THE EFFECT OF SOUTH AFRICAN DIVIDEND AND CAPITAL GAINS TAXES ON COST OF CAPITAL, FIRM VALUE AND CAPITAL STRUCTURE

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ABSTRACT

I examine the effect of South African taxes, specifically the secondary tax on companies (STC) and capital gains tax (CGT) on investor measures of expected return and firm value, firm cost of capital and optimal capital structure. The discussion, findings and models presented in this study are entirely original in the field of South African corporate finance research.

I model the relationship between STC, CGT and expected return and use this relationship to formulate an hypothesis of the expected behaviour of *ex ante* measures of implied cost of capital for a sample of listed South African companies. I calculate these measures by formulating a unique South African version of the residual income valuation model (RIVM) and then regress derived measures of the implied equity premium on historical measures of dividend yield, ultimately concluding that investors appear to recognise the net tax benefit of dividends and capitalise this benefit into stock prices.

I examine how South African managers calculate and apply measures of cost of capital and discuss the effect of STC on the components used to determine this measure. I conclude that a failure by managers to account for STC in cost of capital calculations leads to incorrect measures of WACC which may distort managerial decisions.

I derive models of the relative costs of each component of firm capital structure, including internal equity and compare these costs. I conclude that there is a net tax benefit to utilising internal equity under certain conditions and that firm decisions that ignore this benefit are fundamentally incomplete.

Finally, I examine the expected position of each of these areas in light of the proposed shareholder dividend tax regime that will replace STC and identify opportunities for future research in this area.

ACKNOWLEDGEMENTS

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GLOSSARY OF TERMS

The following is a glossary of terms and acronyms utilised in this study:

APT	Arbitrage pricing theory
CAPM	Capital asset pricing model
CF	Corporate fund (of a long-term insurer)
CGT	Capital gains tax
CISS	Collective investment scheme in securities
CPF	Company policyholder fund (of a long-term insurer)
CSDP	Central securities depository participant
CSR	Clean surplus relationship (of accounting)
DDM	Dividend discount model
ERP	Equity risk premium
EVA^{TM}	Economic Value Added (a registered trademark of Stern Stewart and Co)
GAAP	Generally accepted accounting practice
ICOC	Implied cost of capital
IEP	Implied equity premium
IPF	Individual policyholder fund (of a long-term insurer)
ITA	South African Income Tax Act No. 58 of 1962, as amended
JSE	Johannesburg Securities Exchange
LISP	Linked investment service provider
PBO	Public benefit organisation
RIVM	Residual income valuation model
SARS	South African Revenue Service
SDT	Shareholder dividend tax
STC	Secondary tax on companies
STT	Securities transfer tax
UPF	Untaxed policyholder fund (of a long-term insurer)
VAT	Value-added tax
WACC	Weighted average cost of capital

Introduction

1.1 Objectives of the study

The effect of shareholder-level dividend and capital gains taxes on various aspects of corporate finance continues to be a topical and well-researched area. Previous studies have examined the effects of shareholder dividend and capital gains taxes on *inter alia* firm valuation, costs of capital and capital budgeting and optimal capital structure; these studies are reviewed in Chapter 3 of this study.

South Africa provides a unique case for research in the abovementioned areas. The domestic tax on dividends paid by resident companies (secondary tax on companies, or "STC") is levied on net dividends paid at the firm, rather than the shareholder level (dividend income from shares in resident companies is exempt from income tax at the shareholder level). This has a number of implications for corporate finance: the payout policy of a firm affects both the cost of equity capital (imposing a further cost of declaring dividends to satisfy investors' expected return) and the residual capital growth of stocks after dividend payments (via attrition of retained earnings/book value due to an increased tax charge).

South Africa is one of only two jurisdictions in the world (the other being Estonia) with this manner of dividend tax regime, setting it apart from other developing countries and from the first-world tax regimes that are the subject of the bulk of the existing empirical research.

The singular nature of the STC regime and the resultant convergence from the empirical models arising from existing research in the international context provide an excellent opportunity for original research in the South African context.

This study examines the effect of STC and capital gains tax, or "CGT" on the following aspects of the investment and financing decisions of South African shareholders and firms:

1. The expected return from and investor valuation of South African listed stocks;

2. The cost of equity and overall cost of capital from a firm manager/capital budgeting point of view, and

3. Optimal firm capital structure in South Africa

At the time of writing, the STC regime (which was instituted in 1993) is scheduled to be replaced with a more globally familiar shareholder-level dividend withholding tax regime (colloquially known as the "shareholder dividend tax", or "SDT") during 2010. The South African National Treasury had released three rounds of draft legislation containing the statutory provisions governing the new tax, ultimately promulgating the SDT legislation in September 2009[1]. This study attempts to predict the effect of the proposed SDT regime on the abovementioned areas of corporate finance by considering the

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[1] At the time of writing, the legislation (although promulgated) has not been made effective.

proposed legislation and leveraging off existing international experience on the such areas.

Despite the plethora of international research in the abovementioned areas, a review of the South African literature makes it clear that the research described above has not been undertaken to any significant extent in the domestic context. This study thus adds significantly to the existing body of knowledge around the effects of taxes on corporate finance in South Africa, and provides a meaningful point of comparison to the international research.

1.2 Research questions

The research questions addressed in the study are as follows:

1.2.1 Expected investor return and firm valuation:

1. How should STC and CGT be accounted for in expected return and stock valuation models?

2. To what extent do investors recognise the effects of firm-level STC and shareholder-level CGT when considering the effective return from and valuation of South African listed stocks?

1.2.2 Cost of capital

1. Do South African managers include STC in cost of capital calculations, capital budgeting exercises and project selection?

2. How should STC be accounted for in the aforementioned areas?

1.2.3 Optimal capital structure

1. How do STC and CGT fit into the current theories around optimal capital structures?

2. What are the relative costs of the components of capital structure in South Africa and how do these costs affect the concept of optimal capital structure and the applicability of the various theories around optimal capital structure in South Africa?

1.2.4 Proposed SDT regime

1. Having regard to the answers to the previous research questions and to the results of international empirical research on the effects of foreign dividend tax regimes in those areas, how will the replacement of the STC regime with SDT affect the areas of corporate finance addressed elsewhere in the study?

1.3 Scope of the study

1.3.1 Empirical analyses – taxes, expected return and stock valuation

This aspect of the study involves the empirical testing of data from a sample of 95 listed South African companies. The sample period selected for the empirical testing runs from 2002 to 2007. This period represents a relatively stable phase in the South African economy and capital markets, and is bracketed by two important events that could affect the sample data: the introduction of CGT in 2001 and the stock market volatility arising from the global economic crisis in 2008, whereafter the exogenous shock to the market makes it extremely difficult to separate out a tax effect for the purposes of analyses of the data for 2008 and 2009.

1.3.2 Analysis of current STC legislation and proposed SDT legislation

This study includes an overview of the relevant provisions of both the existing STC legislation and the proposed SDT legislation at the time of writing. The administrative provisions of both STC and SDT are not directly relevant to any aspect of the study and are therefore not discussed in detail.

1.3.3 Aspects of South African tax legislation excluded from the study

The empirical aspect of this study considers only dividends actually declared by companies and not any "deemed dividends" (refer Chapter 2 for an explanation of these transactions). Although STC is levied on deemed dividends, these transactions arise due to corporate actions and are not easily observable or predictable from a firm's published

results. The STC cost thereof is thus highly unlikely to form part of an investor's valuation.

The effects of part-disposals arising from capital distributions (again, this is more fully explained in Chapter 2) are also ignored. For the purposes of this study, I assume that any returns of capital are limited to the amount of paid up capital contributed by the shareholder in question. In practice, the mechanics of the South African Income Tax Act (hereafter referred to as the "ITA") can sometimes result in a taxable capital gain even where such an assumption applies, but this only occurs under specific conditions and is highly unlikely to form part of an investor's expectation of future cash flows.

As noted above, the analyses in this study pertaining to the tax effects under the current regime are limited to the effects of STC and CGT on each area. Other South African capital taxes that could conceivably apply to transactions in shares (such as donations tax, estate duty and transfer duty) are excluded from the scope of this study.

The South African securities transfer tax ("STT"), which is levied on most transfers of shares, is also excluded from the scope of the study. STT was introduced after the sample period and is thus not relevant to the data pertaining thereto; furthermore, any potential effects of STT that could affect the predictions of investor and firm behaviour are expected to be small given the effective rate of 0,25%.

Finally, the South African value-added tax ("VAT") is also excluded from the scope of this study. Transactions in shares are exempt supplies of "financial services" for VAT purposes and thus have no direct VAT implications for the buyer or seller. Cash dividends are similarly excluded from the ambit of VAT.

1.4 Methodological approach

The methodological approach for the study comprises three parts, as follows:

1.4.1 Expected investor return and firm valuation

In the last ten years, research around dividend tax capitalisation has moved away from "event study" analyses (such as comparisons or examinations of stock prices before and after dividend announcement declarations) to regression testing based on tax-inclusive valuation models. One variation of the "new" approach, adopted in seminal research by Harris, Hubbard and Kemsley (1999) and their follow-up research (discussed more fully below), uses the residual income valuation model derived by Ohlson (1995) to model the relationship between price, taxes and the accounting components of book value. The model allows the authors to test whether or not the components of book value that are taxable on distribution (retained earnings and net income) are discounted by investors relative to contributed capital, the non-taxable component thereof.

The publication of the research by Kemsley *et al* led to follow-up studies that criticised the approach, assumptions and conclusions of their research (most notably Hanlon, Myers and Shevlin (2001) and Dhaliwal, Erickson, Myers and Banyi (2001)). Despite rebuttals

to these criticisms that were published by the original authors, valid questions were raised as to the validity of the models and the reliability of the conclusions drawn therefrom. Notwithstanding this, even the harshest critics of their approach agree that Kemsley *et al* have introduced a novel and clever way to test for tax capitalisation.

A second variation of the new approach uses a form of the residual income valuation model to solve for *ex ante* or implied measures of firm cost of equity. If taxes affect investor measures of expected return and thus firm cost of equity, they also affect prices (in terms of the residual income valuation model, an increased cost of equity implies less residual or "abnormal" profits and thus lower measures of market price).

Another branch of research in this area has determined via empirical testing that these implied cost of equity measures do correlate with actual measures of return to investors, provided that certain control variables are included in the testing methodology.

Dhaliwal, Krull, Li and Moser (2003) adopt this "implied cost of equity" approach based on previous research by Gerhardt, Lee and Swaminathan (2001); their methodology tests for tax capitalisation by regressing measures of implied cost of equity on measures of dividend yield and including controls for institutional ownership and tax regimes. By testing the observed correlation coefficients against the expected relationship between taxes, dividend yield and expected return, it is possible to test the hypothesis that investors include the effect of future taxes in their valuations of stock price.

I examine the suitability of both the Kemsley *et al* and implied cost of capital approaches for the purposes of testing for the capitalisation of STC and CGT in the South African context by surveying the research pertaining thereto, the fundamental assumptions underlying and the conditions necessary for their application, and the criticisms raised by other researchers.

For a number of reasons, set out more fully in Chapter 6 below, I consider the implied cost of capital approach to be the appropriate method for the purposes of this study. Although the international research is referenced, the differences between the South African and United States tax codes (as the latter is described in the international studies) make it necessary to develop a new model of stock price, book value and taxes for South Africa.

I adapt the residual income valuation model, including taxes, for South Africa based on the South African tax legislation and its effect on profit and book value. Furthermore, I model the relationship between STC, CGT and shareholder return in order to create the necessary hypotheses for the empirical testing for which this model is employed. These aspects of the study are included in Chapters 5 and 6 below.

Having developed the South African residual income valuation model and discussed the relationship between taxes and expected return, I formulate and test a regression equation of implied equity premium measures (the aforementioned implied cost of capital measures less a proxy for the return on the South African risk-free asset) on measures of

prior-year dividend yield and certain specific control variables in order to examine the extent to which South African investors include the effects of STC and CGT in valuing South African stocks.

1.4.2 Cost of capital and capital structure

The financing aspect of firms, including the relationship between firm cost of capital and capital structure and dividend payout versus retention decisions, has been the subject of a significant amount of research, both domestically and internationally. However, the effect of shareholder taxes on these financing decisions, which has been extensively examined over time in the international context, has not hitherto been comprehensively examined in South Africa.

This aspect of the study seeks to review the international and domestic literature around the commonly accepted theories of cost of capital, capital structure and dividend payout behaviour and their application in the South African context. This includes a review of the research pertaining to the corporate finance practices of the managers of South African listed companies, represented by surveys undertaken by PricewaterhouseCoopers (2005, 2008) and Correia and Cramer (2008.)

Having regard to the research on how South African managers calculate and apply measures of cost of capital, I discuss the effect of STC on the components of cost of capital. I examine how the failure to consider taxes may affect measures of cost of capital.

Furthermore, I examine the novel methodologies applied by Lewellen and Lewellen (2006) to examine the relative costs of internal and external equity. The authors argue (and show via their models) that the existing theory of capital structure ignores a third source of funds in internal equity (retained earnings), making studies of capital structure fundamentally incomplete. Building on a strong body of international research in this area, they formulate a model of the three sources of equity funding (debt, retained earnings and external equity capital) and compare the tax costs of each source. The results are discussed in the context of capital structure, payout policy and cost of capital.

I adapt the models developed by Lewellen and Lewellen for the South African context and investigate the effect of STC and CGT on the relative costs of debt, external equity and internal equity for South African firms. I then examine the implications of my findings in this area in the context of the existing domestic research pertaining to payout policy and capital structure, particularly as to how the behavior of South African managers differs from what is expected from the commonly accepted theories.

1.4.3 Proposed withholding tax regime

As previously noted, the proposed withholding tax regime that will replace STC in 2010 will conform more closely to the existing international dividend tax regimes. The international literature reviewed for the purposes of this study thus provides guidance as to the expected position under the new regime.

I consider the expected position under the proposed SDT regime from the point of view of investors (expected return and firm value) and the firm (cost of capital, payout and capital structure) having regard to the understanding of the relationships between taxes and each of these aspects as discussed in the relevant sections of this study, the effect of the new legislation on those relationships and the guidance afforded by the international literature.

1.5 Contributions of the study

As previously discussed, the relationship between taxes and firm valuation and financing has to date not been considered by the South African research conducted in these areas, nor has the effect of the former on the latter. I thus contend that the existing South African research is fundamentally incomplete.

In addressing the research questions set out in Section 1.2 above, this study attempts to contribute to the existing body of corporate finance knowledge in South Africa in three ways. Firstly, this study contributes original research by discussing and modelling the relationship between firm- and shareholder level taxes and:

1. Expected investor return and firm valuation

2. Firm cost of capital and capital structure

Secondly, I consider the interplay between my original research into the abovementioned relationships and the existing body of corporate finance research pertaining to capital structure. Finally, I attempt to predict how the move to the proposed SDT regime will

affect the abovementioned areas of finance for South African firms; such predictions will hopefully inform the methodologies of future research into these areas.

Based on a comprehensive review of the existing South African literature, the research and models presented in this study represent entirely original contributions to corporate finance research in South Africa.

2 Overview of the relevant South African tax legislation

2.1 Dividends and STC

2.1.1 Introduction

STC is a secondary corporate tax (i.e. a tax levied in addition to normal corporate income tax) levied on companies[2] that are tax-resident in South Africa. The incidence of STC is an important aspect of this study; STC vests in and is payable by a company that pays a dividend and not by the recipient shareholder. This type of dividend tax regime is not the international norm; on the contrary, the only other country that currently imposes dividend tax at the corporate level is Estonia (SARS, 2007). India introduced such a dividend tax regime in 1997, but abolished it in 2002.

STC is not levied on profits earned by companies, but rather on the "net amount" of dividends declared by a company (i.e. the difference between dividends declared by a company and dividends received by or accrued to a company from other companies)[3].

STC was introduced in 1993 due to a perception that the South African corporate tax rate was too low compared to other international regimes (SARS, 2007). The rate of STC has varied over time: initially introduced at a rate of 15%, the rate was increased to 25% in 1994. After this increase had a negative distortionary effect on corporate distribution policies, the rate was decreased to 12,5% in 1996 and remained as such until 2007, when it was decreased to its current rate of 10%. As it stands, the aggregate rates of STC and

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[2] For the purposes of the ITA, the term "company" includes by definition *inter alia* any close corporation, as well as any portfolio of a collective investment scheme in securities ("CISS"), i.e. a unit trust.
[3] Section 64B(2) of the ITA

corporate income tax are close to the top marginal tax rate for individuals. This is understood to discourage tax arbitrage that would otherwise be available should an individual taxpayer house a source of taxable income in a company, rather than in their own hands.

SARS (ibid) also notes the following motivations for STC:

1. STC acts as an incentive for companies to reinvest profits rather than distributing them, enabling "self-financed growth"[4];

2. Tax collection is facilitated by imposing the dividend tax on companies rather than shareholders; the perception is that because companies are subject to more stringent statutory regulations and disclosure requirements, they are more reliable than non-corporate shareholders who may not disclose taxable dividends received[5].

The taxable nature of dividends in the hands of the paying company is tantamount to double taxation on corporate profits, a common criticism of jurisdictions that impose tax on dividends (including jurisdictions where tax is imposed at the shareholder level). In order to avoid triple taxation, the ITA provides that dividends paid by resident companies are exempt from income tax in the hands of the recipient shareholder, subject to certain exclusions. This method of dividend taxation is the first major deviation of the South

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[4] This is a fairly naïve comment by the SARS, as it ignores the fact that corporate distribution policies are, at least in the listed context, often influenced by market expectations and are thus not truly discretionary.
[5] This aspect has been carried over into the SDT regime, as discussed further in Section 2.4 below.

African tax regime for the purposes of commonly understood aspects of corporate finance; a shareholder's expected return from a stock does not need to take into account the income tax that the shareholder would pay on the dividend, as the dividend is exempt. However, in order to pay a dividend of D to a shareholder, the company requires distributable profits of $D(1+t_{STC})$, where t_{STC} is the rate of STC. There is thus a disparity between the expected return from the point of view of the shareholder and the cost of equity from the point of view of the company. This is a fundamental shift from the tax and finance theories underpinning the international research reviewed in Chapter 3 of this study.

Furthermore, the tax cost represented by STC creates a violation of Modigliani and Miller's "dividend irrelevancy" theory (refer *inter alia* Miller and Modigliani, 1961). Briefly, the aforementioned theory holds that shareholders should be impartial as to whether or not value is derived via capital gains or dividend distributions; one rand of the latter simply decreases the former by the same amount. However, under the STC regime the declaration of a D decreases future distributable profits (and thus the asset value) by $D(1+t_{STC})$. The cash-flow benefit of realising value via a dividend thus erodes the capital value of the asset[6].

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[6] As demonstrated in Chapter 5 below, the trade-off between dividends and capital gains is a function of the rates of STC and CGT applicable to the shareholder; in certain cases, dividends are more desirable than capital gains.

Another important point is that because STC is levied at company level, the cost thereof is imposed on taxable and tax-exempt shareholders alike[7]. There is thus no scope for a "tax clientele" effect purely as a result of STC, where the tax-favoured or tax-exempt status of (for example) institutional investors affect how dividend taxes influence prices (this ignores the effect of so-called STC "credits", which are discussed below). This is expected to change when the shareholder-level SDT is introduced, as the concept of tax-exempt shareholders for dividend tax purposes will be introduced with the new regime.

2.1.2 Definition of "dividend" for tax purposes

In order to understand the financial impact of STC, it is first necessary to understand what constitutes a "dividend" for STC purposes. STC is imposed on both "dividends" as defined in section 1 of the ITA and certain "deemed dividends" in accordance with the provisions of section 64C of the ITA.

The definition of "dividend" for the purposes of the ITA (including STC) has been subject to extensive amendments over time. The amendments have broadened the definition to include certain specific transactions between a company and its shareholders. In its current form, the definition provides that a "dividend" constitutes any amount distributed by a company to its shareholders[8] and that term "amount distributed" specifically includes the following:

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[7] Here "taxable" and "tax-exempt" refers to the tax status of the shareholder for the purposes of income tax and CGT.

[8] The term "shareholder" is also defined in section 1 of the ITA. The definition includes a registered shareholder (for a company), a member (for a close corporation) and a unit holder (for a collective investment scheme in securities, or "CISS"). Furthermore, in the case of a company or CISS, where by way of any agreement or contract, or provision of the statutory documents of the entity, some person other than

1. In the case of a company that is wound up, deregistered or liquidated, any profits distributed by that company (or by the liquidator) in the course of such winding up, deregistration or liquidation.

2. In the case of a company conducting business in the ordinary course that is not being wound up, deregistered or liquidated (i.e. a company that is a going concern), any profits distributed by that company. The issue of capitalisation shares (scrip dividends) is specifically included.

3. Any reduction of the profits of a company as a result of the reduction of the capital (i.e. stock capital and stock premium) or as a result of the acquisition, cancellation or redemption of shares issued by that company (i.e. a share buy back).

4. The cancellation of "treasury shares" held by a company (i.e. shares held by such company in its own shareholder).

The specific inclusions listed above are important when comparing STC to international dividend tax regimes. For example, both liquidation dividends and stock repurchases are included as dividends for South African tax purposes; this is comparable to, for example, the US tax code, where certain liquidation distributions and stock repurchases are excluded as dividends and fall within the CGT regime[9].

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the registered shareholder/unit holder is entitled to all or part of the benefit of the voting and/or participation rights attaching to the stock or unit (for example, following the cession of a dividend income stream), such other person is deemed to be a "shareholder" for the purposes of the relevant provisions of the ITA pertaining to that stock.

[9] As mentioned in Hanlon, Myers and Shevlin (2001) and Dhaliwal, Erickson, Myers and Banyi (2001).

The term "profits" is defined in a proviso to the dividend definition, and is itself very wide: it includes both realised and unrealised profits, whether or not such profits have been recognised in the company's accounting records.

The following exclusions from the dividend definition are also relevant:

1. Any capitalisation shares distributed to a shareholder to the extent that such shares are funded from the share premium account of the company

2. Any distribution that represents a reduction of the share capital or share premium of a company (i.e. a return of shareholder capital), unless the capital so distributed consists of so-called "tainted" capital or premium. "Tainted" share capital or share premium refers to amounts that represent capitalised earnings of the company.

3. Any distribution from a subsidiary to a shareholder, where such shareholder holds 70% or more of the ordinary share capital of such subsidiary, to the extent that the shareholder reduced the cost of its investment in the subsidiary for GAAP purposes as a result of the distribution[10].

4. Any amount distributed by way of the redemption of a participatory interest (i.e. a unit) in a CISS.

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[10] This situation was envisaged by SARS to arise upon the receipt of a shareholder by a so-called "pre-acquisition dividend". International Accounting Standard 18 provided (in paragraph 32) that dividends from profits that constituted a portion of the cost of the investment should be recognised as a credit against such cost, rather than as revenue for accounting purposes. This provision was removed from the Standard in 2009. However, it is still possible to reduce the cost of an investment in shares for accounting purposes by virtue of a dividend (for example, by way of the International Accounting Standard dealing with impairments). This exclusion is thus wider than what was initially envisaged by SARS and could arguably still apply.

The definition of "dividend" for tax purposes is clearly extremely broad and includes some intricate provisions and provisos (SARS dedicates more than 60 pages of its *Comprehensive Guide to STC* to this definition). For the purposes of this study, it is important to note that STC applies to all distributions of profit made by a company, including stock repurchases and liquidation dividends. The abovementioned exemption of dividends for income tax purposes thus includes the aforementioned transactions[11]; this is particularly important when comparing (for example) the tax consequences of stock repurchases (an exempt dividend to the shareholder with an STC cost for the repurchasing company) to a third-party sale (income tax or CGT implications for the shareholder and no tax cost to the company). Although both situations are sales from a legal point of view, the tax consequences of each are different for the shareholder and the company, leading to a structuring opportunity when negotiating stock sales.

It is also important to note the specific exclusion of returns of capital, which are dealt with under the CGT rules. This treatment is generally consistent with that imposed by the international jurisdictions considered in the literature reviewed for the purposes of this study.

2.1.3 Deemed dividends

Notwithstanding the broad dividend definition in section 1 of the ITA, section 64C thereof also lists certain transactions that are deemed to be dividends for the purposes of the STC provisions. These transactions are not distributions, but do represent actions

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[11] The exemption does not apply to repurchases of shares held by a share dealer, i.e. where shares are held as trading stock (section 10(1)(k)(i)(cc) of the ITA).

taken by a company that confer a benefit of some kind on a shareholder (or a connected person in relation to such shareholder).

The list of deemed dividends has also been subject to change over time and currently (at the time of writing) includes a transaction whereby:

1. Any cash or asset is distributed or transferred to or for the benefit of a shareholder or a "connected person" (as defined in section 1 of the ITA) in relation to that shareholder.

2. A shareholder or connected person thereto is released or relieved from an obligation to that company that is measurable in money.

3. Any debt owed by a shareholder or connected person thereto is paid or settled by the company.

4. Any amount is used or applied by a company in any other manner for the benefit of a shareholder or connected person thereto.

5. Amounts are disallowed for tax deduction by section 31 of the ITA (the provisions related to cross-border transfer pricing and thin capitalisation).

6. A company ceases to be tax-resident in South Africa (for example, where the company's so-called "effective management" is migrated offshore) – to the extent that profits and reserves are available for distribution (notwithstanding any prohibitions or limitations on distribution imposed by the company's statutory

documents), such profits and reserves are deemed to be a dividend declared by that company.

7. Any loan or advance is granted and made available to a shareholder or connected person thereto.

8. Any amount is incurred by a company in relation to a "hybrid debt instrument" as contemplated in section 8F of the ITA.

The following transactions are excluded from being deemed dividends, notwithstanding that they may be of a type listed above:

1. Amounts that are "dividends" in terms of the definition in section 1.

2. Amounts that are "remuneration" in the hands of the shareholder or connected person (i.e. that relate to services rendered).

3. Amounts that constitute consideration received by the company in respect of the transaction giving rise to the deemed dividend.

4. Any amount that exceeds the profits and reserves of the company that are available for distribution (again, any limitations imposed by the statutory documents of the company are ignored). This exclusion does not apply to transfer pricing adjustments.

5. Any loan advanced to a shareholder or connected person on which a rate of interest is charged that is not less than a rate prescribed by the SARS.

6. Any loan advanced under a loan scheme that is generally available to employees of the company that are not shareholders.

7. Any loan or credit advanced to a shareholder or connected person if the amount is repaid before the end of the following tax year and is not re-advanced following such repayment.

8. Any loan or credit granted to a share incentive trust in order to enable such trust to purchase shares of the company and re-sell them to employees of that company (i.e. in terms of a corporate employment share incentive scheme).

