The Effect Of South African Dividend And Capital Gains Taxes On Share Prices And Investor Expected Returns

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ABSTRACT

We examine the effect of South African taxes, specifically the secondary tax on companies (STC) and the dividends tax (DT) that replaced it, as well as capital gains tax (CGT), on investor measures of expected return and firm value. The discussion, findings, and models presented in this study are entirely original in the field of South African corporate finance research. We 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. We 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. Finally, we examine the expected position of each of these areas in light of the proposed shareholder dividend tax regime.

Keywords: Dividend Taxes; Capital Gains Taxes; Cost of Capital; Residual Income Valuation Model

1. INTRODUCTION

A number of international studies have examined the extent to which dividend and capital gains taxes are capitalized into stock prices by investors, and how these taxes affect expected return; to date, despite the important implications thereof for the body of knowledge concerning inter alia investor behavior and stock valuations, no such research had been performed in South Africa.

The recent change from South Africa’s unique system of dividend taxation to a new regime that more closely corresponds to the tax systems on which the international research is based, lends itself to globally unique research, and potentially very interesting results. From 1993 until 2012, South African companies were subject to a dividend tax called the “secondary tax on companies,” or “STC,” which operated at the company level and did not vest in the shareholder, as is the case with most dividend taxes imposed by other jurisdictions. In April 2012, STC was replaced with a shareholder-level dividend tax regime, colloquially referred to as the “dividends tax,” or “DT.” The move to DT represents a fundamental shift in how dividends are taxed, bringing South Africa in line with most foreign jurisdictions. This change in dividend tax regimes provides a unique research opportunity with respect to the effect of these and other taxes on South African markets and investor behavior. With this in mind, this article attempts to address and answer the following questions:

1. How should STC and capital gains tax (“CGT”) have been accounted for in expected return and stock valuation models?
2. To what extent did South African 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?
3. How is the replacement of the STC regime with DT expected to change the answers to the previous questions?
For the purposes of this article, very limited knowledge of the legal minutiae of STC, CGT, and DT is necessary. It is sufficient to note that:

1. STC was a secondary corporate tax levied on companies that were tax-resident in South Africa. STC vested in and was payable by a company that declared a dividend and not by the recipient shareholder, while dividends from resident companies were generally tax-exempt in the hands of the recipient.
2. CGT is triggered by the disposal of an asset. A taxpayer effectively deducts the tax cost (“base cost”) of the asset from the “proceeds” arising from the disposal in order to calculate a capital gain or loss.
3. DT, which is levied on a taxable shareholder at a rate of 15%, effectively shifts the corporate incidence of STC to shareholders (beneficial owners) by requiring either the company declaring the dividend or certain intermediaries to withhold DT from the dividend paid out. Certain shareholders are exempt from DT in terms of the new legislation, or pay DT at a lower rate than other classes of shareholders.

The remainder of this article is structured as follows. In Section 2, we review the relevant international literature. In Section 3, we describe the methodology to be applied in the domestic context, having regard to the aforementioned literature. In Section 4, we develop and discuss an intuitive model that describes how STC and CGT should have affected investor expectations of stock returns. In Section 5, we develop and apply a regression model that tests for historic tax capitalisation based on a representative sample of South African stocks. In Section 6, we attempt to predict the position under the new DT regime, and in Section 7 we summarise our results and conclude.

2. INTERNATIONAL LITERATURE

In the last ten years, research on dividend tax capitalisation has moved away from “event study” analyses (such as comparisons of stock prices before and after dividend announcements) to regression testing based on tax-inclusive valuation models. One variation of the “new” approach, introduced in seminal research by Harris and Kemsley (1999) and further developed by Collins and Kemsley (2000) and Harris, Hubbard, and Kemsley (2001) (the aforementioned body of work is hereafter collectively referred to as CHHK), uses the residual income valuation model (“RIVM”) derived by Ohlson (1995), to model the relationship between price, taxes, and the accounting components of book value, and to test whether 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. Several follow-up studies criticised the approach, assumptions and conclusions of this research,1 but even the harshest critics agree that Kemsley et al. have introduced a novel and clever way to test for tax capitalisation.

