 1964 shall apply correspondingly.

### Article III

The provisions which pursuant to Article I, part B and Article II, part A are replaced or amended, shall continue to apply with respect to the structural statements and adjustment statements dated post 31 December 1995 referred to in Article 11, paragraph five or Articles 16, 17, 18 or 20 of the Incentives for Shipping Act. Those rules specified in the previous sentence apply correspondingly in the event that at the date of a structural statement or an adjustment statement, the profit is determined on the basis of Article 8c of the Income Tax Act 1964.

### Article IV

The following amendments have been made to the Tax and National Insurance Credit for Shipping Act 1995.

A. In Article 2, paragraph two, part a, the words "19 percent" shall be replaced by: 38 percent.

B. In Article 2, paragraph two, part b, the words "5 percent" shall be replaced by: 10 percent.

### Article V

This legislation shall become effective from the date on which the bill, introduced by Royal Message of, 24 May 1995 to amend the Value Added Tax Act 1968, the Taxation, of Judicial Transactions Act and various other tax laws relating, to disputed constructions regarding land and buildings (Parliamentary Documents 11, 1994/95, 2.4 -172, nr.2) is passed and comes into force, or if this date should be prior to 1 January 1996 then from 1 January 1996.

## Notes:

- 1: Traffic multiplied by long average hauls equals “real” South African seatriade [Jones, 1999]
- 2: Gross registered tonnage (grt): The gross tonnage is calculated from the total volume of all enclosed spaces, measured in cubic meters, using a standard formula. The gross registered tonnage is expressed in units of 100 cubic feet.
- 3: Net registered tonnage (nrt): Under the existing rules, nrt is supposed to represent the cargo volume capacity of the ship and is obtained by deducting certain non-revenue-earning spaces from the gross registered tonnage. The net registered tonnage is expressed in units of 100 cubic feet.
- 4: Article I of the UNCTAD [1986] convention defines the objective as being to strengthen the genuine link between a state and ships flying its flag, in order to give more effective control of the identification and accountability of shipowners and operators especially in administrative, technical, economic and social matters [Stopford, 1997: 452].
- 5: A demise or ‘bareboat’ charter party arises when the charterer is responsible for providing the cargo and crew, whilst the shipowner merely provides the vessel. In consequence, the charterer appoints the crew, thus taking over full responsibility for the operation of the vessel, and pays all expenses incurred. A demise charter party is for a period of time which may vary from a few weeks to several years [Branch, 1981: 291].
- 6: The words corporation and company will be used interchangeably, and a definition of company may be found in Meyerowitz [1997: section 17.8].
- 7: Of course, the money will be taxed when it is eventually paid out, but in the meantime, the full R10.000 grows at the before-tax rate of interest.
- 8: The price paid by the consumer generally will not rise by the full amount of the tax. The assumption made in the text is only for convenience, and is strictly correct only if supply is perfectly price elastic.
- 9: General equilibrium theory forms a bridge between macroeconomics and microeconomics, and uses the tools of microeconomics to analyse the behaviour of the entire economy. The fundamental questions that general equilibrium theory attempts to answer are the same as those posed in macroeconomic theory: given different economic environments, what goods will the economy produce, how will these be produced, and who will obtain them? [Quirk and Saposnik, 1968: 1].
- 10: These tax provisions may stimulate an increase in demand for output, and thus indirectly increase investment demand via the accelerator model.

- 11:  $i$  is defined as the opportunity cost of funds to the firm. Hence, in this model,  $i = (1 - \theta) i_g$ .
- 12: This assumes that the basis used to compute depreciation allowances is not reduced when the firm takes the ITC. If the basis is reduced, then the expression must be modified.
- 13: For an in-depth discussion of the results see Berndt, 1991: 270-277.
- 14: The amount is calculated on the adjustable cost as set out in 24.5 in respect of ships. Before 1995 the depreciation laws allowed for 40 per cent to be written off in the first year, and 10 per cent thereafter [Meyerowitz, 1999: 24].

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