9. Any amount that constitutes a deemed dividend as above (with the exception of the transfer pricing and emigration categories), where such amount is for the benefit of a shareholder forming part of the same "group of companies" as the "declaring" company for tax purposes (or connected person thereto), provided that the "declaring" company must decrease its profits as a result of the transaction in question and the "recipient" must increase its profits by the same amount (such increase and decrease must be greater than zero).

10. Any amount listed in paragraphs 1,2,3,4 or 7 of the above list of deemed dividend transactions that arise for the benefit of a "controlled group company" (for the purposes of the ITA) of the "declaring' company.

While a detailed explanation of the deemed dividend rules of the ITA is not strictly necessary for the purposes of this study, it is important to note that the ambit of STC is not limited to actual distributions or dividends declared by a company as the term is

typically used in financial literature. There are a number of transactions undertaken by a company that could give rise to an STC cost in the company's hands; while managers are aware of these transactions and their effect on corporate costs of equity and can thus plan and structure around them, the tax effect of these transactions may not be obvious to investors or shareholders from publicly available information and could thus be erroneously excluded when valuing the shares of the company in question. For this reason, I exclude the possible tax cost of deemed dividends from my analyses around expected return and firm valuation from an investor or shareholder point of view.

2.1.4 STC rules

As previously noted, STC is levied on the difference between the dividends (including deemed dividends) declared by a company and the dividends accruing to or received by such company. The STC calculation is performed for each "dividend cycle" of a company – briefly, a dividend cycle is the period between each dividend declaration. For example, if dividends are declared at times t and $t+1$, the net amount used to calculate the STC liability at $t+1$ is the difference between the dividend declared at $t+1$ and all dividends received by or accruing to the declaring company from the calendar day after the declaration at t up to and including the calendar day of $t+1$.

If the net amount is negative, the excess dividend receipts and accruals are carried forward to the subsequent dividend cycle and may be set off against the dividend declared in that cycle[12].

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[12] Section 64B(3)(a) of the ITA

The amount of dividends received or accrued that are deductible for the purposes of calculating the "net amount" give rise to what are commercially and colloquially referred to as STC "credits", although this term is not used in the ITA. Because companies are the only entities that are subject to STC and are thus the only entities that can take advantage of STC credits, such credits are valuable in the hands of corporate shareholders from the perspective of the recipient company and its shareholders. For example, assume company B is wholly owned by company A which is turn is wholly owned by person X. If company B has distributable profits and cash of R110, it can declare a dividend of R100 to company A with an associated tax cost of R10 payable to the SARS. Company A can then declare the full R100 to X with no STC cost, because of the offsetting STC credit arising from the dividend received from B. If the credit was not available (and A had no other profits or cash) X could only receive R90.90 (the maximum dividend that A could declare taking into account the 10% STC payable in respect thereof).

An important point to note with respect to STC credits is that such credits are not available to corporate shareholders of South African companies where such shareholders are not tax-resident in South Africa. In the past, this has been raised as a glaring inequity with respect to the STC system; this point was noted by SARS in its media releases pertaining to the proposed SDT regime.

The ITA provides[13] for certain amounts that may not be deducted for the purposes of calculating the net amount for a particular dividend cycle (effectively denying the recipient company an STC credit), including:

1. Certain dividends that are exempt from STC (see below)

2. Distributions made by a CISS to a corporate shareholder, to the extent that the income giving rise to the distribution was exempt from tax in the hands of the CISS.

3. Dividends accruing to the borrower of a share under a securities lending arrangement.

4. Dividends declared by companies that are not tax-resident in South Africa (with certain exceptions).

The ITA also provides[14] that certain dividends are exempt from STC, including:

1. Dividends declared by companies that are tax-exempt by virtue of section 10 of the ITA

2. Dividends declared by fixed property companies that are deductible in terms of section 11(s) of the ITA.

3. Where a company declares a dividend in the course or anticipation of a liquidation, winding up, deregistration or final termination of its corporate existence, so much of such dividend that relates to revenue profits earned before 31 March 1993 (i.e. prior to the introduction of STC) or capital profits (subject to certain limitations) earned

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[13] Section 64B(4) of the ITA
[14] Section 64B(5) of the ITA

prior to 1 October 2001 (i.e. prior to the introduction of CGT). Also excluded in such circumstances are profits earned prior to a company becoming tax-resident in South Africa.

4. Dividends declared by gold mining companies that represent profits earned from the disposal of gold mining assets.

5. Any dividend declared by a CISS.

6. Any dividend declared by a company to a corporate shareholder that holds at least 70% of the issued ordinary share capital of the company declaring the dividend, provided that the dividend increases the profits of the corporate shareholder and that such shareholder would be subject to STC should the dividend in question be on-declared (this exemption is elective from the point of view of the declaring company).

The last exemption is typically referred to by tax practitioners as "group relief" in the context of STC and allows companies within the same group to choose where the STC liability in respect of a particular distribution will arise: the subsidiary may elect the group relief and pay a gross amount to its holding company; the holding company will then pay the STC when it on-declares the amount received to its shareholders, who will receive the amount in question net of the STC. Alternatively, the subsidiary may choose not to elect the group relief and pay a net amount to its holding company and the associated STC to the SARS; the holding company will then be entitled to an STC credit in respect of the dividend received and will pay no STC when the amount is on-declared to its shareholders. The elective nature of the group relief exemption allows for a certain

degree of managerial planning with respect to the cost of equity of a particular investment or project.

Once again, an investor may have difficulty in ascertaining the STC position of a company from its publicly available financial records, as such records would not typically disclose whether or not a dividend received has given rise to an STC credit that could offset the STC cost when the dividend is ultimately distributed to the investor. This raises difficulties for investors that are attempting to value a stock based on the expected dividends from the company.

2.2 CGT

CGT was introduced in South Africa with effect from 1 October 2001. Prior to that date, gains of a capital nature were completely exempt from South African income tax.

CGT arises on the "disposal" of an "asset" as the terms are defined in the Eighth Schedule to the ITA (this Schedule contains the CGT provisions that are applied for the purposes of the ITA). The South African CGT regime is thus based on realisation and not on accrual, as is the case with certain foreign tax regimes. A taxpayer effectively deducts the "base cost" of the asset from the "proceeds" arising from the disposal (again, both terms are defined in the Eighth Schedule with specific inclusions and exclusions) in order to calculate a capital gain or loss.

The term CGT is a misnomer; CGT is not a separate tax. Taxable capital gains (net of allowable capital losses) are calculated in accordance with the provisions of the Eighth Schedule and then included in the "taxable income" of a taxpayer for income tax purposes at a prescribed inclusion rate that depends on the nature of the taxpayer (individual, company or trust). The effective "CGT rate" is thus the product of the taxpayer's marginal rate of income tax and his applicable inclusion rate for capital gains. Persons that are exempt from income tax are thus also exempt from CGT. Non-residents (for tax purposes) are only subject to CGT on the disposal of certain assets; briefly, such assets include immovable property situated in South Africa (or the shares of certain companies predominantly holding immovable property other than as trading stock) and the assets of a so-called "permanent establishment" of the non-resident in South Africa.

The specific inclusion for net taxable capital gains is necessary because amounts of a capital nature are specifically excluded from a taxpayer's "gross income" for tax purposes (the starting point of the South African income tax computation). The distinction between amounts of a capital nature and amounts of a revenue nature is a well-debated grey area in South African tax law; the ITA does not contain any specific provisions in this regard and taxpayers are forced to rely on the guidance provided by the extensive tax case law dealing with this issue. The question of capital or revenue turns on a number of factors; arguably, the most important of these is the intention of the taxpayer

regarding the asset in question[15]. For the purposes of this study, it is only necessary to understand that an investor disposing of a share may be taxed in one of two ways:

1. If the share is held as trading stock (in a scheme of profit making, for speculative purposes) the disposal thereof is treated under normal income tax rules.

2. If the share is held as a capital asset (for investment purposes), the disposal thereof is dealt with in terms of the CGT provisions of the Eighth Schedule to the ITA.

Broadly speaking, the distinction between capital and revenue treatment in respect of a third party disposal of shares by a taxpayer would only affect the rate of tax levied on the gain from such disposal.

In modeling the effect of CGT on investor returns, it is important to note that under current South African tax law, capital gains may be offset against assessed losses for income tax purposes but capital losses may not be set off against taxable income (i.e. other than capital gains).

The interplay between the dividend/STC regime and the CGT rules is an important consideration for the purposes of this study, specifically in the context of share repurchases. As set out in Section 2.1.2 above, share repurchases that are funded by

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[15] There is, however, a specific provision in section 9C of the ITA that effectively deems certain shares to be capital assets once they have been held by a taxpayer for a period of at least three years, regardless of the original intention of the taxpayer regarding the shares.

profits are "dividends" by definition and thus give rise to STC consequences in the hands of the company effecting the repurchase; the shareholder, on the other hand, receives a tax-exempt dividend unless such shareholder is a share dealer. In terms of the CGT rules, the "proceeds" from a disposal excludes any amount that is included in a taxpayer's "gross income"[16]; this includes dividends, which are "gross income" for tax purposes but are subsequently exempted from tax and excluded from "income" and thus "taxable income" as defined. There is thus no capital gain and no CGT liability for the shareholder in the case of a repurchase; on the contrary, the shareholder would incur a capital loss[17]. A repurchase transaction is thus highly tax-advantageous for a shareholder; the only tax cost of such a transaction (the STC) is carried by the company (and thus by any remaining shareholders).

2.2.1 CGT and capital distributions

Paragraphs 74 to 76 of the Eighth Schedule deal with the definition of so-called "capital distributions" and the treatment thereof for CGT purposes. A capital distribution is any distribution (or portion of a distribution) by a company to its shareholders that does not constitute a "dividend" as defined (for example, returns of share capital or share premium or a portion of a share repurchase that is funded by share capital or share premium), or that constitutes a dividend that is exempt from STC because it comprises a distribution of pre-31 March 1993 revenue profits or pre-1 October 2001 capital profits.

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[16] Paragraph 35(3)(a) of the Eighth Schedule to the ITA
[17] Where the shareholder in question holds more than 20% of the shares in the company undertaking the repurchase, the loss so incurred may be "clogged" (i.e. only deductible against capital gains arising from disposals between the shareholder (or former shareholder) and that company). There are other loss limitation rules pertaining to dividend stripping (paragraph 19 of the Eighth Schedule to the ITA); these are unlikely to apply in practice and are thus excluded from the scope of this study.

The receipt or accrual of a capital distribution has consistently (since the introduction of the CGT legislation) resulted in CGT consequences for a shareholder. Prior to 2007, any capital distribution received by or accruing to a shareholder in respect of a share was added to the proceeds (for CGT purposes) arising when the share was ultimately disposed of. The rules have since been amended to provide that a shareholder must calculate a capital gain or loss on a "part disposal" of the share in question upon the receipt of a capital distribution: where the distribution arose prior to 1 October 2007, the CGT event is deemed to occur on 1 July 2011; after 1 October 2007, a capital distribution gives rise to the CGT event at the time of such distribution. The effect of the part-disposal rules is that the shareholder effectively realises CGT on the amount of the capital distribution, after deducting a prescribed portion of the tax cost (CGT base cost) of the share.

2.3 Summary: STC and CGT

In terms of South African tax law, the tax implications of transactions involving dividends and shares vary for both shareholders and companies. Managers and shareholders (both existing and potential) of the firm need to be aware of these implications when making financial decisions regarding the valuation of shares, the cost of capital and capital structure of the firm.

For tax purposes, the word "dividend" has a wider meaning than interim or final distributions of corporate profits and includes transactions such as share repurchases funded by profits (both realised and unrealised), liquidation dividends and the

cancellation of treasury shares. Certain corporate actions that confer benefits on shareholders or connected persons in relation to shareholders are also classified as dividends for tax purposes.

The distribution of a dividend or deemed dividend by a South African company generally gives rise to a liability for STC in the hands of the company declaring the dividend, subject to certain specific exemptions; the dividend is exempt from tax in the hands of the shareholder and, in the case of share repurchases classified as dividends, excluded from the calculation of the CGT liability arising on the disposal of the share.

The sale of shares held as capital investments gives rise to CGT implications for the shareholder, whereas gains or losses arising on the sale of shares held for speculative purposes or as trading stock are taxable or deductible at full income tax rates. CGT implications for shareholders would also arise on the receipt or accrual of capital distributions from a company, i.e. distributions such as returns of share capital or share premium (or share repurchases funded by share capital or share premium). Such distributions have no STC implications for the company making the distribution.

In practice, shareholders are unlikely to have full information regarding the activities of companies pertaining to deemed dividends. A realistic shareholder valuation model would thus only incorporate publicly available information such as interim and final dividends and could potentially cater for the difference between share repurchases, third party sales and liquidations as the terminating cash flow pertaining to a share. Capital

distributions and the associated CGT implications are also a valuation factor, but are more difficult to predict. These aspects of shareholder valuation models are discussed further in Chapter 8 of this study in the context of the relative costs of each component of firm capital structure.

Sophisticated managers would have full information pertaining to the distribution activity of a company, as well as transactions with shareholders that could give rise to deemed dividends and the associated STC liability. This level of information allows for a greater degree of planning with respect to the cost of equity and capital structure of the company.

2.4 Overview of the proposed SDT regime

2.4.1 Motivation for and phasing in of SDT

The replacement of the STC regime with the proposed shareholder-level SDT regime is arguably the most significant tax policy change in South Africa since the introduction of CGT in 2001. The South African National Treasury, in conjunction with the SARS, have at the time of this writing, promulgated the legislation pertaining to SDT following the release of three rounds of draft legislation (the draft legislation was made available for public comment by tax practitioners, academics and other stakeholders). This allows for a comparative analysis of the new regime to the existing STC rules.

The abolition of STC and the introduction of SDT were motivated by the following factors (National Treasury and SARS, 2008):

1. The effects of STC on the costs of capital for South African companies. The corporate-level dividend tax raised the cost of capital for South African companies relative to foreign competitors that were not subject to STC, putting South African companies at a competitive disadvantage.

2. Standard double tax treaties between South Africa and foreign tax jurisdictions did not cater for STC (except for certain treaties where STC is specifically dealt with).

3. As noted elsewhere in this report, STC is effectively unique in the context of global dividend tax systems, making it difficult for foreign investors into South Africa to understand the rules and impact thereof.

4. Because STC is based on tax base of corporate "profits", a term which has commercial and legal meanings but is not dealt with in the ITA in any detail, Treasury and the SARS perceived the dividend tax base to have been "*...shifted outside the STC's direct control.*" (National Treasury and SARS, ibid).

The move to SDT was split into two phases: the lowering of the STC rate from 12,5% to 10% during 2007 (which rate will carry over into the proposed SDT regime) and the full-blown adoption of the new SDT legislation (the effective date was originally announced as late 2009; as of this writing the legislation is expected to become effective in late 2010, based on media releases from National Treasury).

This section of the study summarises the relevant aspects of the SDT regime in the context of this study and is based on the provisions of the SDT legislation as set out in the

Taxation Laws Amendment Act, No. 17 of 2009, as published in South African Government Gazette No. 32610 on 30 September 2009.

2.4.2 The SDT base

The first fundamental change in the tax legislation is the removal and replacement of the definition of "dividend" in section 1 of the ITA. As discussed in Section 2.1.2 above, the dividend definition in its current form is the result of years of amendments resulting in specific inclusions and exclusions. The new definition does away with those inclusions and is arguably much wider in scope: a "dividend" for tax purposes now includes any amount transferred or applied by a company for the benefit of any person in respect of or by virtue of any share in that company, specifically including amounts transferred or applied:

1. By way of a distribution, or

2. As consideration for a share repurchase

The definition excludes any amount so transferred or applied by the company to the extent that such amount:

1. Results in a decrease in "contributed tax capital" (see below);

2. Constitutes a distribution of capitalisation shares;

3. Constitutes a share repurchase by a company in terms of paragraph 5.67 of section 5 of the JSE Limited Listing Requirements (in other words, a share repurchase by a company listed on the JSE), or

4. Constitutes the redemption of a unit in a collective investment scheme in property (i.e. a property unit trust).

"Contributed tax capital" is a new term in the ITA and a definition thereof was inserted in conjunction with the replacement of the dividend definition: it is defined as the aggregate of the share capital and share premium of a company immediately before the effective date of the SDT legislation (less any "tainted" capital comprising capitalised profits, as discussed above) and the consideration received by or accruing to a company in respect of the issue of shares on or after that date, less any amounts thereof that are returned to shareholders by way of capital distributions. In short, contributed tax capital would generally be equal to the equity introduced by shareholders as measured for accounting purposes, although there are certain prescribed cases in which the tax and accounting or legal measures could differ (for example, where the corporate relief provisions provided for in sections 41 to 47 of the ITA apply to a transaction that results in the recognition of share premium by a company). This could make it difficult for investors to accurately predict the tax treatment of distributions of share premium.

The new dividend definition, read with the contributed tax capital definition includes all aspects of the previous definition of "dividend" such as share repurchases and also provides for largely the same exclusions (returns of capital to shareholders). Investors and managers should thus have no difficulty in understanding the tax base of SDT for the purposes of evaluating investment and capital budgeting decisions. However, the definition is, as mentioned above, considerably wider than before.

The proposed legislation also provides for certain "deemed dividends", as is the case with the existing STC legislation. The list of deemed dividends is largely the same as before and includes financial assistance granted to connected persons (subject to certain specified exclusions), debt releases or relief, payment of debts on behalf of a shareholder or connected person, and situations where a company ceases to be a resident. It is interesting to note, however, that the new deemed dividend provisions are couched in the legislation as a new tax (the "value extraction tax") that is separate from SDT. Deemed dividends are thus not dividends for the purposes of SDT, although the effect of the aforementioned new tax (and the rate thereof) is essentially the same as SDT.

For the purposes of the taxing sections of the SDT regime, dividends that are subject to the withholding tax include any dividend as defined in section 1 of the ITA and any dividend declared by a foreign company (i.e. a company that is not tax-resident in South Africa) in respect of a share of that foreign company that is listed on the JSE. The latter inclusion, which effectively brings certain foreign companies into the ambit of the South African SDT regime, is intended to place all JSE-listed companies on an equal footing in the context of the withholding tax (National Treasury, 2009).

2.4.3 The incidence of SDT

The liability for SDT vests in the beneficial owner of a stock (defined as the person entitled to the benefit of a dividend attaching to the share[18]). However, the mechanics of the legislation impose the withholding and payment obligations on either the company declaring the dividend or certain intermediaries. This effectively shifts the corporate incidence of STC to shareholders (beneficial owners), but retains the STC system whereby companies and other regulated entities are responsible for the actual collection and payment. This type of system was discussed (albeit more generally) by Marcus (2007) and was recommended in the context of South African fiscal policy due to the potential mitigation of tax evasion via non-disclosure by shareholders[19]. This is arguably a fair compromise for both companies and the SARS; the cost of capital effect of STC is removed while retaining the administration and collection responsibilities of the companies in question.

Generally, companies will be responsible for withholding the SDT in respect of dividends declared and paid. The declaring company is not required to withhold SDT from payments of dividends to SDT-exempt persons (see below) or to so-called "regulated intermediaries". "Regulated intermediaries" are a defined group in the new legislation and include central securities depository participants (CSDP's), authorised users and

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[18] In certain cases (for example, where shares are held by nominees) the registered shareholder and the beneficial owner of a stock would be different. This could also occur where the dividend stream attaching to a share has been contractually ceded to another party.

[19] Companies and intermediaries are subject to rigorous statutory disclosure requirements and are thus less likely to underpay taxes. This recommendation, which predated the announcement of the SDT regime, was based on the results of empirical testing of potential versus actual tax collections in Marcus (2009) that indicated that tax collections from companies were far more effective than collections from individuals.

approved nominees as contemplated and/or defined in the South African Security Services ITA, 2004 as well as linked investment service providers (LISP's) that hold investments on behalf of clients and a portfolio of a CISS.

A major point of departure from the STC regime arises in the proposed legislation, as not all shareholders will be subject to SDT. The draft legislation lists the following categories of exempt shareholder:

1. Any company which is a South African resident for tax purposes.

2. A pension, provident or other similar benefit fund.

3. Certain tax-exempt bodies that provide services to the Government.

4. A sphere of the South African Government (national, provincial and local).

5. Certain tax-exempt South African public entities.

6. An approved public benefit organisation (PBO).

7. An environmental rehabilitation trust (as contemplated in section 37A).

8. A shareholder in a registered "micro business" as defined in the ITA (where the dividend in question does not exceed R200 000).

9. A natural person transferring a primary resident from a company in terms of the tax amnesty for such transactions that was promulgated in 2009.

10. Any non-resident where the share in question is a share in a foreign company listed on the JSE.

Ignoring the limited exemptions available under the existing STC legislation (such as the group relief discussed in Section 2.1.4 above, which is only available to companies with significant shareholdings in subsidiaries), the cost associated with STC is currently "borne" by all categories of shareholders; the tax cost destroys value in the underlying company declaring the dividend and the shareholder bears this cost through lower dividend payments or lower capital growth. Even taking STC "credits" into account, the flow of dividends from company to company carries at least one incidence of STC (one company must pay the tax on a dividend declared in order to create the credit in the hands of the corporate shareholder) – under SDT, dividends paid by one South African company to another will have no dividend tax cost until the dividend leaves the corporate chain.

South Africa has also renegotiated (or is, at the time of writing, in the process of renegotiating) certain double tax treaties with foreign jurisdictions. The renegotiated treaties apply decreased rates of SDT to dividends paid by South African companies to foreign shareholders in South African companies, provided that such foreign shareholders hold a specified percentage of the total issued shares of the declaring company (National Treasury and SARS, 2008).

The existence of exempt (and lower tax rate) shareholders in the new SDT regime creates, for the first time, the possibility of dividend tax arbitrage in the South African

context. This arbitrage is not limited to tax costs, but will certainly extend to share prices – investor valuations based on expected returns will now vary according to the SDT status of the shareholder. This should lead to an observable clientele effect with respect to South African share prices, a situation which is not expected to arise under corporate-level STC.

The new legislation also marks the first time that share repurchases (by listed companies) are treated as ordinary sales, and not dividends, for tax purposes. This becomes relevant due to its similarity to the treatment imposed by certain foreign tax jurisdictions, as discussed more fully in Chapter 9 of this study.

The SDT levied on a taxable shareholder will be withheld from any dividend declared and paid by a company or intermediary at a rate of 10%. This differs from STC, where the tax is payable at a specified rate of (net) dividends declared. For example, where a company declares a dividend of R100 under the existing STC regime, the company is required to pay an additional R10 (at the current rate of 10%) to the SARS, for a total cost of R110. The shareholder receives the full R100 declared and paid. Under the proposed SDT regime (ignoring intermediaries for the sake of example), a company that declares and pays a dividend of R100 must withhold R10 *of that dividend* and pay it to the SARS. The shareholder receives the net amount of R90. This change will require a shift in the mindset of investors in South African firms, who are used to receiving the full amount of a dividend declaration.

The nature of SDT as a withholding tax differs from the tax treatment of dividends in global regimes where the full dividend is received by a shareholder but is then subject to taxation in their hands. The tax capitalisation literature referenced in Chapter 3 below tests whether or not shareholder level taxes are capitalised into stock prices, i.e. whether or not shareholders price shares with the foreknowledge that distributions from those shares will be subject to taxation. Under the SDT rules, distributions to taxable shareholders are factually reduced at the time of declaration; the decrease in the value of distributions is thus not theoretical, but actually occurs. The decreased returns realised by taxable shareholders should theoretically have an observable effect on prices; however, the extent of the effect is a function of the number of taxable shareholders relative to the number of exempt shareholders, as well as the interplay between the dividend tax and CGT rates of the shareholders in question. This is explored in more detail in subsequent sections of this study.

2.4.4 STC credits and SDT

A surprising concession by fiscal authorities was revealed in the draft SDT legislation (and ultimately promulgated): corporate shareholders are entitled to "stockpile" STC credits (in the form of dividends received by or accruing to such shareholders prior to the effective date of the SDT legislation that exceed the dividends paid by such shareholders immediate prior to that effective date) and utilise these credits to shield taxable shareholders from SDT. For example, if a company receives R100 of dividends in its final dividend cycle prior to the effective date and declares a dividend of R1, the

company goes into the SDT regime with R99 of credits[20]. The company can thus pay R99 of dividends to taxable shareholders without needing to withhold SDT; payments to non-taxable shareholders result in the STC credit being passed on to such shareholders[21], and can be used to shield dividends that are ultimately paid to taxable shareholders.

STC credits are thus valuable to companies with taxable shareholders – to the extent that credits are available, the SDT regime will remove the cost of capital aspect of STC from the company with no associated decreases in return to shareholders.

The effect of the change to SDT on both investors and companies is explored in more detail in Chapter 9 below.

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[20] The R1 declaration is included for illustrative purposes only. The new legislation provides for a deemed "closing" of the corporate dividend cycle on the effective date of such legislation; the company in question would thus have aggregate STC credits equal to all dividends received or accrued from the beginning of this last cycle up to such effective date.

[21] The STC credits cannot be allocated to taxable shareholders only, but are allocated to both taxable and non-taxable shareholders on a pro rata basis.

3 Literature review

3.1 Introduction – testing for capitalisation of tax into stock prices

This section of the study discusses the relevant literature pertaining to the capitalisation of shareholder taxes into stock prices. Certain research papers represent a watershed in empirically testing the capitalisation of dividend taxes in stock prices: Harris and Kemsley (1999), Collins and Kemsley (2000), and Harris, Hubbard and Kemsley (2001) (hereafter HK, CK and HHK respectively and collectively referred to as CHHK). The aforementioned studies introduced a novel methodology based on the residual income valuation model (RIVM) first suggested by Ohlson (1995). A full discussion of the RIVM, including the derivation thereof, is presented in Chapter 4 below.

Prior to CHHK, studies dealing with dividend taxes and stock prices focused mainly on "event study" methodologies; these studies looked for evidence that stock price reductions on ex-dividend days are less than the amount of the dividend paid (this implies that the prices have already been reduced to take taxes into account).

HHK quote studies that support this hypothesis, including Elton and Gruber (1970) Litsenberger and Ramaswamy (1979), Lamdin and Hiemstra (1993), Lasfer (1995) and Poterba, Summers (1984) and Barclay (1987). Specific mention is also made of Eades, Hess, and Kim (1994), wherein an event study analysis concluded that prices declined by the full amount of non-taxable returns of capital, but less than the full amount for taxable

dividends (seemingly supporting the findings of HHK themselves, albeit via a more familiar empirical research method)[22].

HHK also note research results that have contradicted the tax capitalisation hypothesis, including Gordon and Bradford (1980) and Miller and Scholes (1982), as well as studies that have attributed the results of the capitalisation studies to other (non-tax) factors, such as Bali and Hite (1997), Shaw (1991) and Kalay (1982).