A second variation of this approach uses a form of the RIVM to solve for ex-ante or implied measures of firm cost of capital. If taxes affect investor measures of expected return (and thus firm cost of equity), they also affect prices (in terms of the RIVM, an increased cost of equity implies less residual or “abnormal” profits, and thus lower measures of market price). Research in this area has determined via empirical testing that these implied cost of capital (“ICOC”) measures do correlate with actual measures of investor returns, provided certain controls are included in the testing methodology.

Gebhart, Li, and Swaminathan (2001) use a version of the RIVM to derive a market-implied ICOC, using actual market prices and the accounting measures in the RIVM, excluding cost of equity, to solve for the market’s measure of cost of capital. Ahn, Cho, Ko, and Yoo (2008) use a sample of Korean firms to regress implied equity premium (IEP, calculated as ICOC less the market risk-free rate) 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 that the measures of ICOC and IEP are more reliable measures of cost of equity than realised returns.

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, with the variable of interest being the required rate of

1Most notably Hanlon, Myers, and Shevlin (2003) and Dhaliwal, Erickson, Myers, and Banyi (2003).
return.\textsuperscript{2} 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, they test hypotheses related to the relationship between dividend yield and the relative rates of dividend tax and CGT, as well as the effect on this relationship of the level of institutional ownership. The authors conclude that shareholder-level dividend taxes cause ICOC measures to increase when the dividend tax penalty is high, and find evidence that ownership by tax-exempt or tax-favoured institutions decreases measures of ICOC and the dividend tax premium, but that ownership by non-taxed favoured institutions has no effect on these measures.

Sinha, Sunder, and Swaminathan (2009) examine the impact of payout policy (levels of dividend, as well as dividends versus stock repurchases) on the cost of equity using ICOC for a sample of NASDAQ/NYSE firms. 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. TESTING FOR STC AND CGT CAPITALIZATION IN SOUTH AFRICA

The ultimate goal of our quantitative testing is to measure the extent to which South African investors have historically taken STC and CGT into account when calculating expected return and valuing South African stocks. This allows us to predict how the move to DT will affect expected returns and valuations going forward.

The international literature reviewed in Section 2 indicates two approaches used to test for the capitalisation of dividend taxes into share prices by way of RIVM-based regression analyses: 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. The assumption of the former that dividend payout has no bearing on the extent of dividend tax capitalization, and that shareholders will value retained earnings as if they will be fully distributed and subjected to shareholder-level dividend taxes, is clearly invalid in the South African context, both intuitively,\textsuperscript{3} and in terms of the South African RIVM model derived below, where the payout percentage is a fundamental component of the model.

Secondly, historically 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. What is relevant is therefore the relationship between taxes and expected return, and the method that best examines this relationship is the ICOC approach, which we choose to follow in this paper.

If investors have historically capitalised expected future STC and CGT liabilities into stock prices, the \textit{ex-ante} measures of cost of equity (or more correctly the implied equity premium, or IEP\textsuperscript{4}) will move predictably with dividend yields. Where STC has an advantage relative to rates of CGT (which, as discussed in Section 4, occurs for all shareholder classes except those that are tax-exempt), a tax capitalisation effect would increase required return

\textsuperscript{2} Effectively, DKLMs’ expectation about shareholders’ expected return is the opposite of the “cost of capital effect” discussed in CHHK and challenged by Hanlon et al. (2003) and Dhaliwal et al. (2003). 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.

\textsuperscript{3} A glance at the historical payout data indicates that firms are unlikely to distribute all retained earnings as dividends within the foreseeable investment horizon of a South African investor.

\textsuperscript{4} 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).
and thus cost of equity/capital, leading to lower stock prices calculated in terms of the RIVM (as expected future abnormal earnings are decreased).

4. AN INTUITIVE APPROACH TO 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. The implication is that capitalisation of investor-level dividend taxes have a positive (increasing) effect on cost of capital, thus making the *ex-ante* measures of the implied equity premium the dependent variable of the regression analyses in such studies. The cost of capital effect is thus an important consideration in the South African context and requires consideration when testing how investors treated STC when valuing shares.