Li, Shackelford and Thomas (2002) quote other types of "event study" analyses, including tests around changes in tax legislation by (e.g. Guenther and Willenborg, 1999) and changes in corporate control (e.g. Landsman and Shackelford, 1995 and Erickson, 1998).

The assumptions, methodology and results in CHHK were analysed, criticised and challenged in subsequent research. These criticisms and challenges, as well as the amended testing methodologies suggested by the authors, are also discussed below. On the whole, however, Li *et al* (ibid) state that the consensus is that CHHK have identified a "clever" way to test dividend tax capitalisation, although the results of their empirical tests give rise to "conflicting interpretations".

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[22] The abovementioned event study research has not been reviewed for the purposes of this study.

3.2 Testing tax capitalisation using the RIVM: The methodology of CHHK

HK's methodology involves amending the accounting measure-based residual income valuation model presented and derived in Chapter 4 below by introducing shareholder-level taxes (Ohlson's formula includes the effect of corporate tax via the use of after-tax net income measures, but does not account for taxes on distributions at the shareholder level). The term ($1-t_d$) is applied to each term in the arithmetic series representing taxable dividends (where t_d is the tax rate on dividend income of the marginal investor), reflecting the hypothesis that investors will value the stock based on the after-tax returns from dividends.

HK's approach differs from previous research in that it addresses the hypothesis that future dividend taxes that will be payable when a company distributes its retained earnings are capitalised into stock prices, i.e. that investors discount stock values based on the taxes that they will have to pay on future dividends.

HK postulate that their model implies that the ratio of price to book value changes with and in the same direction as the ratio of retained earnings to total book value, hereafter referred to as RE/BV (Dhaliwal, Erickson, Myers and Bhanyi, 2001). HK test this idea empirically by separating their sample firm data into quintiles based on values of RE/BV and developing two regression equations from the model:

- A regression of price (the dependent variable) on book value and net income (the independent variables). HK's prediction is that the coefficients on book value and net income should decrease and increase respectively with increases in RE/BV)[23].

- A regression of price (the dependent variable) on book value, retained earnings, net income and the product of net income and RE/BV (the independent variables). The prediction is that the coefficient on retained earnings is negative (and equal to the shareholder's tax rate on dividends), based on the idea that dividend taxes reduce the inherent value of retained earnings because future distributions therefrom will be taxable. A further prediction is that the coefficient on the product of net income and RE/BV is positive because of what HK refer to as the "cost of capital" effect − shareholders would discount the value of retained earnings because of future dividend taxes and would thus accept a lower return on retained earnings. Increases in net income thus imply increases in price.

HK ultimately conclude that overall firm value and the valuation weights given to retained earnings, contributed capital and current period net income are all "critically dependent" on dividend taxes (HK, 1999). HK state that their findings suggest that investors impute a liability for future shareholder-level dividend taxes into the valuation for retained earnings (HK, ibid).

CK further developed the valuation model and empirical tests from HK by adding the effect of shareholder-level capital gains taxes. CK reported that their empirical analysis supported the model's predictions that:

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[23] Refer Table 2 in HK

1. Both capital gains and dividend taxes reduce investors' implicit valuation of the reinvested portion of earnings;

2. Dividend taxes reduce the valuation of the portion of earnings distributed as dividends, but capital gains taxes do not.

3. Dividend taxes reduce the valuation of retained earnings equity, but capital gains taxes do not. (CK, 2000).

CK also raise the point that retained earnings appear to be subject to three levels of taxation when valued by investors: corporate tax, future dividend tax and future CGT. The latter is eliminated when net income is paid out as dividends and thus may provide a net benefit to shareholders (this is an important aspect of STC and CGT in South Africa and is discussed more fully in Chapter 5 below).

HHK build on the research from HK, testing whether or not shareholder dividend taxes are capitalised into stock prices by testing the hypothesis that shareholders place a higher value on contributed capital than retained earnings (on the basis that a distribution of the latter gives rise to a taxable dividend in the hands of the shareholder, whilst a distribution of the former is treated as a tax-exempt return of capital). HHK also examine whether or not shareholder dividend taxes reduce the required rate of shareholder return, thus increasing stock values. HHK relate their study to the work in HK, using a similar methodology but extending the model to distinguish between taxable and non-taxable

distributions. HHK conduct tests for multiple US dividend tax regimes over their sample period, as well as for tax regimes in Australia, Japan and certain European countries.

In developing their model, HHK devise a methodology to test the following assumptions:

1. Dividend taxes reduce the value of retained earnings;

2. The required shareholder rate of return on retained earnings is lower than the required return on contributed capital, and

3. Firm value decreases with increases in dividend tax rates (because dividend taxes reduce the value of expected future earnings).

As in CK, HHK also add an iterative term to the valuation model which subtracts the capital gains tax inherent in the stock (the capital gains tax rate multiplied by the difference between the stock price and the contributed capital, which is assumed to be the tax or base cost for CGT purposes). This approach is based on the assumptions that capital gains are taxed on periodic accrual, not on sale or realisation.

HHK report three principal findings from the results of their empirical testing:

1. Empirical results for the United States indicate that accumulated retained earnings are valued less per unit than contributed capital. HHK conclude that these results are consistent with the capitalisation of future dividend taxes into the portion of stock prices attributable to retained earnings.

2. The implied tax discount for retained earnings changes predictably with dividend tax rates across U.S. tax regimes.

3. The implied tax discount for retained earnings also changes predictably with cross-country dividend tax rates (this phenomenon was also observed when comparing two different tax regimes within the United Kingdom).

A common thread running though HHK is the idea that "*...[dividend and capital distributions] are discretionary functions of dividend and capital distribution policies, and dividend tax capitalisation should be independent of current distribution policies*" (HHK, page 8). The idea is that investors apply implicit tax discounts to retained and current period earnings regardless of the dividend and/or return of capital payout history, behaviour and expectations of the firm. This idea has been widely challenged and rejected in other literature, as discussed more fully below, and is revisited when discussing the tax capitalisation models in the South African context.

Overall, the unique and original methodologies applied by CHHK have (according to the authors) supported the hypothesis that shareholder dividends taxes are fully capitalised into stock prices (the term "full tax capitalisation" means that valuations include a discount for all of the potential dividend tax payable by shareholders if all earnings are distributed, regardless of dividend payout patterns) .

3.3 Critical responses to CHHK and amended methodologies

Hanlon, Myers and Shevlin (2001), hereafter HMS, re-examine the claims and results of CHHK and provide a number of criticisms as to the assumptions, methods and conclusions thereof.

Before examining the intricacies of the CHHK methodology and results, HMS present an intuitive, theoretical argument against full dividend tax capitalisation. The first point in this argument is that earnings do not necessarily have to be distributed by way of taxable dividends: firms have other distribution options, such as stock repurchases and liquidation dividends[24]. Secondly, full tax capitalisation ignores the tax clientele effect, i.e. that investors may be low tax rate individuals, tax-exempt entities or have tax deduction privileges in respect of dividends received; HMS argue that if dividends are likely to be paid, trading will take place between high- and low-tax or tax-exempt investors so that the dividends are ultimately received by the latter (HMS quote research by Seida, 2001, Dhaliwal, Erickson and Tresevant, 1999 and Erickson and Mayhew, 1998 to support this point)[25].

HMS also raise an "omitted variable" problem in CHHKs' methodology (such variable being the persistence of abnormal earnings for the purposes of the RIVM model) that

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[24] This argument is clearly based on the prevailing tax law in the US jurisdiction under consideration and can be contrasted to the South African STC rules, in terms of which almost any distribution of profits is a taxable dividend.

[25] Guenther and Sansing (2006, 2007) examine the effect of tax-exempt investors on *inter alia* the dividend tax penalty. Both studies conclude that the price penalty relating to capitalised dividend taxes is not mitigated by the amount of shares held by tax-exempt investors on a firm basis, but is mitigated on a market basis by their presence.

could potentially bias their results. Briefly, HMS empirically show that earnings persistence is positively correlated with the RE/BV ratio; this would explain the movement of the earnings coefficient with the aforementioned ratio as observed by CHHK and has nothing to do with shareholder-level dividend taxes (in other words, RE/BV may be a proxy for the persistence of abnormal earnings and possibly firm growth).

Another inconsistency with the CHHK methodology, as pointed out by HMS, is the fact that their samples are apportioned based on the ratios of dividends to retained earnings and dividends to net income; this appears contrary to CHHKs' view that dividend policy is irrelevant in the context of tax capitalisation. HMS point out that if the irrelevance view was correct, CHHKs' results should be consistent across the sample partitions, which is not the case. Furthermore, the coefficients across the samples, which CHHK interpret as the applicable dividend tax rate, are (in some cases) much higher than any tax rate experienced in the jurisdictions under review.

To further refute CHHKs' assumption that dividend taxes on all internal earnings would affect prices, HMS quote the point made by Shackelford and Shevlin (2001) regarding firms with no history of dividend payout (in CHHKs' studies, such firms' stock prices are found to have a high rate of implicit dividend tax): it is highly unlikely that investors would assume that firms that have never paid dividends will eventually distribute all their retained earnings and would thus not include such high rates of tax in stock valuations.

HMS reformulate the model developed by CHHK, taking into account the aforementioned perceived shortcomings. They ultimately find that the impact of future dividend taxes on retained earnings is limited to the present value of such taxes, which (in most cases) is "very small". Furthermore, they find no evidence that contributed capital is valued higher than retained earnings.

HMS conclude with an alternative view of dividend tax capitalisation: because future earnings arising from both reinvested retained earnings and contributed capital are taxed in the same manner and at the same rates, they do not predict (and do not find) that retained earnings would be valued differently from contributed capital. They do, however, comment that in Ohlson's (1995) RIVM model book value and earnings are useful in valuing the firm in that they help to predict future earnings and dividends.

Dhaliwal, Erickson, Myers and Banyi, 2001 (hereafter DEMB) also examine the application of dividend tax capitalisation theory in the CHHK studies. Their study, which corroborated the contemporaneous research by HMS, both illustrates certain "internal inconsistencies" in the model developed by CHHK and also re-performs the empirical testing undertaken by CHHK (specifically the testing in HK and, to a lesser extent, that in HHK).

DEMB essentially focus on three perceived inconsistencies in the CHHK methodology, in that the model (which is, as pointed out by DEMB, mathematically correct) does not support several of the conclusions of CHHK. The first is CHHKs' assertion (supported by

DEMB quoting specific portions of HK, HHK and CK) that the timing of dividend payments does not affect the quantum of the discount that shareholders impute into stock prices due to future dividend taxes (also noted by HMS, as previously discussed). DEMB point out that this assertion is based on the assumption by CHHK that a shareholder's after-tax discount rate is equal to the firm's after-tax rate of return, an assumption that can only hold where the shareholder's tax rate is zero. This state is clearly inconsistent with the focus of CHHK, which deals with the effect of shareholder taxes on stock prices.

A second inconsistency in the CHHK model raised by DEMB also relates directly to the assumption that the timing of dividend payouts does not influence the equity discount from dividends. CHHK raise a so-called "cost of capital effect" in the literature, i.e. that dividend taxes decrease shareholder expected returns (and so increase valuations) in a manner that partially offsets the negative effect on valuations caused by the capitalised tax discount in stock prices. DEMB prove numerically (and algebraically) that the cost of capital benefit is actually capturing the benefit of deferring and reinvesting retained earnings, rather than distributing them as dividends (in other words, the benefit vanishes once all annual income is distributed). This point is also analysed in HMS, with the authors reaching the same conclusion as DEMB.

DEMB conclude that if the abovementioned errors are corrected, the dividend tax discount implied by CHHKs' model is very small or zero (consistent with the findings in HMS).

Like HMS, DEMBs' study also addresses the theoretical plausibility of dividend tax capitalisation. As in HMS, DEMB challenge CHHKs' (crucial) assumption that dividend taxes would be fully included in stock valuations because investors assume that a firm will eventually pay out all earnings as dividends. DEMB repeat HMSs' contention that firms have other means by which to distribute earnings to shareholders; it is thus more plausible that shareholders will also consider tax effects such as CGT, which would arise if shares that are "pregnant" with retained earnings are disposed of.

DEMB also echo the contentions from HMS that tax clientele and arbitrage effects would quickly "drive out" any discount from capitalised dividend taxes and quote much the same research as HMS in this regard[26].

More than half of DEMB involves an identical or similar re-performance of CHHKs empirical testing. Briefly, DEMBs' results are consistent with those of HMS and ultimately reject the contention that stock prices are discounted for future shareholder dividend taxes. Like HMS, DEMB find that controlling for certain omitted variables causes the results of HK to disappear, supporting HMSs' contention that the findings in CHHK are related to the relationship between earnings persistence and growth and not tax capitalisation.

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[26] In the interest of completeness, I note that DEMB also include an extensive section dealing with tax arbitrage, organisational form and tax capitalisation, ultimately rejecting the conclusions around tax capitalisation in CHHK. These sections are based on the tax treatment of different organisations in the US context and are thus not directly relevant to this study. Suffice it to say, the arguments presented are a compelling rebuttal to the concept of full tax capitalisation in the prices of US firms.

3.4 Rebuttals by Kemsley (2001) to HMS and DEMB

Following the studies published by HMS and DEMB, Kemsley (2001) published two papers (hereafter K2001a and K2001b respectively) addressing the criticisms raised by the two studies and providing point-by-point explanations for each. K2001a addresses HMS and DEMB directly, while K2001b offers further insight on the challenges raised by HMS and DEMB (the focus is on the former) and addresses certain queries that arose from other sources since the aforementioned studies were published.

This section of the study summarises the rebuttals that are relevant when examining tax capitalisation in the South African context[27].

K2001a first addresses the contention in HMS and DEMB that CHHKs' assumption that all earnings will be paid out as dividend is invalid. According to K2001a, the model in CHHK is robust to include zero, partial or full tax capitalisation if such is affected by the presence of non-taxable distributions of earnings and that the result of including such factors will simply serve to reduce the empirical results. CHHKs' assumption, whether valid or not, is simply necessary to "form a working model".

K2001b repeats the contentions in K2001a regarding the robustness of the CHHK models regarding full, partial and zero tax capitalisation but admits that "truth" may tend towards

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[27] A number of the issues raised by HMS and DEMB and rebutted by K2001a and K2001b relate to aspects of the CHHK model and assumptions relating thereto that are not relevant for the purposes of this study, in that they have no bearing on the development of a model in the South African context. For a full understanding of the problems raised by HMS/DEMB and the response by K2001a/K2001b, a review of the literature in its entirety is highly recommended.

partial, rather than full, tax capitalisation. This appears to be in agreement with the contentions by HMS and DEMB regarding the assumption that firms will distribute all earnings as dividends; whilst K2001a contends that this assumption is simply for the purposes of model development, this concession by K2001b appears to recognise that the assumption may have affected the empirical results supporting full tax capitalisation.

As to the HMS and CHHK contentions regarding controlling for earnings persistence and growth, K2001a notes that:

1. It is correct that the regression analyses in CHHK should control for earnings persistence; when this control is included by HMS, the negative coefficient results of CHHK are found to be robust. K2001a thus concludes that this supports, rather than rejects, the findings in CHHK. K2001b continues this theme, ultimately agreeing with the contentions of HMS that it is necessary to include a control for persistence of earnings in empirical testing.

2. The method used by DEMB to control for growth is a "well-known, severe violation" of the assumptions underpinning the RIVM model and that DEMBs' results in this regard are "meaningless". K2001b essentially repeats this view.

K2001a challenges DEMBs' argument that the capitalisation of dividend tax does not reduce the cost of retained earnings below the cost of external financing (the argument against CHHKs' "cost of capital effect" as set out above), stating that the converse to this argument is a "*…well established, time-honored result in economics…*" and is thus not challenged in practice.

K2001a concludes that the theory underlying the model in CHHK "withstands" the challenges raised by HMS and DEMB and that those studies in fact provide support for tax capitalisation. The author does, however, state that the question of tax capitalisation is "far from settled" and requires further empirical testing. These sentiments are essentially echoed in K2001b.

3.5 Other studies concerned with tax capitalisation

Li, Shackelford and Thomas, 2002 (hereafter LST) derive an alternative specification of the model used by CHHK to test dividend tax capitalisation. LST refer directly to CHHK and the responses by HMS and DEMB and note that:

> "*At this point, a consensus exists that HK identify a clever way to test dividend tax capitalisation. However, there is disagreement about what can be learned from the empirical tests, because the conflicting interpretations of the different results are not easily reconciled.*" (LST, page 2).

LST attempt to overcome the abovementioned difficulties by deriving an alternative regression analysis from those utilised in CHHK; the LST forecast utilises market forecasts of future cash flows, rather than historical earnings as utilised in CHHK and, according to the authors, has the advantage of being based on a more general valuation model (similar to the dividend discount model, upon which the RIVM is based).

LSTs' results do not support CHHKs' hypothesis that investors place a higher value on contributed capital than retained earnings. They state that this result may be unsurprising, as investors are unlikely to anticipate returns of capital when valuing shares based on predicted cash flows. Ultimately, the authors state that they cannot conclude on the extent to which dividend taxes are capitalised in stock prices.

3.6 The implied cost of capital approach

Another approach used to test for evidence of dividend tax capitalisation utilising the RIVM model involves the estimation of the "implied cost of capital" (hereafter the ICOC) of firms. Gebhart, Li and Swaminathan, 2001 (hereafter GLS) use a version of the RIVM model derived by Ohlson (1995) to derive a market-implied ICOC; essentially using actual market prices and all accounting measures in the RIVM excluding cost of equity to solve for the market's measure of cost of capital. The empirical testing is then performed on the measures of costs of equity so derived (or, more specifically, measures of the implied equity premium, as discussed more fully below).

Ahn, Cho, Ko and Yoo (2008) follow the methods used by GLS to calculate ICOC for a sample of firms in Korea using RIVM and test whether the measures of ICOC and implied equity premium (IEP, calculated as ICOC less the market risk-free rate) are more reliable measures of cost of equity than realised returns. Their methodology, modeled on similar work by Gode and Mohanren (2003), involves regressing IEP on various risk proxies and industry indicators, including controls for firm beta, firm size (measured by market capitalisation), ratio of book value to market value, ratio of book value of debt to

market capitalisation,   unsystematic risk and volatility (standard deviation) of income. The authors find empirical support for their primary hypothesis that ICOC is a superior measure of cost of equity.

Dhaliwal, Krull, Li and Moser, 2003 (hereafter DKLM) estimate measures of ICOC for a sample of firms and test the effect of dividend taxes on those measures. DKLM state that in testing for evidence of dividend tax capitalisation, the variable of interest is the required rate of return[28].

DKLM examine the following hypotheses by regressing the difference between their sample of estimated firm ICOC measures and the market risk-free rate (this difference is referred to as the "dividend tax premium") on measures of dividend yield, firm- and industry specific control factors and levels and types of institutional ownership:

1. That ICOC increases as dividend yield increases when the rate of dividend tax is higher than the rate of CGT (recall the previous discussion around the fact that in such a state of tax rates, distributions result in a lower rate of return for shareholders than the reinvestment of retained earnings and the realisation of shareholder profits via sales of shares).

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[28] Effectively, DKLMs' expectation about shareholders' expected return is the opposite of the "cost of capital effect" discussed in CHHK and challenged by HMS and DEMB. The hypothesis is that the anticipation of dividend tax increases expected/required return and thus cost of capital, with an associated decrease in stock price.

2. That the aforementioned relationship between ICOC and dividend yield increases as the magnitude of the dividend tax penalty (i.e. the difference between dividend tax rates and CGT) increases.

3. That the relationship between ICOC and dividend yield decreases as the aggregate level of institutional ownership increases.

4. That the effect of institutional owners on the dividend tax premium (the premium applied by investors due to the expected effect of future dividend taxes) varies with the tax treatment of each group of such institutional owners.

Based on the results of their empirical testing, DKLM conclude that shareholder-level dividend taxes cause ICOC measures to increase when the dividend tax penalty is high and that the former "varies predictably" with the latter. The authors find evidence that ownership by tax-exempt or tax-favoured institutions decreases measures of ICOC and the dividend tax premium and that ownership by non-taxed favoured institutions has no effect on these measures.

Sinha, Sunder and Swaminathan (2006) examine the impact of payout policy on cost of equity using ICOC for a sample of NASDAQ/NYSE firms. The authors examine the effects of both levels of dividend payout and the composition thereof (dividends versus stock repurchases). They find a weak positive correlation between levels of payout and cost of equity, but negative correlation between levels of dividend in the composition of payouts ("dividend intensity") and cost of equity (despite the fact that stock repurchases

are tax-favoured compared to dividends). The latter finding does not support the tax hypothesis tested and supported by DKLM.

Taken as a whole, the ICOC research appears to indicate that controls are necessary in order to separate out any potential dividend tax effect on cost of capital. The ICOC method is, however, a useful method to examine whether or not investors apply a penalty to measures of expected return due to future taxes on distribution.

3.7 The theory of firm cost of capital

Cost of capital is an important and well understood concept in corporate finance. Briefly, cost of capital is the minimum return that a firm must earn in order to achieve the required return of its investors (both shareholders and lenders).

Cost of capital is a function of a company's cost of equity (the cost incurred in funding shareholders' required rate of return on equity capital) and cost of debt (the company's average long-term cost of borrowing); by weighting each cost according to the contribution of each component to a company's overall capital structure, managers obtain the familiar measure of weighted average cost of capital, or "WACC". More formally, in the absence of taxes WACC may be expressed as follows:

$$WACC = \frac{r_d * D}{(D+E)} + \frac{r_e * E}{(D+E)}$$

Where:

WACC =   Weighted average cost of capital

r_d = Cost of debt[29]

r_e = Cost of equity

D = Market value of firm debt capital

E = Market value of firm equity capital[30]

Note that when calculating WACC, market values of debt and equity capital, rather than book values, should be used (per Correia, Flynn, Uliana and Wormald, 2007).

De Wet (2007) notes the importance of measuring WACC for the purposes of investment or project evaluation (a return that is lower than WACC will destroy firm value), the determination of optimal capital structure (the capital structure that maximises firm value), the valuation of a company's shares and in determining the Economic Value Added[TM] (EVA[TM]) measure of a company.

The weighting methodology used to calculate WACC is ultimately a function of a firm's debt:equity ratio, or D/E. Any cost (tax or otherwise) that is observed to affect either cost of debt or cost of equity will only affect a firm's WACC according to the relative weightings of debt and equity, measured by D/E.

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[29] As discussed later in this study, this should be the after-corporate tax cost of debt.

[30] In cases where a firm has issued preference shares, the cost of preference equity capital should be separated from the cost of ordinary equity (see for example De Wet (2007) and Gitman (2006) for the extended formula). Most preference shares have set payment profiles that are different from ordinary shares, hence the need to consider them separately for the purposes of calculating WACC.

3.8 Calculating the components of WACC – theory and South African practice

3.8.1 Cost of debt

In practice, firms should use the incremental after-tax cost of debt in order to determine WACC (Correia and Cramer, 2008)[31]. "After tax" refers to an adjustment for the tax deductibility of interest, colloquially referred to as the "tax shield" of interest; the tax in question is thus corporate tax and not STC or CGT.

This study examines the effect of STC and CGT on *inter alia* cost of capital and not the effect of corporate taxes. Neither of the aforementioned taxes have any effect on cost of debt; the measure itself is thus excluded from the scope of the study and is not discussed further.

3.8.2 Cost of equity

Cost of equity is much more complicated to estimate (from a managerial/firm point of view) than cost of debt, as managers are effectively attempting to model the return expected by investors.

Furthermore, although cost of equity can be equated to the expected return that investors require in order to invest capital into a firm, it is more accurate to state that the cost of capital is the cost that the company must incur in order to pay a return that satisfies

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[31] Correia and Cramer (ibid) report that based on a 2007/8 survey of South African managers, only 32% of the 28 respondents (constituting 15% of the top 150 companies on the JSE) correctly utilise the incremental after-tax interest rate for the purposes of determining WACC. The remaining respondents utilise a historical average measure, which the authors refer to as "puzzling and unexpected".

investors, retains existing capital and attracts new investment. Whilst the two measures (investor expected return and firm cost of equity) may appear to be the same, the imposition of STC in South Africa may result in the two measures diverging[32], as discussed earlier in this study.

There are a number of methods that firms may use to measure cost of equity based on the return expected by investors, including:

1. The risk premium method: this involves adding a firm-specific risk premium to the market risk-free rate).

2. The arbitrage pricing theory (APT) model: initiated by Ross (1976), this theory holds that expected return can be modeled as a linear function of various economic factors or market indices, with the sensitivity to each presented by a specific beta coefficient (Ross, ibid).

3. The dividend discount model (DDM): derived by Gordon (1959), this valuation model is familiar to all students of corporate finance. The model equates price to the expected one-period-ahead dividend to be paid by a firm, discounted by the different between cost of equity and the expected growth rate of the firm. By reformulating the DDM, cost of equity may be expressed as the sum of the firm dividend yield and the firm growth rate, another well-known expression in finance.

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[32] The amount of the divergence is driven by investor expectations regarding the mix of expected return. The need to pay dividends creates a liability for STC and consequently destroys book value and capital growth to the extent of the tax cost. If investors do not recognise the latter effect when calculating expected return (a key research question of this study), STC becomes an additional firm cost that is not matched by a decrease in expected return.

4. The capital asset pricing model (CAPM): An extremely well-known and widely used pricing model, the CAPM models the expected return of a stock as the risk-free rate plus a risk-weighted market premium (refer the expanded model and a discussion thereof below).

According to the results of a survey of firm managers by Correia and Cramer (2008, hereafter CC), CAPM is the preferred method used by financial managers of South African listed firms to calculate firm cost of equity by a large margin (approximately 74% of the 28 respondents)[33]. The authors note that their result corresponds with the result of the PricewaterhouseCoopers (PWC) Valuation Methodology Survey (2005), which surveys various South African investment banks and corporate finance practitioners to determine which valuation methods are used in practice. PWC (2005) report that the CAPM is the "only" method used in practice to determine firm cost of equity. The latest version of the survey reports that CAPM is still the primary methodology for this purpose (PWC, 2008).

3.8.3 Components of the CAPM

I examine below the components of the CAPM and the observed practices of South African managers relating to each component according to the CC and PWC surveys, in order to examine the potential effects of STC and CGT thereon. Given the propensity of managers to use the CAPM in order to calculate firm cost of equity, this analysis is limited to the CAPM.

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[33] The authors report that this result corresponds with the results of an earlier survey of US companies by Harvey and Graham (2001).