The expected return from a share investment is composed of the expected dividend distributions and capital growth, respectively measured by the dividend yield (the expected one-period-ahead dividend expressed as a percentage of today’s price), and the expected one-period-ahead price and today’s price as a percentage of today’s price (the well-known “holding period return” measure). This combination of dividend yield and capital growth may be derived from the dividend discount model:

\[
P_0 = \frac{D_1}{k - g}
\]

If: \( P_0 = \frac{D_1}{k - g} \) then: \( k = \frac{D_1}{P_0} + g \)

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 into the expected return model, we refer to the domestic tax treatment of the components of return under the STC regime:

1. Dividends from local companies were 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 were/are taxed 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 did 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 reduced the amount of retained earnings available for reinvestment, 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 affects growth \( (g) \) in the expected return model whether or not investors factor CGT into that model. In order to properly measure historical 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, as follows:
If growth \( g \) at time \( t \) in the expected return model is calculated as \( ROE_t \times (1-p) \), then the STC-inclusive growth rate
\[
g_{STC} = \frac{NI_t \times [1-p(1+t_{STC})]}{B_{t-1}} \quad \text{or} \quad g_{int} = Rot_t[1 - p(1+ t_{STC})] \tag{1}
\]

Where:

- \( Rot_t \) is the return on equity (current period net income \( NI_t \) divided by prior period book value \( B_{t-1} \)) at time \( t \)
- \( p \) is the dividend payout ratio
- \( D_t \) is the dividend declared at time \( t \), and
- \( t_{STC} \) is the rate of STC applicable to \( D_t \)

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

\[
g_{STC} = \frac{NI_t \times [1-p(1+t_{STC})]}{B_{t-1}}
\]

Using historical measures of net income and dividend yield to predict 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 maintain a consistent dividend payout ratio. If this expectation is invalid, investors should when calculating expected return account for STC 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 Section 5 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 implies 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 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 \( p \), 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 \( NI \times p \)
2. The STC payable in respect of the abovementioned dividend is \((NI \times p \times t_{STC})\)
3. The capital gain is \((NI - (NI \times p)) - (NI \times p \times t_{STC})\)
4. The CGT payable in respect of the abovementioned capital gain is \( t_{cg} \times [NI - (NI \times p) - (NI \times p \times t_{STC})]\)
5. The net cash flow to the investor (after CGT) is \((NI \times p) + (1-t_{cg})[NI - (NI \times p) - (NI \times p \times t_{STC})]\)

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

\[
(NI \times p) + (1-t_{cg})[NI - (NI \times p) - (NI \times p \times t_{STC})] - NI \times (1-t_{cg}) \tag{2}
\]

Simplifying the above yields the expression:

\[
NI \times p \times [t_{cg} - t_{STC}(1-t_{cg})] \tag{3}
\]

Equation (3) 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 was positive, investors would have measured the expected return from that stock at a premium to the expected return.

\( p \) is limited to \((t_{STC}+t_{CGT}) \times NI \) as discussed above.
from a stock of a non-dividend paying firm if the relationship in Equation (3) holds; that is, the difference between the investors CGT rate and the after-CGT STC rate is positive. This relationship is/was 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 (3) gives rise to the concept of a “tax clientele effect” in South Africa. Internationally, the hypothetical effect of tax clientele on stock prices is positive when ownership by tax-favoured or tax-exempt institutions is high. Equation (3) implies that when CGT rates in South Africa were low (relative to STC), or zero, the distribution of dividends had a negative effect on shareholder return. Tax-exempt entities in South Africa (which would include most institutional investors) should thus have had lower expected returns from dividend-paying firms than from non-dividend paying firms if valuations accounted for both STC and CGT. There should have been no clientele effect if STC was taken into account and CGT not, because STC was levied at the firm level and thus (when taken in isolation) affected the expected return of all shareholders regardless of their tax status. Table 1 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 (3) (ignoring the level of dividend payout):

<table>
<thead>
<tr>
<th>Table 1: STC/CGT Effect on Expected Return 2002 – 2007</th>
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<tr>
<td><strong>Year</strong></td>
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<tr>
<td>Company</td>
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<td>2002</td>
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<td>2006</td>
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<td>2007</td>
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Table 1 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% during 2007 (until that point, the STC rate exceeded the effective CGT rate for individuals – Equation (3) predicts the negative effect on expected return under such conditions). As noted above, these effects were 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 1.

In summary, the above leads to the following prediction: investor required 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 (3).