The CAPM is formally expressed as follows:

$$E(R) = r_f + \beta(r_m - r_f)$$

Where:

E(R)   =   The expected return of an asset (utilised by managers as a proxy for r_e, or cost of equity)

r_f =   The risk-free rate

r_m =   The expected return from the market

β   =   The beta of the firm's equity

The risk-free rate, as the term suggests, is the rate of return on a theoretically risk-free asset. The suggested instrument in this regard is usually a medium- to long-term government bond (or an average rate from a number of such instruments). CCs' results indicate that more than half of the respondent firms used the return from the short-term R153 government bond as a proxy for the risk-free rate for the purposes of calculating cost of equity using the CAPM (the R153 has a 2011 maturity date). The remainder utilised rates from medium- to long-term bonds. In contrast, PWC's (2005) survey sample of valuation and corporate finance experts reflected equal use of the R153 and R157 bonds in 2005 (at that time, the R153's maturity was further away than at the time of the CC survey). PWC (2008) reports that the "majority" of respondents utilised the rate on the R157[34].

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[34] Both CC and PWC (2008) find that respondents generally do not adjust r_f estimates for investor-level taxation. Note that this does not refer to adjustments for STC, but for investor-level income taxes on the expected risk-free return. This aspect is raised in the context of capital structure in Chapter 9 below.

The difference between the expected return from the market and the risk-free rate (the $(r_m - r_f)$ term) is known as the equity risk premium, or ERP. The ERP reflects the additional return required by investors in order to invest in the market portfolio over the risk-free asset (CC, 2008). CC note a number of ongoing debates and interpretations around the calculation of ERP for the purposes of the CAPM. Responses in CC regarding the range of ERP estimates generally corresponded with those of PWC (2005) and PWC (2008).

The beta coefficient is a measure of the sensitivity of a stock to movements in the market. It represents the risk that cannot be mitigated via a diversified portfolio; its inclusion in the CAPM is thus a representation of the compensation required by investors for this undiversifiable risk (PWC, 2008).

The beta of a stock is effectively the slope coefficient in a linear regression of firm rates of return against market returns. The formula for beta may be expressed as follows (see *inter alia* Tofallis, 2008):

$$\beta = \frac{\text{cov}(r_i, r_m)}{\sigma^2(r_m)}$$

Where:

$\text{cov}(r_i, r_m)$ =   Covariance between the respective returns on stock *i* and the market portfolio

$\sigma^2(r_m)$ =   Variance of the return on the market portfolio[35]

The covariance of r_i and r_m is a measure of their co-movement, or how these two variables move together. It is calculated as the product of the differences between r_i and r_m and their expected values. The variance is the square of the difference between an observed value for r_m and its expected value. The definitions of these two measures are important, as discussed more fully in the subsequent subsection.

3.9 Taxes and cost of capital in South Africa

Research in South Africa on the relationship between taxes and cost of capital is extremely limited. De Wet and Koch (2004) investigate the empirical user cost of capital with specific focus on the relationship between corporate taxes and the price elasticity of investment in South Africa. The authors conclude that corporate taxes play a "very important" role in determining the price of capital and that additional taxes such as STC are perceived in a different light than normal income tax, resulting in additional changes in investment behaviour.

De Wet (2007) investigates the effect of the introduction of STC and all legislative changes pertaining thereto on the cost of capital of South African firms by calculating an illustrative WACC after each change in the STC tax rate and reviewing literature relating to dividend payout ratios. The study finds evidence of a decrease in dividend payout

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[35] In calculating beta, the most common proxy for the market return was found to be the JSE All Share Index (ALSI), per CC. This finding was confirmed by PWC (2008).

ratios since the introduction of STC in 1993 and an opposite effect on WACC. The author notes that increased WACC destroys shareholder value and thus expresses a need to reconsider the STC regime.

3.10 The theory of capital structure

Capital structure refers to the mix of debt and equity that a company uses to fund its assets and operations. The subject of capital structure has attracted a plethora of research, both in South Africa and internationally. A specific branch of this research has focused on the idea of an optimal capital structure; that is, the mix of financing that optimises (maximises) the value of the firm (de Wet, 2006). Capital structure affects firm value because value is calculated by discounting expected future cash flows by the cost of capital (WACC); the mix of financing thus affects both the cash flows (as interest payments on debt financing are deducted from net profit and firm cash flow) and the WACC, as discussed in Section 3.7 above. The optimal capital structure is the mix of financing that results in the lowest WACC and thus the highest firm value (de Wet, ibid).

Schauten (2008) explores a number of topics around firm valuation, capital structure decisions and cost of capital. One chapter of Schauten's study provides an overview of the objectives and considerations relating to capital structure that have been proposed in academic literature; ultimately, capital structure is seen to be a multiple criteria decision problem.

Research around optimal capital structure has tended to concentrate on the mix of debt and equity (both ordinary and preference); however, more recently, researchers have

begun examining the effects of using internal equity (i.e. retained income). This is discussed more fully below.

3.11 Views on optimal capital structure

De Wet (ibid) discusses four current theories around optimal capital structure:

1. Trade-off theory

2. Pecking order theory

3. Signalling theory

4. Managerial opportunism theory

It is noted that the signaling and managerial opportunism theories are effectively branches of the pecking order theorem.

3.11.1   Trade-off theory

Trade-off theory finds its roots in the seminal work on capital structure by Modigliani and Miller (hereafter M-M) in 1958. M-M famously posited that in a world without taxes, firm value was unaffected by capital structure (put more succinctly, the value of a levered firm was equal to the value of an unlevered firm). In addition to the aforementioned lack of taxes, the authors made the following assumptions when they presented this theorem:

1. There are no transaction costs

2. There are no bankruptcy costs

3. Investors and firms borrow at the same rate

It is now trite to state that the M-M theorem is unrealistic given the assumptions necessary to support the model. However, it is generally agreed amongst financial researchers that the M-M propositions provide an excellent method of identifying which factors affect capital structure and firm value; that is, how the violation of the M-M assumptions affect capital structure in practice.

Taking the abovementioned assumptions into account, it is easy to see how the M-M proposition is supportable; if the investor can borrow in order to purchase the stock, there is no difference in his position as opposed to purchasing the stock and concurrently lending to the company.

When taking corporate taxes into account, however, the position is different. In subsequent revisions to their research, M-M introduced corporate taxes to their original model, specifically the "tax shield" available to firms in the form of tax-deductible interest payments to lenders.

The existence of the tax shield leads to the (incorrect) conclusion that an optimal capital structure involves financing the firm wholly with debt, in order to maximise the deduction available in respect of interest payments (de Wet, 2006). This version of the theorem included the assumptions noted above, most notably relating to bankruptcy

costs[36]. When taking into account the cost of financial distress, the use of debt in the search for an optimal capital structure involves a trade-off between the advantage of the increased tax shield from interest payments and the disadvantage of the increased costs of financial distress. In terms of the trade-off theory, the optimal level of debt (and thus the optimal capital structure) is thus the level of debt that balances the aforementioned factors.

Frank and Goyal (2007) discuss two types of trade-off theory: static trade-off theory applies when a firm takes into account the trade-off between the tax benefits of debt and the effect of bankruptcy costs for a single period only, whilst dynamic or "target adjustment" trade-off theory refers to a situation where a firm attempts to apply a target level of debt over time.

More recently, researchers such as Lewellen and Lewellen (2006) have attempted to extend the trade-off model by introducing internal equity (retained earnings) as a third source of financing. Their rationale and methodology are key to this study and are discussed more fully in Chapter 9 below.

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[36] The amended theorem (i.e. including corporate taxes) does away with the notion that an investor can, by borrowing, match the capital structure of the unlevered firm. This happens because the investor cannot deduct interest on borrowings in his own hands. I note for completeness that this is generally true in the case of South African tax; it is trite that interest is only deductible if it incurred in the production of "income" as defined in section 1 of the ITA. Unless the investor is a trader in shares, neither the dividends nor capital gains earned from shares are "income" by definition and any interest incurred by such investor in acquiring such shares would consequently not be deductible for income tax purposes.

3.11.2   Pecking order theory

Pecking order theory was originated by Myers and Majluf (1984) and has, over time, emerged as a strong competitor to the trade-off theory (de Wet, 2006). Pecking order postulates that managers attempt to raise finance in a certain order: first from internal equity/retained earnings, then from debt and finally from issues of external equity once raising further debt ceases to be feasible. Frank and Goyal (2007) note that the aforementioned order is based on the "adverse selection" model (see discussion on signaling theory below), but that in reality the order of financing depends on a number of factors such as agency costs and taxes.

A review of the literature reveals mixed support for pecking order theory: de Wet (2006) quotes research support for the theorem as an explanation of capital structure (concurrently with trade-off theory) from Pinegar and Wilbricht (1989), Ghosh and Cai (1999) and Cai and Ghosh (2003). Support is also found in Fama and French (2002) and Myers and Shyam-Sunder (1999). Arguments against the theory are presented by *inter alia* Frank and Goyal (2007)[37].

In the context of optimal capital structure, it is submitted that pecking order theory can be considered concurrently with the trade-off theory if managers apply an order to sources of finance that correspond with the relative costs of each source of capital.

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[37] The pecking order literature was not reviewed in derail for the purposes of this study. For a full discussion and citations, refer de Wet (2006).

3.11.3 Signaling theory

Signaling theory, or adverse selection, is a corollary of pecking order theory. It holds that managers, who have better information about a firm and its investment opportunities than investors, will attempt to communicate that information to investors via a "signal" such as an issue of external equity or a stock repurchase. The theory is that where investors, for example, overvalue a firm due to a lack of information, the managers of that firm will issue (sell) equity in order to signal the overvaluation (in the case of an undervalued firm, managers will do the opposite, i.e. repurchase some of the company's shares). Managers may also use signaling to communicate incorrect or misleading information, in order to manipulate investor behaviour and stock prices.

3.11.4 Managerial opportunism

The managerial opportunism hypothesis is another offshoot of the pecking order theorem that states that managers make capital structure decisions based on personal preferences. De Wet (2006) states that this hypothesis is based on the idea that managers will attempt to issue shares when stock prices are high and raise debt when stock prices are low (see the discussion regarding signaling theory above). Frank and Goyal (2007) add to this the old idea that managers prefer internal to external financing (see also Butters, 1949 in this regard) and refer to the agency models developed by Jensen and Meckling (1976).

Frank and Goyal note the theoretical gaps between the managerial opportunism/agency hypothesis and standard trade-off theory, and note that dynamic models of both theories could help to explain the divergences between these models.

Recently, a branch of the international literature has focused on the effect of taxes on capital structure, dividend payout levels and other aspects of corporate finance. Graham (2003) reviews tax research related to numerous areas, including *inter alia* domestic and multinational capital structure and dividend payout policy. The author reviews the theoretical arguments explaining how taxes can affect corporate decision-making and firm value for each of the aforementioned topics and summarises the related empirical evidence and a discussion of unresolved issues. A key unresolved issue noted is whether corporate actions are affected by investor-level taxes.

3.12 Research on capital structure in South Africa

De Wet (2006) applies a standard trade-off model (incorporating the benefit of tax shields versus the costs of financial distress) in order to determine the optimal capital structure of three listed South African companies. He finds that "significant amounts" of value can be unlocked by moving towards an optimal level of debt in capital structure, but notes that it may be preferable to operate within an acceptable interval of debt rather to attempt to obtain the "absolute optimum" capital structure (this effectively describes the dynamic trade-off model mentioned by Frank and Goyal, as noted above). De Wet's trade off model did not consider the effect of STC, the impact of utilising internal versus external financing, nor the potential impact of shareholder level CGT.

De Wet and Dhanraj (2007) use Mr. Price (a listed South African company) as an example to illustrate how value may be unlocked by moving towards an optimal capital structure, also referencing the four established theories of capital structure. Once again, tax effects are not addressed by the authors.

Wu and Negash (2002) examine which of the trade-off and pecking order theorems best explain the capital structure policy followed by managers of a sample of South African firms. They find that South African managers appear to adopt target adjustment (dynamic trade-off) behaviour in the long-term, but that pecking order behaviour appeared to be applied in the face of short-term earnings and cash-flow shocks. Their study shows that the costs and delays of equity financing may be the main factors driving the short-term pecking order behaviour (i.e. the divergence from long-term target adjustment behaviour). Once again, the study did not address the impact of STC or CGT on managers' capital structure behaviour.

Abor and Biekpe (2006) empirically examine the relationship between agency factors (i.e. factors driving the so-called agency problem, where managers behave opportunistically to the detriment of shareholders) and capital structure in a sample of JSE-listed small to medium-sized entities. They find that firms with one major institutional shareholder are able to monitor manager behaviour more effectively than those with more than one such shareholder, which could result in capital structure shifting more towards debt in order to unlock shareholder value. The authors also find that firms with high growth potential typically have higher gearing ratios than those with lower growth potential.

Correia and Cramer (2008), as discussed above, finds that a majority of the respondents to their survey apply a target D/E ratio for the purposes of capital budgeting decisions. Furthermore, a significant number of respondents utilise the target ratio for the purposes of calculating WACC. These results appear consistent with the findings of Wu and

Negash (ibid), in that South African managers have a target capital structure over time and evaluate investments accordingly.

3.13 An extension of trade-off theory and the effect of taxes

The consensus of the South African literature reviewed for the purposes of this study appears to be that trade-off theory is the predominant driver of long-term capital structure amongst South African firms. None of the literature, however, deals with the impact of taxes on corporate cost of capital or an evaluation of what this impact could mean for optimal capital structure. The trade-off of tax shields on debt and the effect of bankruptcy costs is a narrow approach to calculating an optimal cost of capital, as it is limited to an assessment of an optimal level of debt and ignores the costs of other forms of financing.

Lewellen and Lewellen (2006, hereafter LL) argue that standard trade-off theory is "fundamentally incomplete" because it fails to account for internal equity as a third source of financing that is potentially cheaper than both debt and external equity. The authors assert that a firm's cost of capital depends on the cost of all three sources (debt, internal equity and external equity) and thus so does optimal capital structure.

LL's hypothesis focuses on the tax costs of internal versus external equity. The central thesis is that because cash distributions (dividends and repurchases) have a tax cost in the hands of shareholders, the retention of funds for internal financing has a tax-deferral effect that may lower the cost of using such internal funding relative to other sources of finance.

Essentially, LL attempt to merge the payout and capital structure literature; the authors state that the former concentrates on the benefits of retained earnings in deferring personal taxes but ignores the double-tax effect of CGT, whilst the latter focuses on the double-taxation aspect but ignores the deferral effect. LL combine the two tax effects to examine the overall tax cost or benefit of utilising internal equity as a source of funding for firm investments.

LL note the relation of their study to studies of dynamic trade-off theory, which typically ignores the differences between internal and external equity and focuses on the difference between debt and equity as a whole[38].

LL's methodology involves the development of first a one-period and then a two-period valuation model (the latter may be extended to infinity) that incorporate realistic assumptions concerning the tax effects of dividends, capital gains and interest in the hands of shareholders. In order to concentrate on the effects of financing decisions (as opposed to a holistic model of optimal capital structure), the non-tax assumptions of M-M are retained.

The exact propositions tested and results obtained by LL are not strictly relevant at this point in the study, as they are based on aspects of the US tax code[39] The methodology,

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[38] LL note an exception in the case of Hennessy and Whitehead (2005), wherein the authors find that substituting debt for external equity has different tax consequences than substituting debt for internal equity.

[39] The specific methodology does become relevant when considering the effect of STC on cost of capital and capital structure. This is discussed in Chapter 8 below.

however, is sound and is thus adapted to a South African purpose in Chapter 8 of this study).

The conclusions of LL are as follows:

1. Internal equity is less costly than external equity, due to the deferral of shareholder taxes (when cost is expressed as a rate of shareholder return).

2. Capital structure is a function of internal cash flows

3. Optimal leverage is variable over time and firms may have less incentive to borrow than is suggested by traditional trade-off theory

4. The tax cost of retained earnings depends critically on the rate of shareholder-level CGT, even when a firm declares dividends.

It is submitted that the methodology employed by LL is a ground-breaking approach to evaluating capital structure and cost of capital, particularly in the unique context of the South African STC. The implication is that tax costs at both the firm and shareholder level must be taken into account in calculating an optimal cost of capital and thus an optimal capital structure. In light of the abovementioned research dealing with the capital structure behaviour of South African managers, it is highly unlikely that this is currently the case.

Another key point arising from LL that finds application in the South African context is the attempt to marry the parallel research around capital structure and firm payout policy.

The relevance to the domestic case is obvious; STC implies that payout policy has a direct tax effect at the firm level which affects the trade-off between distributions to shareholders and the retention of internal equity for financing purposes.

3.14 Payout and dividend taxes

3.14.1 Introduction

The dividend payout decision of a firm is often considered separately from capital structure by researchers. However, the policy of paying out or retaining earnings is fundamental to a discussion of optimal capital structure (as discussed later in this study). It is thus important to understand how and why firms declare dividends.

Wolmarans (2003) describes the "dividend decision" (the level of distributions to shareholders) as "*...one of the most important decisions to be taken from a strategic point of view*", due to its effect on the level of retained earnings (equity) and thus capital structure.

The importance of dividends to managers and investors, as well as the effect of dividends on shareholder wealth, has been the subject of a significant body of research in South Africa. Wolmarans (ibid) reviews this literature. In the context of this study, the literature so reviewed applies to research periods prior to the introduction of STC and is thus not relevant for its purposes. It is, however, important to understand the characteristics of payout policy in South Africa.

I have referred above to the dividend discount model proposed by Gordon (1959). To reiterate, this model, which is the basis for the RIVM, is expressed formally as:

$$P_0 = \frac{D_1}{k - g}$$

Where:

P$_0$ =   Share price at time 0

D$_1$ =   The expected dividend at time 1

k   =   The expected return/cost of equity

g   =   The growth rate (often considered to be the product of the retention ratio

and ROE)

Wolmarans (ibid) points out that dividend policy has two offsetting effects on stock prices under the dividend discount model: an increased dividend has both a positive effect on the value of the stock (via an increase in the numerator of the model) and a concurrent negative effect (via a decreased retention ratio and thus decreased growth rate). Put another way, the immediate cash flow benefit of a firm's dividend payment to an investor at a point in time decreases the capital growth of a stock in the hands of that investor (this underpins the concept of the tax benefit of dividends in the South African context, as discussed in Chapter 5). Brigham and Ehrhardt (2002) state that optimum dividend policy thus finds a balance between these two effects.

Modigliani and Miller (1961) famously argued that dividend policy is irrelevant to firm value, based on the premise that one unit of gain via dividend is matched by one unit of loss in capital growth. Wolmarans (2003) notes that this argument was challenged by

Gordon (ibid) and Lintner (1962); these authors hypothesised a direct relationship between dividends and firm value (as in the DDM).

Lintner (1956) went on to publish an often-referenced set of facts about corporate dividend policy, based on a series of interviews with firm managers. The four facts, as listed and discussed by *inter alia* Wolmarans (2003) and Firer, Gilbert and Maytham (2008) are as follows:

1. Firms have long-term dividend payout ratios.

2. Managers focus on changes in dividends, rather than on absolute levels thereof.

3. Changes in dividends follow changes in long-term (sustainable) earnings; furthermore, dividend changes may be smoothed or lagged in order to allow managers to assess the sustainability of increases in earnings.

4. Managers are reluctant to make short-term changes to dividends that may need to be reversed, particularly an increase that may have to be rescinded.

Lintner interpreted the facts listed above into a formal model. The model implies that the difference between the current dividend and the dividend from one period ahead is a function of the current dividend, the target dividend rate of the firm and an "adjustment rate" chosen by management in order to achieve the smoothing or lag in dividend increases noted above[40].

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[40] Refer Wolmarans (2006) for a formal derivation of the model.

Wolmarans investigates whether or not Lintner's model explains the payout behaviour of South African managers, specifically in comparison to a "percentage model" (the author explains that the percentage model assumes that the firm payout ratio is an average of the historical payouts of the firm, rather than the adjusted target ratio suggested by Lintner). Wolmarans finds that, for the sample of 97 listed South African firms selected, the two models are almost equally effective in explaining payout behaviour. Furthermore, the goodness-of-fit tests for the two models across industries yield results that are, according to the author, somewhat counter-intuitive[41]. Wolmarans ultimately concludes that the Lintner model may not be a good explainer of dividend policy in South Africa, but cautions that the restricted sample size (based on past payout behaviour) may affect the results of the study.

Firer, Gilbert and Maytham (2008), hereafter FGM, examine the view of South African managers around dividend policy and the use of stock repurchases in South Africa by adapting and applying a survey first used in the US by Brav, Graham, Harvey and Michaely (2005). FGM admit that the low response rate to their survey (46 respondents) was "worrying" from a representation point of view but contend, nonetheless, that their results are a good indication of South African managers' view of distributions to shareholders.

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[41] For example, a cyclical industry such as construction appears to fit Lintner's model, where it is expected that the percentage model should apply and the more stable and sustainable food sector favours the percentage model, where Lintner's model should apply.

FGM mention the main theories explaining the persistence of dividend declarations despite the abovementioned "dividend irrelevancy" theory put forward by Modigliani and Miller (1961):

1. Signaling theory – dividends are used by management as a mechanism to convey (non-public) information about the firm to investors (similar to the concept of signaling theory as it pertains to capital structure, as discussed earlier). For example, managers may pay a large dividend to signal strong earnings persistence or good future investment prospects. As previously noted, these signals may not always reflect the true position of the firm, i.e. management may employ these signals to convey misleading information.

2. Agency theory – dividends may be used to impose "discipline" on managers in order to combat agency conflicts between owners and managers. The payment of dividends deprives the firm of internal equity that could be used to fund future projects; managers would thus have to approach owners, new equity investors or lenders to fund such projects, allowing those stakeholders to better monitor the use of the investment funds.

3. Taxes – FGM quote research by Grullon and Michaely (2002) that suggests that the use of dividends and/or repurchases may be driven by the tax treatment of such distributions in the hands of shareholders. Interestingly, FGM discuss the evolution of STC and CGT in South Africa, but erroneously conclude that a favourable tax treatment for share repurchases may explain the prevalence thereof since such transactions became legally permissible in South Africa in 1999. This conclusion

appears to misinterpret the tax law around repurchases; to recap, any repurchase consideration that is funded out of retained earnings is treated as a dividend for tax purposes and is subject to STC. Shareholders and firms should thus be indifferent to the form of distributions (i.e. dividend versus repurchase) unless a repurchase is funded out of share capital or share premium. This point appears to be ignored by FGM[42]. In reality, the analysis is more complicated than the international case where the different tax treatments of dividends and repurchases appear to be clearly delineated.

A majority of the respondents in FGM stated *inter alia* that dividends are viewed as a signaling method to supply investors with information about the company, that dividends are important in terms of firm valuation and that there are negative consequences to cutting dividends. More than half of respondents stated that they would rather raise new funds to fund investments than cut dividend payouts.

Share repurchases were also considered a good signaling method by 83% of respondents in FGM. FGM investigated whether or not dividends and repurchases were seen as substitutes or complements; overall, FGM report that South African managers appear to favour dividends over repurchases as a method of distributing cash to shareholders but that the two distribution tools are complementary.

FGM report that most respondents listed the following factors as affecting their dividend decision (percentage of positive responses in parentheses, as set out in Table 3 of FGM):

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[42] This point is subject to the prevailing tax law over the period reviewed by FGM.

1. Historical levels of dividends (84%)

2. Consideration of the change or growth in dividends per share (71%)

3. A conscious avoiding of reductions in dividends per share (68%)

4. Maintenance of a smooth dividend level (66%)

5. A reluctance to make dividend changes that would require reversal (55%)

Furthermore, the following factors were listed by more than half of FGMs' respondents as being factors affecting the dividend decision (percentage of positive responses in parentheses, as set out in Table 4 of FGM):

1. A sustainable change in earnings (87%)

2. The availability of good investment opportunities (87%)

3. Stability of future earnings (84%)

4. Consistency with historic dividend policy (76%)

5. Merger and acquisition strategy (74%)

6. Availability of excess cash (53%)

7. Influence of institutional shareholders (53%)

The results in FGM appear to support the (theoretical) application of Lintner's model and facts in South Africa to a greater degree than was empirically observed by Wolmarans (2006). Over half of FGMs' respondents admitted to targeting a payout ratio, with dividends as a percentage of earnings seemingly the most popular targeting method employed (refer Figure 4 in FGM).

FGM review their survey results in the context of the theories around modern dividend policy, as set out above. On the subject of taxes, the authors report that very few respondents listed STC as a driver of dividend policy and most respondents strongly disagreed that investor CGT was a driver of stock repurchases. FGM conclude here by saying that "...*Arguably taxes don't rank uppermost in the minds of management when they contemplate dividend policy*".

FGM also note that respondents did not appear to be influenced by a need to attract institutional shareholders in setting dividend and repurchase policies. FGM fail to note that this result should be expected, as the South African STC applies at the firm level and thus has no clientele effect (the dividends subject to STC are exempt in the hands of institutional and non-institutional investors alike). It may be true that institutional investors would target firms with steady and predictable dividend flows, but there is no tax clientele effect as is the case in foreign jurisdictions. The issue of institutional investors and a clientele effect is raised due to its importance under the proposed SDT regime, as more fully discussed in Chapter 11 below. A clientele effect is only observed when CGT is considered with STC (see Chapter 5).

FGMs' observations around management's attitude to STC and CGT are important in the context of this study. Although it is unsurprising that the tax treatment of dividends and repurchases is not an important driver of dividend policy (based on the old adage that the fiscal tail should not wag the commercial dog), it can be inferred that management does not integrate the effects of tax into capital budgeting and structure considerations.

4 The residual income valuation model (RIVM)

4.1 Introduction to the RIVM

Due to its centrality in the methodologies applied to test for tax capitalisation, the RIVM is a fundamental model in the context of this study. This section discusses the theoretical concepts underlying the model and presents a review of the significant literature dealing with the derivation and application of the RIVM in practice. I derive an amended RIVM (including taxes) for the South African case in Section 4.3 below.

The RIVM is an example of so-called "deduced valuation" models, a type of model that utilises observable accounting data for stock valuation purposes. This type of valuation model is considered superior to models that are based on a statistical relationship between accounting data and stock prices (for example, price/earnings valuation models) because the latter require that stock prices fully reflect all available firm information, i.e. the market displays strong or semi-strong efficiency (Skogsvik, 2002).

The RIVM expresses firm value as a function of book value and residual or "abnormal" profit (i.e. net profit after tax less a charge for the cost of equity capital). The model makes conceptual sense – essentially, firm value is the aggregate of book value (invested capital) and the present value of economic profits, or goodwill.

A fundamental assumption underlying the RIVM is that the so-called "clean surplus relation" of accounting (or "CSR") applies (Ohlson, 1995). CSR implies that changes in

book value are explained only by net income, dividends and new issues or repurchase of capital.