5. MODEL DEVELOPMENT AND REGRESSION TESTING

5.1 Introduction to the RIVM

Due to its centrality in the methodologies applied to test for tax capitalisation, the RIVM is a fundamental in the context of this article. This section briefly 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. We then derive an amended RIVM (including taxes) for the South African case.

The RIVM is a so-called “deduced valuation” model, which utilises observable accounting data for stock valuation purposes. It 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) – essentially, firm value is seen as 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” (CSR), which holds that changes in book value are explained only by net income, dividends, and new issues or repurchase of capital, applies (Ohlson, 1995).

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.\textsuperscript{6} It is a relatively simple matter to fit a RIVM-based model to a regression model, which makes it possible to test the relationship between the model components.

5.2 Derivation of a RIVM Incorporating STC

A derivation of the RIVM model may be found in Skogsvik (2002). That derivation is not reproduced in its entirety herein, but is referenced where appropriate. The method favoured in the international tax literature to test for dividend tax capitalisation is to regress price (as the dependent variable) against the independent components of an adapted form of the RIVM model that incorporates shareholder-level dividend taxes. In the spirit of the international research, we formulate a RIVM model for the South African case that incorporates the unique effect of STC on firm value. We submit that CGT should not be incorporated into the RIVM model. 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 thus be iterative and incorrect.

The starting point for the RIVM is the net dividend paid by the firm; i.e. total distributions less any fresh injection of capital. Aggregate value 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:

\[
V_0 = \sum_{t=1}^{\infty} \frac{D_t - C_t}{(1 + r_e)^t}
\]

(4)

Where:

\(V_0\) is the total market value of equity at time 0
\(D_t\) is the expected dividend paid to shareholders at time \(t\)
\(C_t\) is the expected new issue of stock capital at time \(t\) (less returns of capital)
\(r_e\) is the 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:

\[
V_0 = \sum_{t=1}^{T} \frac{D_t - C_t}{(1 + r_e)^t} + \frac{V_T}{(1 + r_e)^T}
\]

(5)

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).

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

\[
B_t = B_{t-1} + NI_t - D_t + C_t
\]

(6)

Where:

\(B_t\) is the book value of equity at time \(t\)
\(NI_t\) is the net income after tax for the period ended at time \(t\)
\(D_t\) is the dividends paid to shareholders at time \(t\)

\textsuperscript{6} 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 Section 3 above) appears to imply that dividend payout ratios should be incorporated into the RIVM to test dividend tax capitalisation in all cases.
C_t is the expected new issue of stock capital at time t (less returns of capital)

In the historical South African case, the first departure from the basic model is an adjusted form of the CSR, which includes the STC cost of dividends declared in the model of book value:

$$B_t = B_{t-1} + NI_t - D_t(1+tSTC) + C_t$$

(7)

Where all variables are as described in Equation (6) and tSTC 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. Given that $Rote = NI_t / B_{t-1}$, the adjusted CSR relationship may be re-written as:

$$D_t - C_t = B_{t-1} > Rot_e - (B_{t-1} - B_t) - D_t x tSTC$$

(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 $NI_t x p$ (where $p$ is the dividend payout ratio) and thus $B_{t-1} > Rot_e x p$, 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:

$$V_0 = B_0 + \sum_{t=1}^{T} \frac{B_{t-1} [ROE_t (1 - p x tSTC) - r_e]}{(1 + r_e)^t} + \frac{B_T (V_T / B_T - 1)}{(1 + r_e)^T}$$

(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 required 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).

5.3 The South African ICOC Methodology

Using the RIVM model described in Equation 9, we perform the ICOC testing on a sample of South African firms listed on the JSE for the entire period of 2002 to 2007. This period was selected because it is bracketed by two key events: the introduction of CGT in 2001 and the financial crisis in 2008; the latter distorted market data for subsequent years to an extent that makes comparability uncertain. Firms with consistent losses were omitted, resulting in a final sample size of 95 firms. The firm data employed in this study was sourced from Bloomberg, as collated by Professor Aswath Damodaran of Stern Business School at New York University.

We 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:

1. A firm-specific growth rate is estimated using the STC-adjusted form of the dividend discount model (see Equation (1)).
2. For each year in the sample, we estimate ten annual data points for forward net income for ten years (we 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; this adjustment is necessary in order to avoid double-counting of STC.