SIMM (2007) mention the following advantages of the RIVM as a valuation tool:

1. It utilises readily available accounting data.

2. It can be applied to any firm, regardless of whether or not dividends are paid (this may be contrasted with, for example, the dividend discount model, which requires a dividend stream).

3. It can be applied even when cash flows are unpredictable.

4. It focuses on economic value.

5. A terminal value may be estimated and is typically a relatively small portion of overall value.

The use of the model has certain disadvantages: the use of accounting numbers means that the model is exposed to accounting manipulations and distortions; certain adjustments may thus be required. Furthermore, the assumption that CSR holds may be violated in practice (for example, where events are recognised in the balance sheet only and not through the income statement or equity)[43] and would generally depend on the accounting rules employed by a firm in a particular jurisdiction (SIMM, ibid). These

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[43] This is becoming more and more unlikely, given the increasing focus of International Accounting Standards on income statement based accounting.

problems may be overcome via adjustments to the cash flow forecasts utilised in the model.

Previous research has hypothesised that the information used to value a firm using the RIVM (or similar models such as the well known Economic Value Added™ or EVA™ model) is the same as that required for free cash-flow based valuation models and thus yields the same results (for a proof of this hypothesis and a discussion of the literature around accounting versus cash-flow based valuation models, refer Fernández, 2002). The attractiveness of accounting-based models such as the RIVM lies in the consistent accounting rules that are applied across firms to calculate earnings and book values (Baur, Habib and Volkart, 2003) and not necessarily in a perceived or actual superiority of the RIVM for valuation purposes. The similarities between cash-flow based valuation methods and the RIVM are important, because they imply that the principles used in applying methods such as the dividend discount model may be applied to analyses involving the RIVM (a key example would be the measurement of shareholder expected return, as explored in Chapter 5 below).

4.2 Formal derivation of the RIVM

The following derivation of the RIVM model is referenced from Skogsvik, 2002 (notations differ slightly from the referenced text).

The starting point for the RIVM is the net dividend paid by the firm, i.e. total distributions less any fresh injection of capital. Price is expressed as the aggregate present

value of periodic net dividends in perpetuity, discounted at the shareholder's required return. This may be formally expressed as:

$$P_0 = \sum_{t=1}^{\infty} \frac{D_t - C_t}{(1+r_e)^t} \qquad (1)$$

Where:

P_0 = Share price at time 0

D_t = Expected dividend paid to shareholders at time t

C_t = Expected new issue of stock capital at time t (less returns of capital)

r_e = Shareholder expected/required return

Equation 1 describes a firm valuation in perpetuity; Skogsvik (ibid) notes that for forecasting reasons, analysts will typically insert a "terminal value" term at a point in time. Equation 1 is thus rewritten as:

$$P_0 = \sum_{t=1}^{T} \frac{D_t - C_t}{(1+r_e)^t} + \frac{V_T}{(1+r_e)^T} \qquad (2)$$

Where all variables are as defined above and V_T is the expected value of owner's equity (book value of capital) at time T (the terminal point).

There are a number of methods for calculating the terminal value; Dhaliwal, Krull, Li and Moser (2003) and Gebhardt, Lee and Swaminathan (2001) favour a method whereby a terminal cash flow is valued into perpetuity at the required rate of return and then present valued using the discount factor in equation (2). As noted above, the terminal value is a relatively small component of overall value in the RIVM, thus limiting potential errors arising from forecasting the "perpetual" cash flow.

At this point in the derivation, a specification of the CSR becomes relevant. Where the CSR holds, the following relationship is assumed:

$$B_t = B_{t-1} + NI_t - D_t + C_t \tag{3}$$

Where:

B_t =   Book value of equity at time t

NI_t =   Net income after tax for the period ended at time t

D_t =   Dividends paid to shareholders at time t

C_t =   Expected new issue of stock capital at time t (less returns of capital)

Solving for the dividend cash flow ($Dt - Ct$), equation (3) is expressed as:

$$D_t - C_t = B_{t-1} + NI_t - B_t \tag{4}$$

which may be re-written as:

$$D_t - C_t = B_{t-1}*ROE_t - (B_t - B_{t-1}) \tag{5}$$

Where ROE_t is NI_t/B_{t-1}, the return on equity measured at time t.

By decomposing *ROE* (total return) in equation (5) into expected shareholder return (r_e) and abnormal or residual return ($ROE - r_e$) and substituting the result into equation (2), the following model is derived:

$$P_0 = B_0 + \sum_{t=1}^{T} \frac{B_{t-1}(ROE_t - r_e)}{(1+r_e)^t} + \frac{B_T (V_T / B_T - 1)}{(1+r_e)^T} \tag{6}$$

Equation (6) is the formal specification of the RIVM, which equates stock price to the sum of accounting book value at the time that the valuation is performed, the present value of expected residual income or abnormal profits (that is, the return that exceeds the shareholder's expected or required return or $ROE_t - r_e$) to time T and the present value of the expected goodwill (or badwill) after time T (the terminal value term).

Despite the use of relatively easily available accounting data for valuation purposes, the RIVM is not without its problems. The user is still required to predict a growth rate (growth rate prediction has long been a criticism of the dividend discount model) for book value and net income (ROE follows) and must still calculate an appropriate required rate of return (cost of equity). The predictions needed for the terminal value of residual income were mentioned above. The usefulness of the RIVM is thus directly linked to how accurate these predictions are.

Notwithstanding any prediction problems and as noted elsewhere, the RIVM is a very useful tool for the purposes of formulating models to test (for example) dividend tax capitalisation (as in CHHK and related literature) because it maps the relationship between price, equity and profit variables without the need to predict actual dividend flows[44]. It is a relatively simple matter to fit an RIVM-based model to a regression model, which makes it possible to test the relationship between the model components.

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[44] As will be seen in a later section of this study, in the South African case it is actually imperative to consider dividend flows when testing how taxes affect prices. South Africa is a special case given the unique nature of STC; however, the criticism around the assumption in CHHK that a dividend tax discount would be applied to the entire net income and retained earnings of a firm (see Chapter 3 above) appears to imply that dividend payout ratios should be incorporated into the RIVM to test dividend tax capitalisation in all cases.

4.3 Deriving a RIVM model with STC

As discussed in Chapter 3 above, the methodology favoured in the international tax literature to test for the capitalisation of dividend taxes involves adapting the basic form of the RIVM model to incorporate shareholder-level dividend taxes and formulating a regression analysis based on the relationship between price (as the dependent variable) and the independent components of the model. CHHK incorporate a dividend tax discount term (*1-t*) into the components of the RIVM that are taxable on distribution (i.e. net income and retained earnings) and separate out the components that are not taxable on distribution. The re-examinations of CHHKs' model and the results observed by HMS and DEMB involve the same basic methodology. LST reformulate the CHHK model and amend the empirical testing methodology by focusing on different pre- and post-tax measures of cash flows and cost of equity in order to separate out any theoretical tax effect. The common factor throughout the international research remains some version of the RIVM that incorporates the effect of taxes on cash flows.

In the spirit of the international research, I formulate a RIVM model for the South African case that incorporates the unique effect of STC on firm value. I submit that CGT should not be incorporated into the RIVM model, despite the introduction thereof into models in the international context (refer for example HHK, 2001). CGT is a result of the disposal of the stock; the tax arises as a result of the value of the stock relative to its tax cost and is thus not a component of value (from an investor's point of view). Including CGT in a RIVM model of stock value would be iterative and incorrect.

The starting point for the South African model is equation (2) on page 95 above. The model development procedure described above involves reformulating equation (2) based on the CSR; in the South African case, the first departure from the basic model is an adjusted form of the CSR specified in equation (3) on page 95 above, which includes the STC cost of dividends declared in the model of book value:

$$B_t = B_{t-1} + NI_t - D_t(1+t_{STC}) + C_t \qquad (7)$$

Where all variables are as described in equation (3) and t_{STC} represents the statutory rate of STC. Equation (7) shows the effect of STC as a cost of capital that decreases retained earnings by more than the profit appropriated via the dividend distribution.

In a similar fashion to equation (5), the adjusted CSR relationship may be re-written as:

$$D_t - C_t = B_{t-1}*ROE_t - (B_t - B_{t-1}) - D_t*t_{STC} \qquad (8)$$

Where all variables are as described above. The final term on the right-hand side represents the STC cost as a standalone factor. Recognising that the dividend D_t is equal to NI_t*p (where p is the dividend payout ratio) and thus $B_{t-1}*ROE_t*p$, the decomposition of ROE in equation (8) into expected shareholder return (r_e) and abnormal/residual return ($ROE - r_e$) (as performed above) yields the following with simplification:

$$P_0 = B_0 + \sum_{t=1}^{T} \frac{B_{t-1}[ROE_t(1-p*t_{STC})-r_e]}{(1+r_e)^t} + \frac{B_T(V_T/B_T-1)}{(1+r_e)^T} \qquad (9)$$

Equation (9) represents the RIVM model incorporating STC. The middle cash flow term implies the residual income is not merely the difference between actual and expected return, but the difference between the actual return adjusted for the STC cost of generating the dividend portion of shareholder return and the actual return; put another way, the adjustment is to recognise the difference between the return required by investors and the cost to the firm of delivering that return (the true cost of equity). As mentioned above, the dividend payout ratio and STC rate are fundamental factors in the South African RIVM model, and the value of the stock incorporating STC is thus not independent of payout as contended by CHHK[45].

The factor V_T in the final term representing the terminal value at time T is necessary when the model is used for a finite valuation period (the model of value to infinity would exclude the last term and would aggregate the middle cash flow term to infinity) and would also require adjustment for STC costs; this is discussed further in Chapter 6 below.

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[45] As mentioned above, this contention was criticised by DEMB.

5 The relationship between STC, CGT and investors' expected return

A central issue in the international literature dealing with the capitalisation of dividend taxes is the effect of such taxes on investor required return and thus firm cost of capital. Indeed, the so-called "cost of capital effect" is a fundamental component of the methodology underlying the studies of dividend tax capitalisation that apply the implied cost of capital approach, which posit that capitalisation of investor-level dividend taxes have a positive (increasing) effect on cost of capital, thus making the *ex ante* measures of implied equity premium the dependent variable of the regression analyses in such studies (refer *inter alia* Dhaliwal, Krull, Li and Moser (2003) and Gebhardt, Lee and Swaminathan (2001)). As mentioned in Chapter 3 above, one of the challenges to the CHHK literature by DEMB involved proving that the cost of capital effect in HK (1999) was the result of a tax deferral effect and not due to the capitalisation of dividend taxes as inferred by CHHK. The cost of capital effect is thus an important consideration in the South African context and requires consideration when testing how investors treat STC when valuing shares (it has a direct bearing on the hypotheses tested in Chapter 6 below).

Although the observations of the international literature are useful guidelines, in the context of this study it is necessary to set them aside and return to first principles in order to establish a South African cost of capital effect. The reason for this is the fundamental difference between STC and the dividend taxes considered in the aforementioned literature; the theoretical effects of investor-level taxes are different from those expected in the unique firm-level STC environment.

The expected return from an investment in shares is composed of two elements: the dividend distributed in respect of such shares and the capital growth thereon. The former is measured by the dividend yield, or the expected one-period-ahead dividend expressed as a percentage of today's price. The latter is expressed as the difference between the expected one-period-ahead price and today's price as a percentage of today's price (the well-known "holding period return" measure). As previously noted, this combination of dividend yield and capital growth may be derived from the dividend discount model[46]:

If: $$P_0 = \frac{D_1}{k - g}$$

Then: $$k = \frac{D_1}{P_0} + g$$

As noted above, growth (g) is typically estimated as ROE multiplied by the plowback or reinvestment rate (one minus the dividend payout ratio). It is obvious that the combination of dividends and capital growth in the model is equal to ROE, or net income after tax divided by shareholder equity (because the net income is the aggregate cash flow that is distributed and reinvested). In the absence of taxes or other costs, Modigliani and Miller (1961) are correct in stating that shareholders are ambivalent to how return is realised (ignoring factors such as the signaling effects of dividends or cash flow hunger by investors that are normally used to explain why dividends are distributed in practice). In order to introduce South African taxes to the expected return model, I refer to the tax treatment of the components of return as explained in Chapter 2 above:

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[46] For the purposes of this study, transaction costs are ignored.

1. Dividends from local companies are generally tax-exempt in the hands of shareholders (this includes share repurchases funded out of retained earnings, except in the case of share dealers) regardless of the nature of the shareholder

2. Capital gains arising from sales to third parties and from returns of capital ("capital distributions" as defined in paragraph 74 of the Eighth Schedule to the ITA) are taxed based on the difference between the "proceeds" arising for CGT purposes and the CGT "base cost" of the stock (or part thereof, in the case of capital distributions).

The exempt nature of local dividends for tax purposes means that no tax adjustment is made to the first term of the expected return model; shareholders do not expect to pay further taxes on dividends from local companies after STC has been paid by the company and would thus not adjust the dividend yield in calculating expected return. There are, however, two distinct tax effects on the capital growth term:

1. STC payable by companies on dividends declared reduces the amount of retained earnings available for reinvestment by more than the amount of the dividend, and

2. CGT payable by investors on the gain realised as a result of capital growth from reinvested earnings reduces the after-tax return from the stock investment when such investment is realised through sale.

The STC effect noted in point 1 has an effect on growth (g) in the expected return model whether or not investors factor CGT into that model. In order to properly measure expected return in South Africa, the tax cost of the expected dividend yield must be taken

into account by adjusting the reinvestment/plowback rate used to estimate capital growth to take this tax cost into account.

It is possible to express this tax-adjusted growth rate using accounting specifications. If growth g at time t in the expected return model is calculated as:

$ROE_t*(1\text{-}p)$

Where:

ROE_t =   Return on equity (current period net income NI_t divided by prior period book value B_{t-1}) at time t

p =   The dividend payout ratio

then the STC-inclusive growth rate g_{STC} is:

$ROE_t*(1\text{-}p) - D_t*t_{STC}/B_{t-1}$

Where:

D_t =   The dividend declared at time t

t_{STC} =   The rate of STC applicable to D_t

D_t can also be expressed as ($p*NI_t$); substituting for D_t and simplifying leads to the following measure of growth for the purposes of expected return:

$$g_{STC} = \frac{NI_t[1-p(1+t_{STC})]}{B_{t-1}} \quad \text{or} \quad g_{STC} = ROE_t[1-p(1+t_{STC})] \tag{10}$$

The use of historical measures of net income and dividend yield to predict the cash flows used to calculate expected return may accidentally price in historical STC costs; this would only be correct if the firm is expected to distribute dividends according to a consistent payout ratio. If this expectation is not valid, investors should account for STC when calculating expected return by first excluding any STC cost from the historical results used to forecast cash flows and then adjusting the growth rate as above according to the expected payout ratio and "gross" net income figure (i.e. net income after corporate taxes but before STC). This approach is adopted in the empirical testing in Chapter 6 below.

The STC-adjusted growth rate implies that expected return would be lower than the measure ordinarily calculated via the dividend discount model "dividend yield plus growth" method. Intuitively, this seems to imply that an analysis of ICOC and IEP in the South African context would show a negative correlation between ICOC and dividend yield; however, this ignores the effect of investor-level CGT noted in point 2 above.

The tax cost of STC decreases expected growth and thus decreases the capital gain arising when the stock in question is disposed of. Because STC is calculated as a fraction of dividends paid and the dividend itself is exempt, the effective rate of STC differs from the statutory rate. For example, the current rate of STC at the time of writing is 10%. A company with R100 of retained earnings available can thus declare a dividend of 100/110 x R100, or R90.91 - the STC levied on this distribution would be 10% of the dividend, or

R9,09 (the aggregate constituting the total available retained earnings of R100). At a 10% statutory rate, the effective rate is thus 9,09%.

In order to understand how the combined effect of STC and CGT influences expected return, consider the following examples:

An investor that is an individual is considering a R100 investment in shares, with a view to liquidating the investment via sale to a third party after one year for a selling price equal to the book value attributable to the shares at the time of sale. The individual has a personal CGT rate of 10%. The firm is expected to generate R100 of net income in the year that the investment is held and will distribute all available net income as a dividend. The investor thus expects a dividend of R90.91, as explained above (the current STC rate of 10% is assumed to apply). The expected return is thus 90,91%; no capital gain is earned (as book value and thus selling price is equal to the original investment after declaring the dividend and paying the associated STC) and there is thus no liability for CGT.

Now assume the same facts as in the first example, but that only R50 is declared as a dividend and the remainder (after STC) is retained by the firm (R45, after deducting the R5 of STC payable on the R50 dividend declared). The investor thus sells the stock for R145 and realises a taxable capital gain of R45 (R145 less the R100 investment, which would constitute the CGT base cost). The investor is liable for 10% of R45, or R4,50 on the sale; the total return from the investment after tax is the R50 dividend plus the R40.50

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after-tax capital gain (R45 less the CGT of R4.50) or R90.50. The return under this latter scenario is 90.50%, which is less than the 90.91% from the first example.

Finally, assume the same facts as above but with no dividend payout. The capital gain in the hands of the investor is now R100 (the full amount of reinvested net income) and the CGT payable is R10, with a net return of R90.00 or 90%.

The three examples illustrate the relationship between STC and CGT in the context of expected return: the net effect of a firm paying out dividends is, counter-intuitively, an increase in expected return relative to the expected return where no dividend is paid, as long as the investor's rate of CGT and the rate of STC satisfy certain conditions. These conditions are demonstrated in the model derived below.

The relationship between STC and CGT can be formally derived. If net income for the period is expressed as NI, the rate of STC is t_{STC}, the effective rate of CGT for the investor is t_{cg} and the dividend payout ratio (expressed as a percentage of net income) is p[47], the following specifications would apply to an investment that involves holding a stock for one period and selling the stock via a third party sale (at book value) at the end of such period:

1. The dividend declared by the firm is $(NI*p)$

2. The STC payable in respect of the abovementioned dividend is $(NI*p*t_{STC})$

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[47] p is limited to $(t_{STC}/1+t_{STC})*NI$, as discussed above

3. The capital gain is $NI - (NI*p) - (NI*p*t_{STC})$

4. The CGT payable in respect of the abovementioned capital gain is $t_{cg}*[NI-(NI*p)-(NI*p*t_{STC})]$

5. The net cash flow to the investor (after CGT) is $(NI*p) + (1-t_{cg})[NI - (NI*p) - (NI*p*t_{STC})]$

If no dividend was paid (i.e. $p = 0$), the return to the shareholder would be $NI*(1-t_{cg})$. The difference between the return when the firm pays dividends and the return when no dividends are paid is thus:

$$(NI*p) + (1-t_{cg})[NI - (NI*p) - (NI*p*t_{STC})] - NI*(1-t_{cg}) \qquad (11)$$

Simplifying the above yields the expression:

$$NI*p[t_{cg} - t_{STC}(1-t_{cg})] \qquad (12)$$

Equation (12) is the formal specification of the relationship between STC, CGT and their effect on expected shareholder return when the dividend payout ratio is greater than zero. If the expected payout from a firm is positive, investors will measure the expected return from that stock at a premium to the expected return from a stock of a non-dividend paying firm if the relationship in equation (12) holds; that is, the difference between the investors CGT rate and the after-CGT STC rate is positive. This relationship is unique to

South Africa (due to the unique nature of STC) and, based on a review of the available South African and international literature, has never been formally expressed or explored.

Equation (12) gives rise to the concept of a "tax clientele effect" in South Africa that is comparable to the clientele effect addressed at length in the international literature reviewed in Chapter 3. In the international context, the hypothetical effect of tax clienteles on stock prices is a positive price effect when ownership by tax-favoured or tax-exempt institutions is high. Equation (12) implies that when CGT rates are low (relative to STC) or zero, the distribution of dividends has a negative effect on shareholder return. Tax-exempt entities in South Africa should thus have lower expected returns from dividend-paying firms than from non-dividend paying firms if both STC and CGT are taken into account in the valuation process. As noted in Chapter 2 above, there should be no clientele effect if STC is taken into account and CGT is not, because STC is levied at the firm level and thus (when taken in isolation) affects the expected return of all shareholders regardless of their tax status.

Table 1 sets out the statutory and effective rates of STC and the effective rates of CGT per class of taxpayer for the calendar years under consideration in this study (the rate of STC was changed in late 2007, hence the two rates presented).

Table 1: Rates of STC and CGT 2002 – 2007

Year	Statutory rate of STC	Effective rate of CGT		
		Company	Trust	Individual[48]
2002	12,5%	15%	16%/21%/20%[49]	10%
2003	12,5%	15%	20%	10%
2004	12,5%	15%	20%	10%
2005	12,5%	15%/14,5%[50]	20%	10%
2006	12,5%	14,5%	20%	10%
2007	12,5%/10%[51]	14,5%	20%	10%

Source: SARS, 2007

Certain entities have special tax rates that require consideration:

1. Life insurers are taxed on a "four funds" basis – the ITA splits the operations of these entities into four funds (three policyholder funds, with allocations based on the ownership of life insurance policies and one shareholder fund) that are treated as separate taxpayers with different tax rates. The shareholder fund (the corporate fund, or CF) and the company policyholder fund (CPF) are and were subject to the rates set out in Table 1 above applicable to companies. The individual policyholder fund (IPF) has been subject to a statutory rate of 30% throughout the sample period, with an effective rate of CGT of 7,5%. The untaxed policyholder fund (UPF) is exempt from normal tax, but was subject to the now-defunct retirement funds tax (RFT).

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[48] South African individuals are taxed according to a progressive system of tax brackets based on levels of taxable income. The top marginal tax rate for individuals has remained at 40% throughout the sample period and the CGT inclusion rate has remained constant at 25%. The top marginal effective rate of CGT is thus assumed to be 10%. The CGT rate for an individual could conceivably be lower than 10%, but this is not observable without information about the taxable income for a given individual.

[49] Until 28 February 2002, the effective tax rate for trusts was 32% on the first R100 000 of taxable income and 42% on the amount of taxable income exceeding R100 000. From 1 March 2002 until the time of writing, the statutory tax rate was 40%. The CGT inclusion rate for trusts has remained at 50% throughout the sample period.

[50] The corporate tax rate was decreased in 2005. The 29% corporate tax rate (and thus 14,5% effective tax rate based on the CGT inclusion rate for companies of 50%) applied for tax years of assessment ending after the period to 31 March 2005.

[51] The rate of STC was 12,5% until 30 September 2007 and 10% from 1 October 2007 until the time of writing.

2. Unit trusts were treated as companies throughout the sample period and were not subject to CGT in their own hands due to a specific tax exemption. The CGT on disposals of fund assets were taxed in the hands of unit holders at their effective marginal tax rates.

Table 2 sets out the theoretical increase or decrease in expected investor return based on the interaction between the applicable rates of STC and CGT as per equation (12) (ignoring the level of dividend payout):

Table 2: STC/CGT effect on expected return 2002 - 2007

Year	$[t_{cg} - t_{STC}(1\text{-}t_{cg})]$		
	Company	**Trust**	**Individual**
2002	4.38%	5.15%/11.13%/10%	-1.25%
2003	4.38%	10%	-1.25%
2004	4.38%	10%	-1.25%
2005	4.38%/3.81%	10%	-1.25%
2006	3.81%	10%	-1.25%
2007	3.81%/5.95%	10%/12%	-1.25%/1%

Calculations author's own

As expected from the observations in Table 1 and the specification in equation (12), Table 2 indicates a positive tax effect on expected return for companies and trusts throughout the sample period and a negative effect for individuals until the STC rate was lowered to 10% in 2007 (until that point, the STC rate exceeded the effective CGT rate for individuals – equation (12) predicts the negative effect on expected return under such conditions). As noted above, these effects are only applicable to shares of firms that paid dividends in the sample years concerned; the level of dividend payout (divided by the

proposed investment, i.e. the book value at the time of investment) would have a multiplicative effect with respect to the factors in Table 2.

Tables 1 and 2 include the tax rate and effect on expected return for trusts at the marginal tax rate applicable to capital gains in the hands of the trust itself. The ITA, however, provides that where income and capital gains are vested by trustees in the beneficiaries of a trust (either by virtue of the Trust Deed or by decision of the trustees before the end of the tax year in which the income or gains accrue to or are received by the trust), such income and gains are taxable in the hands of such beneficiaries at their effective tax rate[52]. The effect on expected return as presented in Table 2 could thus be different in practice if capital gains were vested in beneficiaries that were individuals or companies. This is, however, not possible to observe in practice without access to the tax return information of the beneficiaries.

In summary, the above leads to the following prediction with respect to an analysis of tax capitalisation in South Africa for the purpose of testing how taxes are treated by investors when valuing shares: expected investor return (and thus cost of equity) should display a positive relationship with dividend yield where, on aggregate, the ownership of the shares being tested is concentrated in investors with rates of CGT that lead to a positive result for equation (12).

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[52] Section 25B of the ITA.

6 Testing for the capitalisation of STC and CGT in South African stock prices

6.1 *Selecting the testing methodology*

The international literature reviewed in Chapter 3 indicates two broad approaches used to test for the capitalisation of dividend taxes into stock prices by way of regression analyses based on the RIVM: the CHHK approach, which tests whether or not investors discount retained earnings (which are subject to dividend taxes on distribution) relative to contributed capital (distributions of which are not taxable) and the ICOC approach, which examines whether or not taxes affect stock prices via an increase in investors' expected return and thus firm cost of capital (refer DKLM, as discussed more fully in Chapter 3 above).

Having regard to the method employed by CHHK, the criticisms and commentary pertaining to such method by *inter alia* DEMB and HMS (refer Chapter 3 above) and the nature of STC and CGT in South Africa, it is submitted that the CHHK method would not be appropriate in the South African context.

Firstly, as noted above, a key assumption of the CHHK methodology (an assumption that was soundly rebuffed by DEMB) is that dividend payout has no bearing on the extent of dividend tax capitalisation and shareholders will value retained earnings as if they will be fully distributed and subjected to shareholder-level dividend taxes. This assumption is clearly invalid in the South African context, both intuitively (a glance at the historical payout data obviates even the faintest possibility that firms are likely to distribute all

retained earnings as dividends within the foreseeable investment horizon of a South African investor – this was also noted in the international context by Shackelford and Shevlin, 2001) and in terms of the South African RIVM model in equation (9) above, where the payout percentage is a fundamental component of the model.

Secondly, HMS's strongest argument against a tax discount on retained earnings is that such effect, if any, would be mitigated by both the assumption that the firm is a going concern and would thus pay dividends (and in South Africa, the associated STC) out of net income rather than retained earnings and the fact that such effect would be included at its present value, further lowering the effect of such discount on price.

Finally, as discussed in Chapter 5, the South African firm-level STC (taken together with the exempt treatment of dividends in shareholders' hands and the relative rates of STC and shareholder CGT) means that the expectation of dividends has a positive effect on expected return. In the domestic case, the variable of interest is thus the expected return or firm cost of equity (from an investor's point of view) and not the constituents of book value. Put another way, as HMS point out, the return from both contributed capital and reinvested earnings are subject to dividend tax (STC) on distribution and the difference between the two is not relevant. What is relevant is the relationship between taxes and expected return; the method that best examines this relationship is the ICOC approach.

I thus consider the ICOC method more appropriate for the South African context. If investors capitalise expected future STC and CGT liabilities into stock prices, the *ex ante*

measures of cost of equity (or more correctly the implied equity premium, or IEP[53]) will move predictably with dividend yields. Where STC has an advantage relative to rates of CGT (which, as discussed in Chapter 5, occurs with all classes of shareholder except for those that are tax-exempt), a tax capitalisation effect would increase expected return and thus cost of equity/capital, leading to a decrease in stock prices calculated in terms of the RIVM (as the expected future levels of abnormal earnings are decreased).

6.2 The South African ICOC methodology

I perform the ICOC testing on a sample of listed South African firms. The sample was selected based on firms that had been listed on the JSE for the entire sample period of 2002 to 2007. Firms with consistent losses were omitted. The final sample size comprised 95 firms, a full list of which is set out in Appendix A. The firm data employed in this study (including measures of firm beta) was sourced from Bloomberg and collated by Professor Aswath Damodaran of Stern Business School at New York University[54].

As was the case with the studies of DKLM and GLS, I calculate expected values of return on equity (ROE), book value of equity (B), net income (NI) and dividends paid (a function of the payout percentage *p* and NI) for each firm in the sample. The expected values are obtained as follows:

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[53] As previously noted, IEP is defined as the difference between the ICOC measure and the rate of return from the risk-free asset (or a reasonable proxy thereof).

[54] Refer Professor Damoradan's website at http://pages.stern.nyu.edu/~adamodar.

1. A firm-specific growth rate is estimated using the STC-adjusted form of the dividend discount model as set out in equation (10) above.

2. For each year in the sample, I estimate ten annual data points for forward net income for ten years (I consider this a sufficient valuation horizon from an investor point of view; DKLM use twelve years in their methodology) by applying the calculated firm-specific growth rate. The first (actual) observation of net income is adjusted for the STC cost of the dividend from that year; as discussed in Chapter 5 above, this adjustment is necessary in order to avoid double-counting of STC.

3. Forward dividends are estimated by applying the current-year dividend payout percentage to the forward net income figures.

4. Expected forward book value of equity is estimated using the actual book value of equity at the time of valuation and assuming that the clean surplus relationship holds; in other words, forward book value is given as prior year book value plus expected net income for the period less expected dividends paid as well as the associated STC cost.

5. The rate of STC is constant at the statutory rate of 12,5% from 2002 to 2006, and decreased to the announced statutory rate of 10% in 2007 (this latter would presumably be applied by investors to calculate expected cash flows in future period once the amended rate and the effective date of such amendment was made public).

6. Expected return on equity ratios for the predicted periods are calculated using the abovementioned expectations of net income and book value of equity.

7. The terminal value for the period after $t = 10$ is calculated by growing the year ten predictions in the manner described above and growing the cash flow so calculated

into perpetuity at the implied cost of equity (the ICOC to be calculated). This method of calculating the terminal value in is line with the methodologies adopted by Dhaliwal, Krull, Li and Moser (2003) and Gebhardt, Lee and Swaminathan (2001)

The ICOC calculation exercise involves applying the predicted values so calculated and the actual observations of firm stock prices (represented by total market capitalisation) in the model represented by equation (9) and solving for r_e (the ICOC). Finally, the implied equity premium (IEP) is calculated by deducting a proxy for the "risk-free rate" from the calculated ICOC values. For the purposes of this study, the aforementioned proxy is the average annual yield on South African government bonds with maturities of ten years or more (yields sourced from the South African Reserve Bank). The selection of this proxy is in line with the methodology of DKLM.

6.3 Hypothesis development and the regression equation

The discussion set out in Chapter 5 above implies that the relative rates of STC and shareholder CGT result in a benefit to most classes of shareholder when firm value is realised via dividends as opposed to capital gains. Put another way, shareholders would generally expect a higher return from a dividend paying firm than a non-dividend paying firm and the quantum of this higher return increases with the payout ratio. This is the basis of the primary hypothesis around the South African IEP measures: that the IEP measures calculated as discussed in the preceding section are, in conjunction with the proper firm-specific controls, positively correlated with firm-specific levels of dividends.

In order to test this hypothesis, I estimate the following regression equation:

$$IEP_{SA,i,t} = \beta_0 + \beta_1 yield_{i,t-1} + \beta_2 yield^2_{i,t-1} + \beta_3 g_{STC} + \beta_4 B/M + \beta_5 risk_{i,t} + \varepsilon_{i,t} \qquad (13)$$

Where:

- $IEP_{SA,i,t}$ is the IEP measure (the ICOC derived via the South African RIVM model, as discussed above, less a proxy for the risk-free rate) calculated for firm i at time t

- $yield_{i,t-1}$ is the prior period dividend yield for firm i, calculated as dividends paid divided by market capitalisation (i.e. the market value of equity) in such prior period

- $yield^2_{i,t-1}$ is a control introduced at the suggestion of DKLM. According to the authors, this control compensates for an effect identified by *inter alia* Elton and Gruber (1970) and Dhaliwal et al (2003) whereby the relationship between dividend yield and stock returns demonstrates increasing concavity over time.

- The last three independent variables g_{STC}, *B/M* and *risk* are three controls that I consider relevant, based on literature such as Ahn et al (2008) and Gode and Mohanran (2003) as discussed in Chapter 3 above. The first control is the STC-inclusive growth rate of the firm calculated at time t, the second control is the ratio of the book value of the firm to its market value[55] (measured by market capitalisation) at time t and the third control is the undiversifiable risk of the firm at time t, measured by the current period beta.

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[55] As with DKLM and GLS, the natural logarithm of the B/M ratio is used. DKLM state that this is done to control for the effect of outliers.

Based on the primary hypothesis and with reference to DKLM, the IEP measures are expected to exhibit positive correlation with the prior year dividend yield measures and negative correlation with the squared yield measure. The coefficients on growth and beta are expected to be positive (growth implies sustainable abnormal earnings and thus an increased expected return and it is trite that increased beta measures imply an increased risk premium). The coefficient on B/M is also expected to be positive, based on the results observed in DKLM.

6.4 Results of regression analysis

The detailed results of the six regression analyses are included as Appendices B to G hereto. The ANOVA tables indicate extremely strong statistical significance at the 5% level for the regression analyses for all years except 2007.

Table 3 below summarises the regression coefficients for each year.

Table 3: Regression coefficients for equation (13)

Year	Intercept	Prior year dividend yield	Prior year dividend yield^2	Growth rate	ln(B/M)	Beta
2002	-0.097462	1.705025	-3.819272	0.698332	0.005634	-0.003629
2003	-0.037285	2.910749	-14.097571	0.702292	0.125984	0.102351
2004	-0.069589	0.644179	-0.172602	0.613194	0.032563	0.056873
2005	-0.055690	1.162107	-0.634711	0.653118	0.029908	0.018609
2006	-0.053351	0.925064	-0.017663	0.566666	0.029190	0.022150
2007	0.206006	0.188431	-0.893154	0.758196	0.112489	-0.021348

Calculations author's own

The coefficients on the control variables behave as expected: the IEP measures are positively correlated with growth and undiversifiable risk and (weakly) with B/M.

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The variable of interest, however, is the coefficient on prior year dividend yield. The IEP measures exhibit positive correlation with prior year dividend yield; furthermore, the coefficient on dividend yield for the 2007 year is markedly lower than all of the prior year measures. Recall that 2007 was the only year in the sample period in which a reduction in the statutory rate of STC was announced; this would lower the difference between STC and shareholder CGT rates and thus decrease the benefit available to certain classes of shareholders.

The results of the regression analysis appear to support the hypothesis that investor expectations as to the tax treatment of dividends and capital gains have an effect on expected return and thus cost of equity and stock prices.

A key aspect of DKLM was that the authors also tested the hypothesis that the predicted tax effect on cost of capital was decreasing along with decreases in the level of institutional ownership (i.e. where shareholders are not subject to tax). This hypothesis was found to be supported by the regression analyses. A similar effect is expected in the South African context, as certain classes of shareholder[56] are not subject to CGT and thus realise no benefit from dividend declarations. Unfortunately, such detailed shareholder information is not readily available in South Africa and it is thus not possible to empirically test this ancillary hypothesis. However, it is worth mentioning that, anecdotally, most non-taxable funds have substantial investments in dividend-paying

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[56] Such classes are tax-exempt institutions (such as pension funds) and non-residents (for South African tax purposes) that hold non-taxable equity investments.

equities for non-tax related reasons, such as the relatively high yield and consistent cash flows from such equities. This implies that the results of my regression analyses already include the effect of an unquantifiable but assumedly significant shareholding by non-taxable entities and that the positive correlation holds regardless. In other words, the positive correlation would be even higher absent the unmeasured effect of ownership by non-taxable entities.

The effect of non-taxable ownership on the relationship between IEP measures and dividend yields is definitely an area of interest for future research on tax capitalisation in South Africa, assuming that information relating to the extent of such ownership becomes available.

7 STC and firm cost of capital

7.1 Effect of STC on managerial estimates of cost of equity using the CAPM

The CC and PWC literature reviewed in Chapter 3 of this study concord as to the prevalence of CAPM as the tool used by managers to estimate firm cost of equity[57]. It follows that South African managers are only able to predict investor required returns if those investors are using the same or similar measures to estimate the performance of the firm's shares. PWC (2005) and PWC (2008) find that professional valuators also use CAPM to calculate firm cost of equity for the purposes of valuing shares; it would thus appear that managerial and market measures of cost of equity do correspond. However, it is important to understand that the market valuation employs the CAPM cost of equity as a discount rate and required rate of return. To the extent that dividends are paid in the course of providing the required return, firms will incur an STC cost; *actual* cost of equity in the firm sense (i.e. the cost incurred to provide investors with their required return) could thus exceed the CAPM measures employed by managers, unless the components of the CAPM include an STC charge in the initial calculation of cost of equity. It is thus necessary to discuss the effect of STC on each of the three components of the CAPM.

Another important point to note is that the CAPM is a historical (backwards looking) measure of firm and market performance – both market premium and beta are based on

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[57] Although the sample sizes of CC and PWC 2005/2008 are relatively small given the number of South African firms, I submit that the correlation of results and the industry spread across their samples lend support to the proposition that the survey results are good indicators of industry practice.

prior period results. The relevance of this point is discussed more fully below; however, before considering the theoretical effect of STC on the CAPM, it is necessary to discuss how STC is reflected in firm results.

It is common knowledge that dividends are not treated as deductions from firm income for the purposes of calculating net income/profit figures for accounting purposes. Dividends are treated as an appropriation of profit and are consequently presented "below the line" on a company's income statement, i.e. after the calculation of net profit after tax. Dividend payments are presented separately on the statement of changes in owners' equity in the annual financial statements; they reduce owners' equity after net profit for the year has been added to retained earnings.

STC, however, is included in the corporate tax line in South African accounts, notwithstanding that the tax base thereof (dividends) is wholly separate from the corporate tax base (profits). The measure of net income after tax thus includes the STC cost of the dividends paid in a particular financial year.

The accounting treatment and presentation of STC has an important implication for investors. Firm return is generally measured using the return of equity (ROE) ratio, or the ratio of current-year net income after tax (after dividends on preference shares but before ordinary dividends) to the book value of shareholder equity. STC thus impacts on ROE, given its inclusion in the tax line and thus the measure of net profit after tax.

It may be argued that the inclusion of STC in firm net income automatically implies that STC is included in valuation models; if investors base earnings forecasts on previous net income measures and such measures include STC, the forecasts will include a commensurate STC charge. This may be the case; however, forecasts that are obtained by applying an estimate growth rate[58] to current/historical net income figures will only *accurately* include future STC costs if future dividend payout ratios remain at a constant percentage of net income and if the historical measures used to predict future cash flows contain a predictable pattern of dividend flows that correspond to the future payouts.

Interestingly, 79% of the respondents in PWC (2008) make adjustments to valuation models for STC. Of these respondents, slightly more than half adjust future cash flows for STC costs while the remainder makes an adjustment to the effective tax rate of the firm. It is submitted that the correct approach involves a combination of both of these adjustments: valuation models should adjust net income measures for STC (i.e. add back the STC cost) for the purposes of predicting growth and future cash flows and then include a separate adjustment for STC on the predicted future cash flows.

7.1.1 Risk-free rate

As discussed above, the rate of return of the risk-free asset is typically estimated based on the yield of government-issued bonds. This measure is thus exogenous to firm costs and results, both at the individual firm level and the aggregate measure (i.e. the market as a

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[58] As discussed above, the growth rate may be expressed as the product of current-year ROE and the reinvestment (or "plowback") ratio, measured as one minus the dividend payout rate. It is simple to prove that if the payout ratio is measured on a net income figure that includes an STC cost, the predicted growth will correspond to actual growth in ROE only if the dividend payout ratio remains constant and there is no change in the rate of STC.

whole). The risk-free rate as a component of the CAPM is thus unaffected by STC and could only be affected by investor-level CGT if those investors made tax adjustments to government bond yields (the results reported by PWC (2008) and CC indicate that this is not the case).

7.1.2 Market return, equity risk premium and beta

Market return is generally measured based on the performance of a representative index (such as the JSE All-share Index, or ALSI). CC note a variety of issues and debates around the calculation of the market return, including arguments around the use of geometric or arithmetic means, the use of historical returns, and so on; these issues are outside of the scope of this study[59]. For the purposes of discussion, it is sufficient to ignore the method of calculating the market return and focus on the inputs of the calculation.

Regardless of the index used as a proxy for market return, such index would be a weighted composite of the historical returns from a number of firms, with return typically measured by ROE. The effect of STC on net income and ROE, as discussed above, is fed through into the data used to measure the index in question; the aggregate effect of STC is thus a function of the sample of firms used in the index, their payout policies and the STC rate over time.

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[59] As quoted in CC, a comprehensive discussion of these issues is included in Correia *et al* (2007). The latter study has not been reviewed for the purposes of this study.

Unless ROE measures are adjusted for STC or otherwise controlled to eliminate the effect of different payout policies on firm return, market return and thus ERP for the purposes of the CAPM effectively includes some composite effect of firm STC cost and feeds this into the model. This is not in itself a significant problem; the purpose of ERP in the CAPM is to represent the return that an investor could demand by investing in the market portfolio; this return would always incorporate the tax cost of firm payout policy. A potential problem arises because market return is also used for the purposes of calculating beta.

As mentioned above, beta is calculated as the ratio of two statistical measures. The covariance of firm and market returns measures the correlation between the differences between firm return and market return and their respective expected values (generally the mean). Again, if the data used to calculate beta is not adjusted or controlled for the inherent cost of STC in measures of ROE, the sample of firm return will reflect the STC effect of historical payout policies and the sample of market return will reflect a similar (weighted and aggregated) effect for the firms in the relevant index. The covariance measure in beta thus incorporates a measure of correlation for the payout policy of the firm and the sample in the market portfolio (as the STC cost inherent in the data is a function of prior dividend behaviour).

Beta (and CAPM) are inherently backward-looking measures of firm risk and cost of equity and have thus been criticised for their use in discounting future cash flows for valuation purposes. The potential effect of STC on beta measures adds another dimension

to this criticism in South Africa; if the data used results in firm risk being measured according to past payout behavior (and the correlation thereof with the payout behaviour of the sample market portfolio), this risk measurement will be misstated unless both sets of payout policies (as well as statutory STC rates) remain the same.

7.1.3 Summary – STC and cost of capital

The South African literature dealing with the calculation of firm cost of equity and investors' required return shows CAPM as the predominant method of estimating this measure. If managers calculate cost of equity the same way that investors calculate required return, the managerial measure will be understated by the STC cost of achieving the required return unless firm payout policy going forward corresponds exactly to the historical patterns that give rise to the data used in the CAPM model.

Furthermore, the STC cost of dividend payouts is included in the net income after tax measures used to calculate firm return (ROE) and thus the measurement of beta employed in the CAPM. If no adjustment is made for STC costs in the data underlying the CAPM estimates, the correlation (covariance) component of beta includes a comparison of firm payout policies as compared to those of the firms included in the market portfolio. This may result in an incorrect statement of risk and thus misstatement in the cost of equity measure provided by the CAPM, as the mix of firm returns may not necessarily correspond to those observed historically.

8 Expanding the Lewellen and Lewellen models – optimal capital structure and taxes in South Africa

The LL model and conclusions are mentioned in Chapter 3 above. As previously discussed, LL find that taxes have an effect on a firm's financing decisions (i.e. cost of capital, payout levels and capital structure). Instead of the effect of taxes on valuations (the investment decision), LL focus on the effect of taxes on "*...the firm's incentive to retain cash, the tax advantage of internal over external equity, and the dynamics of capital structure over time*" (LL, page 4).

The existing South African research on capital structure, as discussed in Chapter 3 above, has so far omitted any detailed examination of the effects of taxes on financing decisions. This may be due to a lack of management consideration of tax factors in making corporate finance decisions or simply a lack of focused research around this area. It is submitted that, despite how managers may currently view taxes as a factor in corporate finance, analyses such as those presented in LL prove that tax is an important consideration. Of particular interest is the idea that the use of internal equity may have a tax advantage over external equity, which could lead to a re-examination of the relationship of the components of capital structure in South African firms.

This section of the study models the effect of STC and CGT on the abovementioned financing decisions in the South African context. The starting point is an examination of the methodology used by LL to formulate their model and propositions around capital structure with taxes. I then apply the South African tax rules in order to reformulate the

model to suit the domestic context. In Chapter 9, I discuss how the proposed move to SDT will affect the reformulated model and capital structure going forward.

8.1 Formulating the LL models

All references in this subsection, unless otherwise noted, are to LL (2003). LL's methodology initially involves formulating a one-period model, based on a set of stylised facts. The one-period model assumes that a firm relies on external financing (both debt and equity) and illustrates the tax advantage of an equity investment in a firm relative to an investment in a separate risk-free asset. The authors then extend the model to two periods and examine the situation where, in the second period, the firm has a choice between employing internal equity (retained earnings) from the first period for investment purposes or declaring those earnings as a dividend and issuing further external equity.

The aforementioned stylised facts are employed for both the one-period and two-period models formulated by LL and (for ease of reference and for the purposes of comparison) are also employed when formulating the South African model.

LL posit a firm that considers an investment of I. Investment I is expected to pay a pre-tax return of P_1 after one period. Investors can choose to invest in the firm, or in a risk-less investment yielding a return of r. In order to assume away the issue of bankruptcy, LL assume that the rate of return of the firm's investment (P_1/I) is greater than r.

The risk-free return r is also the rate at which the firm borrows from external lenders. The riskiness of the firm's debt is thus not a factor in the model, as the payoff from the proposed investment is greater than the potential borrowing costs. In order to cement the risk-free nature of debt, LL also assume that all excess cash is invested within the firm at the risk-free rate r.

LL apply actual provisions of the US tax code when formulating the model: interest incurred by the firm is deductible for tax purposes, while dividends and any consideration paid when the firm repurchases its own shares are not. The tax rate on corporate income is denoted as t_c for the purposes of the model. The tax rates on interest, dividends and capital gains in the hands of shareholders are denoted as t_i, t_{dv} and t_{cg} respectively.

Under the one-period LL model, the firm is assumed to be liquidated at time 1, with any capital gains being recognised by shareholders at that point. Any net income (after corporate taxes) is distributed to shareholders through a dividend and/or stock repurchase at time 1 and is taxed accordingly in their hands[60]. The return of the capital invested by the shareholders is not subject to tax.

LL assume that the firm raises debt and equity of D_0 and S_0 at time 0. The excess cash $(D_0 + S_0 - I)$, denoted C_0, is invested by the firm in the risk-free asset. It follows that the

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[60] Under the US tax code, dividends are subject to tax at certain rates and stock repurchases are taxed as capital gains. These tax treatments are accordingly modeled by LL. As previously mentioned, the current South African tax treatment differs from this US treatment; this is discussed further below in the context of the derivation of a South African model.

income of the firm is thus $(P_1 + C_0r - D_0r)(1 - t_c)$. After repaying the capital owing to

debt holders (D_0), the firm's cash at time 1 (C_1) is:

$$C_1 = I + P_1(1-t_c) + (C_0 - D_0)[1 + r(1 - t_c)] \qquad \text{(LL equation (1))}$$

Because C_0 is $(D_0 + S_0 - I)$, equation 1 may be re-written as:

$$C_1 = (P_1 - Ir)(1 - t_c) + S_0[1 + r(1-t_c)] \qquad \text{(LL equation (2))}$$

The re-writing of LL equation (1) into LL equation (2) is not arbitrary. The authors are

intentionally splitting the cash of the firm into debt and equity components for the

purposes of illustrating the different returns from each component: the first term

demonstrates the after-tax return from investment I if such investment is entirely funded

by debt, while the second term isolates the return from issuing equity. To quote LL, the

second term implies that "*...every dollar of equity raises the firm's cash holdings at date

1 by 1 + r(1-t_c)*".

LL then assume that the firm distributes its cash (C_1) to shareholders as either a dividend

or a repurchase (the distinction between the two is not relevant at this stage of LL's

analysis). The cash flow to shareholders, CF_1, is thus:

$$CF_1 = (P_1 - Ir)(1 - t_c)(1 - t_e) + S_0[1 + r(1-t_c)(1-t_e)] \qquad \text{(LL equation (3))}$$

Where t_e is the tax rate on dividends or capital gains, as the case may be. Note that in the second term, no tax is levied on the return of the original investment of capital S_0 (refer above).

In order to evaluate whether or not external equity is valuable when compared to debt, the return from equity (the terms in the square brackets in LL (3)) must be compared to the return that an investor could obtain from investing in the risk-free asset, the latter being $1 + r(1-t_i)$. The present value (discounted at the after-tax return from the risk-free asset) of the difference between the two returns at time 0 is thus denoted by LL as:

$$NPV(S_0) = \frac{r}{1+r(1-t_i)}[(1-t_c)(1-t_e)-(1-t_i)]$$ (LL equation (4))

LL then extend their model to two periods. Under the two period model, the firm can decide to retain the cash at time 1 (C_1) or to distribute it to shareholders via a dividend or repurchase. Furthermore, the two-period model introduces the idea that shareholders can trade a portion (or all) of their shares in the firm. With both third-party sales and repurchases (note the CGT treatment of repurchases, as discussed above), shareholders are taxed on the realised capital gain (the difference between the sale or repurchase consideration and the initial investment or CGT "base cost" of the shares) and not the full consideration. LL denote the portion of shares traded by shareholders as α.

LL consider two separate two-period model derivations and propositions about capital structure in their study, one where the firm repays shareholders via a repurchase at time 1

and one where the firm distributes a dividend at time 1. For the purposes of this study, the discussion of LL's methodology can be limited to the case where the firm uses dividends. The reason for this has been explained in an earlier section of this study; under current South African tax law, share repurchases are "dividends" for tax purposes to the extent that they represent a distribution of profits (realised or unrealised). The reason for the dual formulations in LL is the different tax treatment applied to repurchases and dividends under the US tax code; this is not the case in South Africa and the distinction is not necessary. There will, however, be a distinction under the proposed SDT regime in the specific case of repurchases by listed South African firms; this is discussed in more detail in Chapter 9 below.

LL utilise their two-period model to illustrate four propositions, two of which (LL Propositions 2 and 3) relate to situations involving repurchases and are directly dependent on the specific tax treatment thereof. The formulations leading to these two propositions are not reproduced herein, as they are not relevant in the context of the South African model. LL Proposition 1 states that where a firm issues debt to invest in the risk-free asset, this has no effect on shareholder value notwithstanding the applicable tax rates. This proposition is employed by LL to illustrate the relationship between debt, equity and taxes in the determination of firm value. Again, it is not necessary to reproduce or discuss this aspect of the LL model; the proposition (as stated by LL themselves), is fairly obvious and has no application in developing the South African model.

LL's Proposition 4, however, is based on a set of facts where the firm has a choice to retain income at the end of year 1 or to distribute income to shareholders via a dividend. The formulation of the LL model under these conditions is directly relevant in the development of a South African model of firm taxes and financing decisions, as under current South African tax legislation the distribution of current period profits to shareholders will result in a "dividend" for tax purposes, subject to certain exclusions that may, for the purposes of this discussion, be ignored (refer Chapter 2 above for a discussion thereof).

LL's "two-period model with dividends" involves the same first period cash flows as the one-period model. Any retained earnings after dividends or repurchases at time 1 is assumed to be invested in the risk-free asset and generate income at a rate of r.

The firm earns net income after tax (NI_1) of $[P_1 + C_0r - D_0r](1 - t_c)$. After repaying debt holders, the firm's cash at date 1 (C_1) is ($NI_1 + S_0$). If the firm chooses to pay NI_1 as a dividend at date 1, the cash flow to shareholders ($CF_{1,div}$) is the after-tax dividend to shareholders less the CGT payable on the portion of shares sold by the shareholder:

$$CF_{1,div} = NI_1(1 - t_{dv}) - \alpha t_{cg}(V_{1,div} - S_0) \qquad \text{(LL equation (17))}$$

The first term is self-explanatory. The second term, representing the CGT payable by the shareholder, is based on a capital gain calculated as the difference between the market value of equity at time 1 and the invested capital (the base cost of the shares). LL

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estimate V_1 as the present value (at time 1) of the cash flow that the shareholder will receive at time 2[61], $CF_{2,div}$. Because net income after tax has been distributed, net income after tax for the second period is simply $S_0 r(1 - t_c)$ and cash at time 2 is thus $S_0[1 + r(1 - t_c)]$. LL thus calculate the cash flow at time 2 ($CF_{2, div}$) as the sum of the after-tax dividend (the net income from period 2), the return of capital S_0 (again, this portion is not subject to tax on distribution) and the capital loss incurred by shareholders when the company is liquidated at time 2:

$$CF_{2,div} = S_0[1 + r(1 - t_c)(1 - t_{dv})] + \alpha t_{cg}(V_{1,div} - S_0) \qquad \text{(LL equation (18))}$$

The third term in LL equation (18), the capital loss on liquidation, arises due to the portion of shares traded at the end of period 1. The new shareholders (i.e. the purchasers of the traded portion) establish a new CGT base cost of $\alpha V_{1,div}$ for their portion of the firm's shares; because the value is recovered via a dividend rather than a capital transaction, this base cost results in a capital loss.