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Firms that were listed for only part of the period were excluded in order to provide balanced results.

Loss-making companies were excluded from the sample. Survivorship bias is not considered a risk in this regard: as explained later in this article, the methodology tests the relationship between implied investor expected return and dividend yield. By definition, firms must earn profits to pay dividends.

A list of the firms used in this study is available from the authors on request.

Refer Professor Damoradan’s website at http://pages.stern.nyu.edu/~adamodar
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% for the 2002 to 2006 years, 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. Required return on equity ratios for the predicted periods is 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 of 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 aggregate firm value 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 of more (yields sourced from the South African Reserve Bank). The selection of this proxy is in line with the methodology of DKLM.

5.4 Hypothesis Development and the Regression Equation

The intuitive discussion in Section 4 above implies that the relative rates of STC and shareholder CGT result in a benefit to most classes of shareholder (and especially institutional shareholders, who dominate the JSE), when firm value is realised via capital gains as opposed to dividends. Put another way, shareholders would generally require 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 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, we estimate the following regression equation:

\[
IEP_{SA,i,t} = \beta_0 + \beta_1 yield_{i,t-1} + \beta_2 yield^2_{i,t-1} + \beta_3 g_{STC} + \beta_4 \frac{B}{M} + \beta_5 risk + \epsilon_{i,t}
\]  

(10)

Where:

- \( IEP_{SA,i,t} \) is the IEP measure 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 dependent variables \( g_{STC}, \frac{B}{M}, \) and \( risk \) are three controls that we consider relevant, based on literature such as Ahn et al. (2008). 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\(^{11} \) (measured by

\(^{11}\) As with DKLM and Gebhardt et al. (2001), the natural logarithm of the B/M ratio is used. DKLM state that this is done to control for the effect of outliers.
The results of the regression analyses indicate strong to extremely strong statistical significance for the regression analyses for all years except 2007. Table 2 below summarises the regression coefficients by year.

<table>
<thead>
<tr>
<th>Year</th>
<th>Intercept</th>
<th>Prior Year Dividend Yield</th>
<th>Prior Year Div. Yield Squared</th>
<th>Growth Rate</th>
<th>ln(B/M)</th>
<th>Beta</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>-0.097462*</td>
<td>1.705025*</td>
<td>-3.819272*</td>
<td>0.698332*</td>
<td>0.005634*</td>
<td>-0.003629</td>
</tr>
<tr>
<td>2003</td>
<td>-0.037285</td>
<td>2.910749***</td>
<td>-14.097571</td>
<td>0.702929*</td>
<td>0.125984*</td>
<td>0.102351</td>
</tr>
<tr>
<td>2004</td>
<td>-0.069589*</td>
<td>0.644179*</td>
<td>-0.172602*</td>
<td>0.613194*</td>
<td>0.032563*</td>
<td>0.056873*</td>
</tr>
<tr>
<td>2005</td>
<td>-0.055690*</td>
<td>1.162107*</td>
<td>-0.634711*</td>
<td>0.653118*</td>
<td>0.029908*</td>
<td>0.018609</td>
</tr>
<tr>
<td>2006</td>
<td>-0.053351*</td>
<td>0.925064*</td>
<td>-0.017663</td>
<td>0.566666*</td>
<td>0.029190*</td>
<td>0.022150</td>
</tr>
<tr>
<td>2007</td>
<td>0.206006</td>
<td>0.188431</td>
<td>-0.893154</td>
<td>0.758196</td>
<td>0.112489**</td>
<td>-0.021348</td>
</tr>
</tbody>
</table>

Significant at the: * 99% confidence level, ** 95% confidence level, *** 90% confidence level. Calculations authors' 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.

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 most 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 required return and thus cost of equity and stock prices.

A key aspect of DKLM was that the authors also tested and found support for 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). A similar effect is expected in the South African context, as certain classes of shareholder 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, anecdotally most non-taxable funds have substantial investments in dividend-paying 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 our 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 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.

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12 Betas are sourced from Damodaran Online. They are estimated by regressing weekly returns on stock against an index using 5 years of data.