LL state that the total value of the firm's equity at time 1 is the cash flow at that point $CF_{1,div}$ and the value of equity $V_{1,div}$ (the present value of $CF_{2,div}$ above).

LL go on to model the cash flows where the firm does not distribute a dividend at time 1, but retains the cash until time 2. In this case, $CF_{1,retain}$ consists solely of the CGT term $\alpha t_{cg}(V_{1,retain} - S_0)$ in LL equation (17) above and is thus negative (once again, $V_{1,retain}$ is

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[61] If the two-period model is extended to further periods, V_1 would be the present value of all future cash flows, as in the dividend discount model and free cash flow valuation models.

the present value of the second period cash flow $CF_{2,retain}$). The retained income (as well as the invested capital) grows at a rate of r, so net income after tax for period 2 is (NI_1 + S_0)[1 + r(1 − t_c)]. $CF_{2,retain}$, consisting of the after-tax dividend comprising the net income after tax from both periods and the capital loss incurred by shareholders at time 2, is presented as follows:

$$CF_{2,retain} = NI_1(1 - t_{dv})[1 + r(1\text{-}t_c)] + S_0[1 + r(1 - t_c)(1 - t_{dv})] + \alpha t_{cg}(V_{1,retain} - S_0) \qquad \text{(LL}$$

equation (20))

According to LL, $V_{1,retain}$ is the present value of $CF_{2,\,retain}$ and the total value of equity is the sum of $CF_{1,\,retain}$ and $V_{1,retain}$.

LL calculate the difference between the present value of the returns (again discounting at the after-tax return from the risk-free asset) under the payout and retention approaches above in order to formulate their Proposition 4: the tax benefit of the internal equity relative to paying out dividends $PV(RE_1)$ (where RE is retained earnings, equal to NI_1 if no dividends are paid) is as follows:

$$PV(RE_1) = RE_1 \frac{r(1 - t_{dv})}{1 + r(1 - t_i) - \alpha t_{cg}} [(1 - t_c)(1 - \alpha t_{cg}) - (1 - t_i)] \qquad \text{(LL equation (21))}$$

LL's Proposition 2, which is not fully discussed herein, provides that if the firm raises new equity S_1 at time 1, the extra return after corporate taxes from such new equity is $S_1[1 + r(1 - t_c)]$ (because net income in period 2 arises at the risk-free rate r). If this

income is distributed as a dividend at time 2 (with S_1 distributed as a tax-free return of capital), the cash flow to shareholders is $S_1[1 + r(1 - t_c)(1 - t_{dv})]$. After taking into account the effect of CGT on S_1, the tax benefit of external equity over investment in the risk-free asset, presented as a modified version of LL's Proposition 2, is thus:

$$PV(S_1) = \frac{r(1 - \alpha t_{cg})}{1 + r(1 - t_i) - \alpha t_{cg}}[(1 - t_c)(1 - t_{dv}) - (1 - t_i)] \qquad \text{(LL equation (23))}$$

LL compare their equations (21) and (23) and conclude that internal equity is less costly than external equity where αt_{cg} is less than t_{dv}, which holds where t_{cg} is less than t_{dv}.

8.2 The South African models

In order to model the effect of South African taxes on corporate financing decisions as with LL above, it is first necessary to reiterate how STC is levied on a company. As previously noted, the current STC legislation is effectively ambivalent as to whether companies distribute income to shareholders via dividends or share repurchases (provided the latter do not decrease the invested share capital or share premium of the company). In a domestic application of the stylised facts underlying the LL methodology, dividend taxes thus apply to any distribution by the company and CGT only applies where shareholders sell their shares to third parties.

The fundamental difference between the South African tax legislation and the US legislation applied by LL (corporate-level STC versus shareholder-level dividend taxes and CGT) means that the dividend tax (STC) factor that must be applied when modeling cash flows is also different. LL use the tax factor $(1 - t_{dv})$ to represent dividend taxes in

their models (or $(1 - t_{cg})$ to represent CGT on repurchases). In South Africa, the mechanics of STC result in a tax factor of $(1/(1 + t_{STC}))$, where t_{STC} is the applicable rate of STC levied on "dividends" (for tax purposes) distributed by the company (refer the discussion and illustrative examples in Chapter 5 above).

8.2.1 The one-period South African model

The South African model developed herein is based on the stylised facts used by LL, as set out above. The cash holding of the firm C_1 at the end of the period represented by the model are thus as set out in LL's equations (1) and (2). When the firm makes a liquidation distribution to shareholders, however, the firm is liable for STC and shareholders thus only receive a net amount of earnings after corporate tax. CF_1, the cash flow to shareholders under the South African model, is thus:

$$CF_1 = \frac{(P_1 - Ir)(1-t_c)}{(1+t_{STC})} + S_0[1 + \frac{r(1-t_c)}{(1+t_{STC})}] \tag{14}$$

The present value of the benefit of an equity investment in the South African firm over an investment in the risk-free asset under the facts of the one-period model is thus given by:

$$NPV(S_0),_{SA} = S_0 \frac{r}{1+r(1-t_i)(1+t_{STC})}[(1-t_c)-(1-r_i)(1+t_{STC})] \tag{15}$$

There are two obvious differences between the South African one-period model and the US model presented by LL. Firstly, the abovementioned STC factor is a positive multiplier in the denominator of the model, rather than a negative multiplier in the numerator. Secondly, the tax effect is limited to STC (recall that dividends and

repurchases are treated identically under the STC rules), unlike in LL where the effect could be attributable to dividend taxes (for dividends) or CGT (for share repurchases).

8.2.2 The two-period South African model

Under the two-period South African model, the facts from LL are once again retained. At date 1, the South African firm has a choice to distribute the cash at that date to shareholders via a repurchase or dividend (in both cases, the tax effect would be the same) and the shareholders may choose to trade the exogenous fraction α of their shares in the firm with third parties. Should the firm choose to distribute, LL equation (17) as set out above becomes the following for the purposes of the South African model:

$$CF_{1,distr} = \frac{NI_1}{(1 + t_{STC})} - \alpha t_{cg}(V_{1,distr} - S_0) \tag{16}$$

At this point, it is necessary to discuss the tax rate on capital gains t_{cg} and the tax treatment of capital gains in South Africa. As discussed in Chapter 2 above, a disposal of a share has different consequences under South African tax law depending on the nature of the share in the hands of the taxpayer making the disposal. If the shareholder holds the share as trading stock or in a scheme of profit-making (this type of person is colloquially referred to as a "share dealer"), the rate of tax applied to the capital gain on the disposal is the taxpayer's full marginal rate of income tax. Practically, the share dealer includes the full proceeds on disposal in their taxable income but has been entitled to a full deduction

of the cost price of the share in the year in which such share was purchased[62]. The net tax effect is that only the gain is subject to tax at the aforementioned rate, but the two tax events (the deduction of the cost and the inclusion of the proceeds) may occur in different years.

If the share is held as an investment on capital account, the taxpayer includes the capital gain or loss in their taxable income in the year that the share is disposed of (the CGT base cost is deductible from the proceeds from disposal in the year of disposal, not when the share is acquired) at a specified inclusion rate. The effective rate of CGT in this latter case is the full marginal rate of the taxpayer multiplied by the statutory CGT inclusion rate.

The term t_{cg} in the model thus refers to the effective rate of tax applicable to the gain in the hands of the taxpayer making the disposition, which could be the full marginal rate of the taxpayer (and thus equal to the rate of tax on interest, t_i) or the effective CGT rate depending on whether or not the transaction involving the share has a speculative or investment purpose.

Furthermore, in the case of a shareholder or any taxpayer with a speculative intention with respect to the shares of the firm in the model, the portion of the cash flow in the hands of shareholders representing tax on the capital gain (the second term in equation

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[62] The amount of the cost price of the share that may be deducted may be limited where the transaction is undertaken in order to achieve a "dividend strip". This special case is ignored for the purposes of this study; however, the effect of modeling a dividend strip would be an amendment to the second (CGT) term in equation (16) to account for the fact that S_0 is not fully deductible from the proceeds $V_{1,distr}$.

(16)) may not actually occur in the same year. Put another way, the deduction of the cost S_0 against the proceeds from disposal for the purposes of calculating the capital gain may actually have occurred in a previous tax year and provided a tax benefit against other taxable income in that year. In the eyes of the firm (and the purposes of developing these models is to examine their implications on the financing decisions from the firm's point of view), the net cash flow to the shareholder may thus be an amalgamation of two different cash flows in the shareholders' hands and may be subject to different tax rates depending on the intentions of the shareholder. This does not affect the efficacy of the models for general illustrative purposes, but makes it extremely difficult (if not impossible) to empirically test their application without a significant amount of exogenous information about the tax affairs of the firm's shareholders.

Returning to the model, it is necessary to calculate $V_{1,distr}$ for the purposes of equation (16). As in LL, I assume that $V_{1,distr}$ is the present value (at time 1) of the expected cash to shareholders at time 2, $CF_{2,distr}$. Assuming that the remaining cash in the firm (S_0, due to the distribution of net income at time 1) is invested in the risk-free asset for the duration of period 2, $CF_{2,distr,SA}$ is as follows:

$$CF_{2,distr} = S_0[1 + \frac{r(1-t_c)}{(1+t_{STC})}] + \alpha t_{cg}(V_{1,distr} - S_0) \qquad (17)$$

As was the case in LL equation (18), the cash flow at time 2 is the after-STC net income distributed to shareholders plus the capital loss incurred by the shareholders that invested at time 1.

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Once again, the nature of the shares in the hands of the taxpayer gives rise to a point for discussion. If the shareholder is a share dealer, the loss incurred at time 2 would be deductible for income tax purposes (ignoring any limitations imposed by the dividend-stripping rules) and would thus have either an immediate cash benefit (by way of a reduced liability for income tax in the year of disposal) or a future cash benefit if it adds to any assessed tax loss of the taxpayer. If, however, the stock is held on capital account, the resulting capital loss only provides a cash benefit if there are other capital gains (not income taxable under normal income tax rules) in that year. If not, the capital loss is carried forward and may be set off against capital gains arising in future years of assessment.

The effect of the tax treatment of losses, as described above, implies that in reality the "cash flow" benefit of the capital loss in equation (17) may require discounting where it adds to the assessed loss of a share dealer or where it cannot be set-off against capital gains in the current year, as the case may be. Put another way, although the loss does provide a benefit (unless the taxpayer holding the shares on capital account never earns another capital gain in his lifetime), the benefit may only be "cashed out" in future period and would thus need to be discounted in the calculation of $CF_{2,distr}$ and thus $V_{1,distr}$.

Notwithstanding this, attempting to model this effect requires exogenous shareholder data and would only complicate the model; furthermore, the effect of omitting the discounting is not expected to be large. I thus assume for the purposes of developing the model that

the capital loss in equation (17) is a cash benefit to the shareholders at the end of period 2.

As discussed above, $V_{1,distr}$ is the present value of $CF_{2,distr}$ (discounted at the after-tax return from the risk-free asset) and the total value of equity in the hands of shareholders at time 1 is the sum of $V_{1,distr}$ and $CF_{1,distr}$.

I now model the shareholder cash flows that would apply where the firm chooses to retain the cash at time 1 and fully reinvest it for period 2. The (negative) cash flow $CF_{1,retain}$ at time 1, as is the case in the US model, is simply $-\alpha t_{cg}(V_{1,retain} - S_0)$. Both NI_1 and S_0 grow at the after-tax return from the risk-free asset of $[1 + r(1 - t_c)]$. At time 2, the firm distributes the net income after tax from both period (again, either as a dividend or as consideration for a repurchase) and S_0 is distributed as a non-taxable return of capital. The shareholders that invested at time 1 receive the capital loss benefit from the increased tax cost of their shares. Under this scenario, the total expected cash flow to shareholders at time 2 is:

$$CF_{2,retain} = \frac{NI_1[1 + r(1 - t_c)]}{(1 + t_{STC})} + S_0[1 + \frac{r(1 - t_c)}{(1 + t_{STC})}] + \alpha t_{cg}(V_{1,retain} - S_0) \qquad (18)$$

Once again, $V_{1,retain}$ is the present value of $CF_{2,retain}$ and the total value of equity is the sum of $V_{1,retain}$ and $CF_{1,retain}$.

The tax benefit of retained earnings relative to paying dividends is thus the difference between the market values of shareholder equity under the two respective scenarios (retention versus dividend payments). LL present this benefit as their Proposition 4 (LL equation (21) above); in the South African case, the net present value of benefit represented by the following:

$$NPV(RE_1) = RE_1 \frac{r}{(1+t_{STC})[1+r(1-t_i)-\alpha t_{cg}]}[(1-t_c)(1-\alpha t_{cg})-(1-t_i)] \qquad (19)$$

RE_1 in equation (19) is equal to NI_1 if the dividend payout is at time 1 is zero. It is now necessary to model the benefit of external equity over investment in the risk-free asset, as LL did in their equation (23) above. If the firm issues new equity S_1 at date 1, invests the cash from this issue at the risk-free rate and makes a full distribution of both S_1 and the net income (after corporate taxes) arising from S_1 to shareholders at date 2, shareholders receive a cash flow (net of STC) of:

$$S_1[1+r\frac{(1-t_c)}{(1+t_{STC})}] \qquad (20)$$

The net present value of the benefit of issuing S_1 versus investing in the risk-free asset is thus:

$$NPV(S_1) = S_1 \frac{r}{[1+r(1-t_i)]}[\frac{(1-t_c)}{(1+t_{STC})}-(1-t_i)] \qquad (21)$$

As LL point out, equation (21) does not account for the effect of CGT on shareholder returns. Including the CGT effect in equation (21) yields the following:

$$NPV(S_1) = S_1 \frac{r(1-\alpha t_{cg})}{[1+r(1-t_i)-\alpha t_{cg}]}[\frac{(1-t_c)}{(1+t_{STC})}-(1-t_i)] \tag{22}$$

The benefit of retained income (or internal equity) relative to issuing new capital (or external equity) is established by comparing equations (20) and (22); clearly this benefit is a function of the rate of STC and the income tax and CGT rates of the shareholder.

Specifically, retained earnings are less costly than external equity where the shareholder's effective rate of CGT is greater than the rate of STC. LL's models illustrated the opposite condition must apply in order for retained earnings to be less costly; this is due to the mechanics of STC relative to a shareholder level dividend tax and supports the previous discussion above: the higher return for shareholders from a dividend means a higher cost for the company.

I examine the benefit of retained earnings versus external equity for different combinations of actual South African tax rates over the 2002 to 2007 sample period. There are four possible classes of shareholders from a tax point of view: companies, individuals, trusts and tax-exempt shareholders (the last class would include non-residents that do not hold the shares in question through a permanent establishment). With two rates of STC applicable to the sample period of this study, there are thus 8

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possible combinations of STC, CGT and income tax[63]. Retained earnings are found to be less costly than external equity in five out of eight cases; external equity is less costly only in the case of an individual shareholder with a 12.5% STC rate and in the case of a tax-exempt shareholder with both rates of STC[64].

Before considering the implications of the South African models on corporate financing decisions, it is worth discussing why STC "credits" are not included in the models. As discussed more fully in Chapter 2 above, STC is levied on the net amounts of dividends paid by a company; dividends received are offset against gross dividends paid in order to calculate the "net amount" for the purposes of the ITA and thus provide the so-called STC credits. In the context of the models, any STC liability in the hands of the firm translates into an STC credit for shareholders of that firm that are a company and thus liable for STC when declaring dividends to their shareholders. However, unlike the CGT loss included in the models, STC credits are not actually cash benefits to the corporate shareholders; the cost to such shareholders when making taxable distributions is the same regardless of whether the STC portion is paid to SARS (when no credits are available) or paid to their shareholders (when the firm has created credits for its corporate shareholders). The tax and cash benefit of STC credits arising from dividends declared by the firm thus arises in the shareholders of its shareholders; this is one step removed from the scope of the models and is thus not included therein.

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[63] For the purposes of this comparison, 2007 rates of CGT and income tax are applied throughout the sample period. This is possible because tax rates have consistently reduced over time from 2002 to 2007; the 2007 results are thus indicative of the results over time.

[64] For obvious reasons, this empirical comparison is not affected by whether the shareholder in question holds the shares on capital or revenue account. If the latter treatment applies, the tax rate that would apply to a disposal is double or quadruple the rate of CGT, as the case may be; if the CGT rate exceeds the STC rate, so must the rate of income tax.

Notwithstanding the above, the STC credits of the firm itself would have a cash benefit for shareholders that are companies and could thus be included in the model. The cash flows underlying the models would thus require adjustment in the case of a company with shareholders that are companies, where the underlying company has STC credits available. These adjustments are not discussed further for the purposes of this study, as information relating to STC credits and the nature of a company's shareholders are not available in practice.

8.3 Implications of the models

The relative costs of internal and external equity add an extra dimension to the traditional discussions around firm financing decisions. Specifically, LL examine the impact of their findings on the key areas of capital structure, payout policy and cost of capital. Their findings have been discussed in Chapter 3 above. Chapter 3 also discussed the existing research around capital structure in South Africa and noted a lack of consideration of tax effects on optimal capital structure.

LL's findings about the incomplete nature of standard trade-off theory find application in the South African context. The South African literature reviewed does not discuss the possible tax benefits of internal equity over external equity; if managers are aware of this benefit, this would go some way to explaining the tendency of South African managers to display short-term pecking order behaviour despite a tendency to adhere to trade-off behaviour in the form of long-term debt/equity ratios. LL raise this point in the US

context as well. The explanatory power of my findings, however, would only apply if managers are aware of the relationship between tax rates and shareholder return; the existing literature does not shed any light on this point. At the very least, the models imply that the tax effects of third component of capital structure (retained earnings) should be considered by management when making decisions about capital structure.

The South African models developed above, which are entirely original in the context of South African corporate finance research, show a clear link between STC, shareholder tax rates and cost of capital. Specifically, cost of equity may be split into cost of internal equity and cost of external equity. As LL point out, the differences between the costs of the two types of equity has an immediate effect on project and investment selection (capital budgeting) where WACC is used as a benchmarking tool for this purpose. A budgeting exercise focusing entirely on the cost of issuing external equity and ignoring a reallocation of retained earnings is fundamentally incomplete and may lead to unnecessary rejections of viable investments.

Finally, the implications of my findings for capital structure are also applicable to the payout behavior of South African firms. The literature reviewed makes it clear that managers choose payout levels based mainly on commercial and market factors and not by virtue of any perceived tax benefit to shareholders. While this approach is completely understandable, it is submitted that the tax effects of retaining income as opposed to declaring dividends should be a factor in the dividend decision, particularly in light of the effects thereof on optimal capital structure and project selection, as set out above. This

may or may not occur in practice; the relatively small sample sizes surveyed by, for example, Firer *et al* obviates any firm conclusions in this regard.

In summary, the South African versions of the LL models prove that internal equity may have a cost advantage over external equity depending on shareholder tax rates and STC. The extent of this benefit would also be affected by the propensity of shareholders to trade in the shares of the firm (a factor that is clearly exogenous to the information employed by the firm in making and evaluating financing decisions). The aforementioned benefit of internal equity appears to be ignored by South African managers, yet has fundamental implications for firm capital structure, cost of capital and payout decisions.

9 Expectations under the proposed SDT regime

9.1 Expected investor return, SDT and CGT

The proposed SDT regime will affect the relationship between dividend taxes and CGT and thus the benefit of declaring dividends, as formally specified in equation (12) above. The SDT regime is fully discussed in Chapter 2 above; to reiterate, dividends declared by a company to taxable shareholders will be subject to a 10% withholding tax. The tax is withheld by the company and paid over to SARS, meaning that the shareholder receives only the net dividend. Despite the mechanism for withholding and paying the tax, the liability for the tax vests in the shareholder as is the case in the global tax regimes that were the subject of the international literature reviewed for the purpose of this study.

In order to illustrate the position after the change, a new formal specification of the relationship between dividends and capital gains is derived as follows:

Once again, net income for the period is expressed as NI. The rate of dividend tax is t_d, the effective rate of CGT for the investor remains t_{cg} and the dividend payout ratio (expressed as a percentage of net income) is p[65]. As with the previous derivation, the investor is assumed to hold a share for one period and dispose thereof via a third party sale at the end of such period.

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[65] The limitation applicable to p under the current STC regime is no longer applicable. In other words, the full amount of the firm's income may be distributed as a (gross) dividend.

1. The dividend declared by the firm is (NI^*p)

2. No STC is payable; however, the investor receives only the net dividend (after the firm has withheld the dividend tax) of $NI^*p(1-t_d)$.

3. The capital gain is $NI(1-p)$

4. The CGT payable in respect of the abovementioned capital gain is $t_{cg}^* NI(1-p)$

5. The net cash flow to the investor (after CGT) is $NI^*p(1-t_d) + NI(1-p)(1-t_{cg})$

As in the previous derivation, if no dividend was paid (i.e. $p = 0$), the return to the shareholder would be $NI^*(1-t_{cg})$. The difference between the return when the firm pays dividends and the return when no dividends are paid is thus:

$$NI^*p(1-t_d) + NI(1-p)(1-t_{cg}) - NI^*(1-t_{cg}) \tag{23}$$

Simplifying the above yields the expression:

$$NI^*p(t_{cg} - t_d) \tag{24}$$

The difference between equation (12) in Chapter 5 of this study and equation (24) is immediately apparent. Under the new SDT regime, a policy of paying dividends rather than retaining income is beneficial from an investor's point of view only if the rate of CGT is greater than the rate of SDT.

There are two rates of SDT proposed under the new regime: 10% for taxable shareholders[66] and 0% for non-taxable shareholders. Broadly speaking, taxable shareholders are non-intermediaries that are individuals, trusts, non-residents and the IPF of a long-term insurer; non-taxable shareholders generally includes those entities that are currently exempt from tax and any resident company. Based on current rates of CGT, equation (24) implies that:

1. The only non-corporate entity that would realise a tax benefit from dividends as opposed to capital gains are trusts that do not vest the dividends in any beneficiaries and are subject to SDT in their own hands.

2. Individuals (at the top marginal rate) and tax-exempt entities are ambivalent to the receipt of dividends or capital gains (an IPF and individuals paying tax below the top rate would generally prefer to be taxed at CGT rates).

3. Companies (with an effective CGT rate of 14% and an SDT rate of 0%) would significantly prefer to receive dividends as opposed to realising investments in shares through sale.

4. Non-resident investors in South African shares would significantly prefer to receive capital gains as opposed to dividends, assuming that such shares are outside the ambit of South African CGT.

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[66] The word "shareholder" refers to "beneficial owner" in the context of the proposed SDT legislation.

9.2 The expected price effect of SDT and CGT

The proposed move to the shareholder-level SDT has a fundamental effect on the relationship between dividend taxes and CGT in South Africa and the benefit to shareholders of firm payouts as opposed to earnings retention. By extension, the move to the new regime will change how these taxes are treated by investors when valuing the shares of South African companies.

The regression analysis set out in Chapter 6 above supports the idea that South African investors are aware of the tax effects of dividends and capital gains on the expected return from their equity investments and accordingly factor these effects into stock prices in the market. As previously noted, under the existing STC regime dividend payouts result in a net benefit in respect of expected return to most classes of shareholders, but not to non-taxable entities or non-residents. This tax-induced increase in expected return translates into a positive correlation between *ex ante* measures of cost of equity and positive dividend yields; prices are thus decreased accordingly. Even without knowing the extent of ownership of non-taxable shareholders, my empirical testing supports the hypothesis of a negative tax effect on price.

Under the new SDT regime, the positions for most classes of shareholder are different. As set out in Chapter 5 above, from a tax point of view individuals (including an IPF) are either ambivalent as to the two policies (payout or retention) or prefer capital gains (i.e. retention); companies prefer to receive non-taxable dividends; non-taxable South African entities are ambivalent and non-residents prefer capital gains. The only class of

shareholder that would still realise a net benefit of dividends over capital gains is trusts that do not vest dividends in beneficiaries (note that this would exclude unit trusts, which typically distribute all income to unit holders).

In summary, under the SDT regime the price effect that currently exists under the STC regime is expected to change to the extent that shares are held by individuals or an IPF (the position for companies, trusts, non-taxable entities and foreigners remains unchanged). While the extent of ownership by these two classes of shareholder are currently unknown, the expected effect is an increase in prices for those companies held by such classes (the expected return from dividend-paying shares decreases, resulting in a decreased cost of capital and thus presumably an increased price).

Once the SDT regime has become entrenched in the South African fiscal environment and data becomes available, it is submitted that any future empirical testing of the expected position as discussed above would depend on knowing the extent to which South African firms are held by each class of taxpayer.

9.3 SDT and the cost of the components of capital structure

The proposed SDT regime will have a fundamental impact on both the models and the implications thereof for South African firms. In addition to the general effect of the change in dividend tax regimes, SARS has also announced a specific change that will impact listed companies that undertake share repurchases. I deal with each of these two impacts, the general and the specific repurchase scenario, separately below.

9.3.1 The move from STC to shareholder-level tax

The divergence of the South African models from those originally developed by LL is largely due to the incidence of STC on the firm, rather than the shareholder, and the implications this has on the amount of earnings that can be distributed. Specifically, as noted above, the dividend tax factor in the South African context is a positive divisor $(1/(1+t_{STC}))$ rather than the familiar negative multiplier $(1-t_d)$. The incidence of STC and the manner in which it is applied to firm distributions means, as is clear from the models, that a firm with earnings after tax of (for example) R100 cannot distribute the entire R100 as a dividend. The available cash must fund both the dividend and the STC payable in respect of that dividend, which means that the amount received by shareholders is less than the total earnings.

Under SDT, firms must withhold a statutory percentage (10%, at the time of writing) of dividends paid to taxable shareholders (an important point that I return to below) and pay the amount withheld to SARS. Economically, this means that firms can declare all of their earnings as dividends and the tax is borne by the shareholder. The $(1+t_{STC})$ divisor terms in the models would thus be replaced by $(1-t_{SDT})$ terms under the SDT regime; in other words, the models presented in LL would apply to South African firms with no changes required.

The changes to the models under the STC regime has no effect on the implications of the models to South African firms with respect to the potential benefits of internal equity relative to external equity. However, the conditions under which such benefits will apply

have changed: as mentioned above, LL compare their propositions and conclude that internal equity is less costly than external equity where CGT rates are less than dividend tax rates, whereas I conclude that the opposite is true under STC. Furthermore, LL conclude that the rate of dividend tax is merely a multiplicative effect on the benefit and not a pre-requisite. This implies that using retained income instead of issuing external equity will benefit firms with tax-exempt shareholders (such shareholders will also be tax-exempt for SDT purposes). This in turn leads to an interesting paradox for managers of firms with the aforementioned mix of shareholders: how should such managers balance the cash flow needs of such shareholders (tax-exempt entities comprise mainly institutional funds) and thus the pressure to declare dividends with the apparent benefits to the firm of retaining income and applying it to investment opportunities?