13 Such classes are tax-exempt institutions (such as pension funds) and non-residents (for South African tax purposes) that hold non-taxable equity investments.
6. EXPECTATIONS UNDER THE DT REGIME

The DT regime affects the relationship between dividend taxes and CGT and thus the benefit of declaring dividends. Under the DT regime, dividends declared by a company to taxable shareholders are subject to a 15% 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. 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 $p$. 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.

1. The dividend declared by the firm is $(Ni \times p)$
2. No STC is payable; however, the investor receives only the net dividend (after the firm has withheld the dividend tax) of $NI \times p(1-t_d)$.
3. The capital gain is $NI(1-p)$
4. The CGT payable in respect of the abovementioned capital gain is $t_{cg} \times NI(1-p)$
5. The net cash flow to the investor (after CGT) is $NI \times p(1-t_d) + NI(1-p)(1-t_{cg})$

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

\[
NI \times p(1-t_d) + NI(1-p)(1-t_{cg}) - NI \times (1-t_{cg})
\]

Simplifying the above yields the expression:

\[
Ni \times p(t_{cg} - t_d)
\]

(12)

The difference from the position under STC is immediately apparent. Under the new DT 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 DT.

There are two rates of DT proposed under the new regime: 15% for taxable shareholders and 0% for non-taxable shareholders. Broadly speaking, taxable shareholders are non-intermediaries that are individuals, trusts, non-residents, and the individual policyholder fund 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 (12) 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 DT 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 a DT 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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14 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.

15 The word “shareholder” refers to “beneficial owner” in the context of the proposed DT legislation.
The move to the new regime will also change how dividend and capital gains taxes are treated by investors when valuing the shares of South African companies.

The regression analysis set out above supports the idea that South African investors are aware of the tax effects of dividends and capital gains on the required 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 required return to most classes of shareholders, but not to non-taxable entities or non-residents. This tax-induced increase in required 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, our empirical testing supports the hypothesis of a negative tax effect on price.

Under the new DT regime, the positions for most classes of shareholder are different. As set out in 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 DT 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 companies held by such classes (the required return from dividend-paying shares is decreased, resulting in a decreased cost of capital and thus presumably an increased price). Once the DT regime has become entrenched in the South African fiscal environment and data becomes available, 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.

7. SUMMARY AND CONCLUSIONS

The effect of taxes on investor required return and thus firm cost of capital is as important in the South African context as it is in the international literature. In assessing the effect of taxes on investor valuation, we first discuss and model the historically relevant relationship between STC, CGT, and required return, and then 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 decreased expected growth and thus decreased the capital gain that arose when a share was disposed of. When CGT is considered as well, the net effect of a firm paying out dividends was an increase in required return relative to the required return where no dividend is paid, as long as the difference between the investor’s CGT rate and the after-CGT STC rate was positive. Prior to this study, this relationship had not been formally derived or its effects discussed.

The above relationship implies that when CGT rates were low (relative to STC) or zero, dividend distributions had a negative effect on shareholder return. Considering both STC and CGT in the valuation process, tax-exempt entities in South Africa should thus have had lower required returns from dividend-paying firms than from non-dividend paying firms; this unique South African clientele effect has bearing on the historical quantum of tax capitalisation into stock prices. Indeed, when comparing rates of CGT and STC for the sample period (2002 to 2007), we 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.

Our findings on the relationship between taxes and required return imply that a regression of the latter on dividend yield would indicate positive correlation throughout the sample period, the quantum of which would depend on the extent of ownership by tax-exempt shareholders. In order to test whether the relationship between
taxes and required return was capitalised into stock prices, we 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. This point, along with the criticisms of the CHHK method and the nature of STC and CGT in South Africa, leads us to discard the CHHK approach of testing for tax capitalisation and focus on the ICOC methodology.

Using the latter methodology we calculate ICOC and IEP measures for a sample of listed South African firms for the period of 2002 to 2007, and regress these measures on dividend yield and a selection of controls. Our results 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 required 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 such a benefit is not available to institutions of this nature), we conclude intuitively that the results of our regression analyses 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.

Having regard to how the proposed DT regime will operate, we predict that the relationship between dividend taxes, CGT and STC will change fundamentally under the new regime. Where a tax on dividends such as DT 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 DT. 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 DT, 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 also change how dividend tax and CGT are treated by investors when valuing South African companies’ shares, compared to under the old STC regime, at least 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.

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