9.3.2 The specific case of repurchases by listed companies

The SDT legislation released by SARS at the time of writing provides for a hitherto unique treatment for share repurchases undertaken by listed companies. Although share repurchases will remain "dividends" for SDT purposes as is the case under the STC regime, share repurchases by listed companies will not; such repurchases will be treated as a normal purchase and sale transaction and will thus be subject to CGT (or the full rate of income tax for share dealers, as the case may be). This specific treatment was adopted by SARS after a number of academics and tax practitioners argued that the dividend treatment of share repurchases could lead to different prices in the market because, again for the first time in South Africa, only certain shareholders are subject to the new dividend tax.

As previously noted, share repurchases are subject to CGT treatment under the US tax code in the manner that is proposed for repurchases of listed shares in South Africa. This treatment led to LL's Proposition 3, which is not discussed above due to its non-application under the existing South African STC regime. Proposition 3 is identical to Proposition 4 (presented as LL equation (21) above), except that the dividend tax factor in the numerator $(1-t_{dv})$ is replaced with the CGT factor $(1-t_{cg})$ and the exogenous factor α (the portion of shares traded by shareholders) is replaced with an exogenous factor β. LL define β as the ratio of the tax cost of the stock in the hands of the shareholder at a point in time to the market value of the stock at that time (V_1 in the various models above). LL prove that when a share repurchase triggers CGT in the hands of shareholders, the factor β determines the extent of the benefit of retained earnings: where β is low, repurchasing shares has a greater tax effect than where β is high (because more CGT is payable) thus increasing the incentive to retain income in the firm.

This proposed treatment for repurchases of listed shares in South Africa means that under SDT listed firms will have a unique financing consideration if such transactions are being considered. Admittedly the exogenous factor β would be difficult, if not impossible, for firms to obtain and this would affect the ability of firms to quantify the benefit of deferring repurchases for planning purposes. However, LL's models, specifically their Proposition 3, find application under the proposed SDT regime and thus so do the implications of repurchases identified by LL for capital structure and cost of capital.

10 Conclusions

This study examines the effect of STC (the firm-level tax on dividends that is globally unique to South Africa) and shareholder-level CGT on various aspects of corporate finance in South Africa. Specifically, after deriving and specifying the relationship between the taxes, I examine the effect of this relationship on expected investor return and stock valuation from the investor's point of view, as well as the effect thereof on firm cost of capital and on the relative costs of the components of firm capital structure. The latter effect has a direct bearing on the concept of optimal capital structure in South Africa.

I also attempt to predict the effect of the proposed move from STC to a shareholder-level SDT regime on each of the abovementioned areas, having regard to the position under STC and the results of global research into similar systems of taxation overseas.

I set out below a summary of the results of the study in each of the abovementioned areas, the conclusions that may be drawn from such results and how those conclusions contribute to the body of corporate finance knowledge in South Africa. Finally, I suggest potential opportunities for future research in this area.

10.1 The relationship between STC, CGT and expected return

The effect of taxes on investor required return and thus firm cost of capital is a central issue in the international literature concerned with the capitalisation of dividend taxes. This issue is equally important in the South African context. In assessing the effect of

taxes on investor valuation, I first discuss and model the relationship between STC, CGT and expected return.

The expected return from an investment in shares is composed of two elements: the dividend distributed in respect of such shares and the capital growth thereon. In the eyes of the investor, only the latter is affected by tax (dividend income is tax-exempt in the recipient's hands, having been subject to STC at the corporate level). I calculate an STC-adjusted growth rate that includes the STC cost of declaring dividends, using the methodology implied by the dividend discount model.

The tax cost of STC decreases expected growth and thus decreases the capital gain arising when the stock in question is disposed of. When CGT is considered as well, the net effect of a firm paying out dividends is an increase in expected return relative to the expected return where no dividend is paid, as long as the difference between the investors CGT rate and the after-CGT STC rate is positive. Prior to this study, this relationship had not been formally derived nor have the effects thereof been discussed in prior South African research.

The aforementioned relationship implies that when CGT rates are low (relative to STC) or zero, the distribution of dividends has a negative effect on shareholder return. Tax-exempt entities in South Africa should thus have lower expected returns from dividend-paying firms than from non-dividend paying firms if both STC and CGT are taken into

account in the valuation process; this South African clientele effect has bearing on the quantum of tax capitalisation into stock prices.

Comparing rates of CGT and STC for the sample period (2002 to 2007), I find that dividends provided a net tax benefit to shareholders that were companies and non-vesting trusts throughout the sample period. Individual shareholders did not realise such a benefit until the STC rate was lowered to 10% in 2007.

My findings on the relationship between taxes and expected return imply that a regression of the latter on dividend yield would indicate positive correlation throughout the sample period, with the quantum of the positive correlation coefficients being affected by the extent of ownership by tax-exempt shareholders.

10.2 Results of empirical testing - STC, CGT and firm valuation

In order to test whether or not the relationship between taxes and expected return is capitalised into stock prices, I formulate a South African RIVM model that incorporates the unique effect of STC on firm value. CGT is not included, as the model is developed from the point of view of an investor; CGT is thus an effect and not a cause. The South African model includes a special South African case of the clean surplus relationship of accounting, which includes the STC cost of dividends declared in the model of firm book value (the existence of STC means that retained earnings decrease by more than the profit appropriated via the dividend distribution).

The specification of the South African RIVM model implies that the dividend payout ratio and STC rate are factors in stock value, despite the contentions of CHHK that value is independent of payout behaviour where tax capitalisation occurs. This point, along with the criticisms of the CHHK method by DEMB and HMS (refer Chapter 3 above) and the nature of STC and CGT in South Africa, leads me to discard the CHHK approach of testing for tax capitalisation and focus on the ICOC methodology. I use this latter methodology to test, via regression analysis, whether or not the relationship between STC, CGT (exogenous to the RIVM model but still a factor for shareholders) and expected return is capitalised into prices.

I calculate ICOC and IEP measures for a sample of listed South African firms for the sample period of 2002 to 2007 and regress these measures on dividend yield and a selection of controls. The results of the regression analysis are in line with predictions under tax capitalisation and appear to support the hypothesis that investor expectations as to the tax treatment of dividends and capital gains have an effect on expected return and thus cost of equity and stock prices. Furthermore, despite a lack of information as to the extent of ownership by tax-exempt institutions (which would mitigate the effect of capitalising a perceived tax benefit into prices as such a benefit is not available to institutions of this nature), I conclude intuitively that the results of my regression analyses already include the effect of a shareholding by non-taxable entities (such entities are known to favor investments that pay dividends due to cash flow requirements) and that the positive correlation between IEP and dividend yield holds regardless.

10.3 STC and firm cost of capital

In Chapter 7, I examine and discuss the effect of STC on the components of firm cost of equity and thus overall cost of capital.

The South African literature indicates that the CAPM is the predominant method of estimating a firm's cost of equity by investors (for valuation purposes) and by managers (for the purposes of calculating WACC). CAPM uses historical rates of return in measures of firm beta, but the existence of STC means that cost of equity and rate of return are not equal (the former is higher than the latter where dividends are a component of required return). I thus contend that managerial estimates of cost of equity are understated by the STC cost of achieving the required return unless certain conditions regarding payout levels are met.

Furthermore, prior period STC costs are usually included in firm results due to the "above-the-line" method of accounting for STC, notwithstanding that it relates to a "below-the-line" appropriation of profit. Where these STC-inclusive measures are used to calculate measures such as ROE and ultimately beta, such measures of beta are effectively comparing firm dividend payout policies to those in the market portfolio. This may lead to incorrect risk assessments and cost of equity measures.

In summary, I conclude that the probability that South African investors and managers are misstating cost of equity due to a lack of consideration for STC is extremely high.

10.4 The relative costs of components of capital structure

A review of the South African literature dealing with capital structure indicates that research and discussion on the effect of taxes is generally omitted. This omission is most notable in research examining which of the commonly accepted theories of optimal capital structure is most prevalent in South Africa.

Studies such as de Wet (2006) and de Wet and Dhanraj (2007) examine how the use of debt can unlock value in South African firms, but without considering the relative tax costs of each component of capital. Wu and Negash (2002) conclude that South African managers adopt dynamic trade-off behaviour in the long term and a pecking-order approach in the short-term; in considering the reason for this behaviour, tax benefits were not taken into account

The survey of South African managers by Correia and Cramer (2008), as discussed above, finds that a majority of the respondents calculate and apply a target debt/equity ratio for the purposes of capital budgeting decisions (including calculating WACC). This appears in line with the findings of Wu and Negash (ibid) (a target debt-equity ratio is indicative of trade-off behaviour). Such behaviour indicates that managers do not consider tax-benefits in terms of long-term decisions, but may do so in the short-term (hence observations of pecking-order type behaviour).

The effect of taxes is similarly ignored in the South African literature in the area of firm dividend payout behaviour. Here, the omission of detailed research on the effect of taxes

is even more glaring, as some of the research attempts to use international reasoning to comment on a system where dividends are taxed in a wholly unique manner and share repurchases (which are generally capital transactions overseas) are uniquely treated as dividends. Despite the lack of detailed research around the effect of taxes on dividend payout levels, the domestic research does indicate that managers do not consider taxes when planning payout decisions and that commercial factors such as market expectations have more weight.

In Chapter 3, I review a study by Lewellen and Lewellen (2006) which attempts to combine the payout and capital structure literature by considering the effect of taxes on both. In the spirit of Lewellen and Lewellen, I discuss and model (for one period and two, the latter of which may be extended into infinity) the effect of STC and CGT on the relative costs of debt, external equity (i.e. issuing new equity) and internal equity (retained earnings). Unlike the discussion and specification of expected return, the models are derived from the point of view of the firm and thus include the effect of CGT on shareholders.

I find that the benefit of retained income (or internal equity) relative to issuing new capital (or external equity) is a function of the rate of STC and the income tax and thus CGT rates of the shareholder. Retained earnings are less costly than external equity where the shareholder's effective rate of CGT is greater than the rate of STC; this relationship holds for five out of eight combinations of classes of shareholder and rates of STC over the sample period. External equity is found to be less costly than retained

earnings for tax-exempt shareholders (including non-residents) and for individuals where the historical STC rate of 12,5% applied.

My findings pertaining to the relative costs of internal and external equity add an extra dimension to the traditional discussions around firm financing decisions in South Africa. If South African managers are aware of the benefit of retained earnings, such benefit may be a factor in motivating the short-term pecking order behaviour observed by researchers such as Wu and Negash.

Even if managers are not aware and/or motivated by the tax benefits of the components of capital structure, it is submitted that they certainly should be. The relative costs of the two types of equity have an immediate bearing on WACC and thus on project and investment selection. Where capital budgeting does not recognise the tax benefits of each component of equity, the decision-making process is fundamentally incomplete.

Finally, I submit that dividend payout policy is inextricably linked to the aforementioned relative costs of capital and, despite the need for commercial considerations by management when planning dividends, should thus also be considered in the context of planning firm capital structure.

10.5 Expectations under SDT

Having regard to how the proposed SDT regime will operate, I predict that the relationship between dividend taxes, CGT and STC will change fundamentally under the

new regime. Where a tax on dividends such as SDT applies, a policy of paying dividends rather than retaining income is beneficial from an investor's point of view only if the rate of CGT is greater than the rate of SDT.

Under these conditions, the mix of shareholders that would obtain a net tax benefit from dividends as opposed to capital gains is different. Non-vesting trusts would retain a net tax benefit from dividends as opposed to capital gains. In contrast to the position under STC, individuals (at the top marginal rate) and tax-exempt entities are ambivalent to the receipt of dividends or capital gains (an IPF and individuals paying tax below the top rate would generally prefer to be taxed at CGT rates). Companies, which are exempt from SDT, would now significantly prefer dividends to capital gains. Finally, non-resident investors in South African shares would significantly prefer to receive capital gains as opposed to dividends, assuming that such shares are outside the ambit of South African CGT.

The move to the new regime will change how dividend tax and CGT are treated by investors when valuing the shares of South African companies. Under the SDT regime the price effect that currently exists under the STC regime is expected to change to the extent that shares are held by individuals or an IPF (the position for companies, trusts, non-taxable entities and foreigners remains unchanged). While the extent of ownership by these two classes of shareholder is currently unknown, the expected effect is an increase in prices for those shares held by such classes due to lower expected rates of return.

The move to SDT means that dividend tax ceases to be a cost to the firm. This is expected to have an immediate decreasing effect on measures of firm cost of equity as calculated by the CAPM, including measures of firm beta.

Finally, the proposed SDT regime will clearly affect the models developed to examine the relative costs of capital in South Africa. More specifically, the move to a shareholder-level withholding tax means that the models developed by Lewellen and Lewellen (2006) will apply as they are presented by the authors in the United States context.

The first major change would thus be the conditions under which a tax benefit is afforded by the use of internal, rather than external equity. Under SDT, internal equity is less costly than external equity where CGT rates are less than dividend tax rates. Furthermore, per Lewellen and Lewellen (2006) the rate of dividend tax has a multiplicative effect on the benefit and is not a pre-requisite for such benefit; the benefit could thus apply in the case of a firm with SDT-exempt shareholders. Under SDT, managers of firms with tax-exempt shareholders would thus have to balance the cash flow needs of tax-exempt shareholders (such as pension and benefit funds) with the benefit of retaining income and not paying dividends.

Furthermore, under the SDT regime share repurchases by listed companies will be treated as capital transactions and not as dividends; such repurchases will be subject to CGT or income tax, as the case may be. This treatment is in line with the treatment of share

repurchases in other international jurisdictions. The models developed by Lewellen and Lewellen (ibid) indicate that where this type of treatment applies, the benefit of internal equity over external equity is dependent on an exogenous factor: the ratio of firm value to the tax base cost of the share in the hands of the shareholder, which is itself based on *inter alia* a share's trading volume. Firms attempting to evaluate repurchases under the new tax regime will thus require this external measure in order to ensure completeness of information for the decision-making process.

10.6 Areas for future research

It is suggested that once sufficient data is available under the SDT regime, future research in South African corporate finance should examine the effects of SDT and CGT on the areas considered in this study. As discussed above, such research would need to consider external factors such as the nature of a firm's shareholders, the extent to which shares are traded and the tax cost of the shares in the shareholders' hands.

10.7 Summation

The conclusions set out above indicate that South African STC and CGT have measurable effects on firm valuation, cost of capital and capital structure (including dividend payout ratios). The South African literature to date indicates that these effects have largely been ignored. This study presents wholly original research and empirical models in the South African context that may be used as the basis for future research in these areas.

I challenge other South African researchers to re-examine their findings around firm valuation, cost of capital, payout behavior and capital structure in light of the research presented in this study. Furthermore, the predictions around SDT should be empirically examined once data becomes available.

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Sources of quantitative data

- Damodaran Online: http://pages.stern.nyu.edu/~adamodar

- South African Reserve Bank: www.reservebank.co.za

Appendix A: Sample of firms used for empirical testing

Ticker	Company
ABL	AFRICAN BANK INVESTMENTS LTD
AEG	AVENG LTD
AFE	AECI LTD
AFR	AFGRI LTD
AFX	AFRICAN OXYGEN LIMITED
ALT	ALLIED TECHNOLOGIES LTD
AMS	ANGLO AMERICAN PLATINUM CORP
ANG	ANGLOGOLD LTD
APN	ASPEN PHARMACARE HOLDINGS LT
ARL	ASTRAL FOODS LTD
ASA	ABSA GROUP LTD
ATN	ALLIED ELECTRONICS CORP LTD
AVI	ANGLOVAAL INDUSTRIES LTD
BAT	BRAIT SA
BAW	BARLOWORLD LTD
BEL	BELL EQUIPMENT LTD
BTG	BYTES TECHNOLOGY GROUP LTD
BVT	BIDVEST GROUP LTD
CAT	CAXTON AND CTP PUBLISHERS AN
CLE	CLIENTELE LIFE ASSURANCE CO
CLH	CITY LODGE HOTELS LTD
CRM	CERAMIC INDUSTRIES LIMITED
DEL	DELTA ELECTRICAL INDUSTRIES
DLV	DORBYL LTD
DST	DISTELL GROUP LTD
DSY	DISCOVERY HOLDINGS LIMITED
DTC	DATATEC LTD
ELH	ELLERINE HOLDINGS LTD
FOS	FOSCHINI LTD
FSR	FIRSTRAND LTD
GDF	GOLD REEF CASINO RESORTS LTD
GFI	GOLD FIELDS LTD
GMB	GLENRAND MIB LTD
GND	GRINDROD LTD
GRF	GROUP FIVE LTD
HAR	HARMONY GOLD MINING CO LTD
HDC	HUDACO INDUSTRIES LTD

HVL	HIGHVELD STEEL AND VANADIUM
ILV	ILLOVO SUGAR LTD
IMP	IMPALA PLATINUM HOLDINGS LTD
INL	INVESTEC LTD
IPL	IMPERIAL HOLDINGS LTD
ITE	ITALTILE LTD
IVT	INVICTA HOLDINGS LTD
JDG	JD GROUP LTD
JNC	JOHNNIC HOLDINGS LTD
KGM	KAGISO MEDIA LTD
KWV	KWV INVESTMENTS LTD
LBH	LIBERTY HOLDINGS LTD
LGL	LIBERTY GROUP LTD
MAF	MUTUAL & FEDERAL INSURANCE
MOB	MOBILE INDUSTRIES LTD
MPC	MR PRICE GROUP LTD
MSM	MASSMART HOLDINGS LTD
MST	MUSTEK LTD
MTA	METAIR INVESTMENTS LTD
MTN	MTN GROUP LTD
MTX	METOREX LTD
MUR	MURRAY & ROBERTS HOLDINGS
MVL	MVELAPHANDA RESOURCES LTD
NCL	NEW CLICKS HOLDINGS LTD
NED	NEDCOR LTD
NHM	NORTHAM PLATINUM LTD
NPK	NAMPAK LTD
NPN	NASPERS LTD-N SHS
NTC	NETWORK HEALTHCARE HOLDINGS
OCE	OCEANA GROUP LTD
OMN	OMNIA HOLDINGS LTD
PAM	PALABORA MINING CO LTD
PIK	PICK'N PAY STORES LTD
PPC	PRETORIA PORTLAND CEMENT CO
PSG	PSG GROUP LTD
RAH	REAL AFRICA HOLDINGS LTD
RBW	RAINBOW CHICKEN LTD
REM	REMGRO LTD
RLO	REUNERT LTD
RMH	RMB HOLDINGS LTD
SAP	SAPPI LIMITED
SBK	STANDARD BANK GROUP LTD
SHF	STEINHOFF INTL HOLDINGS LTD

SHP	SHOPRITE HOLDINGS LTD
SLM	SANLAM LIMITED
SNT	SANTAM LTD
SOL	SASOL LTD
SPG	SUPER GROUP LTD
TDH	TRADEHOLD LTD
TIW	TIGER WHEELS LTD
TKG	TELKOM SA LTD
TRE	TRENCOR LTD
TRT	TOURISM INVESTMENT CORP LTD
TRU	TRUWORTHS INTERNATIONAL LTD
TSX	TRANS HEX GROUP LTD
WBO	WILSON BAYLY HOLMES-OVCON
WES	WESCO INVESTMENTS LTD
WHL	WOOLWORTHS HOLDINGS LTD

Appendix B: Results of IEP regression – 2002

Regression Statistics	
Multiple R	0.984240258
R Square	0.968728886
Adjusted R Square	0.966972082
Standard Error	0.019467091
Observations	95

ANOVA

	df	SS	MS	F	Significance F
Regression	5	1.044843024	0.208968605	551.4154171	2.40203E-65
Residual	89	0.033728121	0.000378968		
Total	94	1.078571145			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	-0.097461564	0.005499656	-17.72139206	6.14264E-31	-0.108389263	-0.086533864	-0.108389263	-0.086533864
PYDY	1.705024516	0.132125411	12.90459198	4.29824E-22	1.442494145	1.967554888	1.442494145	1.967554888
PYDY Sq	-3.819271909	0.747417508	-5.10995778	1.82481E-06	-5.304374545	-2.334169273	-5.304374545	-2.334169273
Growth	0.698332018	0.014881336	46.92670303	1.44611E-64	0.668763122	0.727900914	0.668763122	0.727900914
B/M	0.005633771	0.001414463	3.982975256	0.000138834	0.002823263	0.008444279	0.002823263	0.008444279
Beta	-0.003628635	0.00782553	-0.463691939	0.644000539	-0.019177796	0.011920526	-0.019177796	0.011920526

Appendix C: Results of IEP regression – 2003

Regression Statistics								
Multiple R	0.672079971							
R Square	0.451691487							
Adjusted R Square	0.420887638							
Standard Error	0.233097828							
Observations	95							
ANOVA								
	df	SS	MS	F	Significance F			
Regression	5	3.983670216	0.796734043	14.66347556	1.79088E-10			
Residual	89	4.835779181	0.054334598					
Total	94	8.819449397						
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	-0.037284763	0.050710736	-0.735243976	0.464124021	-0.138045913	0.063476387	-0.138045913	0.063476387
PYDY	2.910748921	1.646102983	1.768266597	0.080442976	-0.360022574	6.181520416	-0.360022574	6.181520416
PYDY Sq	-14.09757141	8.843436378	-1.59412821	0.114452654	-31.66929074	3.474147931	-31.66929074	3.474147931
Growth	0.702291825	0.171556843	4.093639237	9.32268E-05	0.361412039	1.043171611	0.361412039	1.043171611
B/M	0.125983713	0.01775412	7.096026972	2.97575E-10	0.090706656	0.161260771	0.090706656	0.161260771
Beta	0.102351054	0.088294421	1.159201828	0.249474609	-0.073088076	0.277790185	-0.073088076	0.277790185

Appendix D: Results of IEP regression – 2004

Regression Statistics	
Multiple R	0.959160458
R Square	0.919988785
Adjusted R Square	0.915493773
Standard Error	0.045609709
Observations	95

ANOVA

	df	SS	MS	F	Significance F
Regression	5	2.128806933	0.425761387	204.6688127	3.19202E-47
Residual	89	0.185141854	0.002080246		
Total	94	2.313948787			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	-0.069589014	0.009031364	-7.705260517	1.74118E-11	-0.087534142	-0.051643886	-0.087534142	-0.051643886
PYDY	0.644178985	0.073627264	8.749190844	1.24118E-13	0.497883183	0.790474788	0.497883183	0.790474788
PYDY Sq	-0.172602096	0.030392209	-5.679156026	1.6782E-07	-0.232990766	-0.112213425	-0.232990766	-0.112213425
Growth	0.61319416	0.027836903	22.02810271	8.51158E-38	0.557882827	0.668505492	0.557882827	0.668505492
B/M	0.032562862	0.004272203	7.622030157	2.57291E-11	0.024074085	0.041051638	0.024074085	0.041051638
Beta	0.056873216	0.016458429	3.455567734	0.000843527	0.024170669	0.089575762	0.024170669	0.089575762

Appendix E: Results of IEP regression – 2005

Regression Statistics								
Multiple R	0.935704413							
R Square	0.875542749							
Adjusted R Square	0.868550769							
Standard Error	0.061672512							
Observations	95							
ANOVA								
	df	SS	MS	F	Significance F			
Regression	5	2.381389479	0.476277896	125.2209962	1.02514E-38			
Residual	89	0.338511384	0.003803499					
Total	94	2.719900863						
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	-0.055689588	0.011590025	-4.804958207	6.23528E-06	-0.078718721	-0.032660455	-0.078718721	-0.032660455
PYDY	1.162106504	0.184685357	6.29235865	1.14615E-08	0.795140641	1.529072366	0.795140641	1.529072366
PYDY Sq	-0.634711383	0.3140575	-2.021003744	0.046284313	-1.258736932	-0.010685834	-1.258736932	-0.010685834
Growth	0.653118176	0.037163268	17.57429336	1.09574E-30	0.579275556	0.726960797	0.579275556	0.726960797
B/M	0.029908195	0.005050638	5.921666188	5.87912E-08	0.019872684	0.039943705	0.019872684	0.039943705
Beta	0.018609193	0.013355793	1.393342427	0.166986359	-0.007928483	0.045146869	-0.007928483	0.045146869

Appendix F: Results of IEP regression – 2006

Regression Statistics								
Multiple R	0.944715543							
R Square	0.892487458							
Adjusted R Square	0.886447427							
Standard Error	0.05872179							
Observations	95							
ANOVA								
	df	SS	MS	F	Significance F			
Regression	5	2.547601968	0.509520394	147.7620791	1.56492E-41			
Residual	89	0.306894132	0.003448249					
Total	94	2.8544961						
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	-0.053351081	0.010880435	-4.903395831	4.21144E-06	-0.074970274	-0.031731888	-0.074970274	-0.031731888
PYDY	0.925064012	0.153346491	6.032508523	3.6195E-08	0.620367808	1.229760217	0.620367808	1.229760217
PYDY Sq	-0.017663065	0.202718756	-0.087130885	0.930763214	-0.420460906	0.385134777	-0.420460906	0.385134777
Growth	0.566666326	0.048410034	11.70555523	1.04707E-19	0.470476622	0.66285603	0.470476622	0.66285603
B/M	0.029190195	0.005138401	5.680793635	1.66645E-07	0.018980302	0.039400087	0.018980302	0.039400087
Beta	0.022150392	0.011525243	1.921902366	0.057817431	-0.00075002	0.045050805	-0.00075002	0.045050805

Appendix G: Results of IEP regression – 2007

Regression Statistics								
Multiple R	0.321145512							
R Square	0.10313444							
Adjusted R Square	0.052748734							
Standard Error	0.638064572							
Observations	95							
ANOVA								
	df	SS	MS	F	Significance F			
Regression	5	4.166732658	0.833346532	2.04689879	0.079648631			
Residual	89	36.23424943	0.407126398					
Total	94	40.40098208						
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	0.206005563	0.142616917	1.444467932	0.152118808	-0.077371207	0.489382332	-0.077371207	0.489382332
PYDY	0.188430966	1.174410594	0.160447263	0.872892375	-2.145097819	2.521959751	-2.145097819	2.521959751
PYDY Sq	-0.893154308	1.514136332	-0.589877073	0.556767713	-3.901710882	2.115402267	-3.901710882	2.115402267
Growth	0.7581962	0.662497126	1.14445206	0.255504777	-0.558171449	2.074563849	-0.558171449	2.074563849
B/M	0.112488935	0.045916876	2.449838583	0.016249728	0.021253082	0.203724787	0.021253082	0.203724787
Beta	-0.021348009	0.154362583	-0.138297823	0.890317476	-0.328063168	0.285367149	-0.328063168	0.285367149