

The cost of capital, the dividend decision and aspects of South African practice

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The objective in this article is to report on the role of the cost of capital when financial managers perform valuations in order to take a dividend decision. The dividend decision has been the subject of considerable debate with numerous models, theories, and considerations covering a wide spectrum being proposed and criticized as academicians argue the merits, relevance, and irrelevance of the dividend decision. Despite the lack of agreement as to the relevance of the dividend decision, the relevance of the cost of capital is not, *per se*, the subject of the dividend debate — it is central to the debate. In an attempt to establish the role and function of the cost of capital with regard to the dividend decision in South Africa, an empirical survey of all firms listed on the Johannesburg Stock Exchange was conducted. From this survey it is apparent that for the majority of the respondents the cost of capital does not have a formal or explicit impact on the dividend decision.

Die doel van hierdie artikel is om verslag te doen oor die rol van die koste van kapitaal wanneer finansiële bestuurders by die neem van die dividendbesluit, 'n waardering doen. Die dividendbesluit is 'n onderwerp waarvoor heelwat polemieke bestaan en waar 'n breë spektrum modelle, teorieë en oorewegings reeds voorgestel is. Hierdie voorgestelde modelle word deur akademici gekritiseer wanneer die meriete, relevansie of irrelevantie van die dividendbesluit beredeneer word. Ten spyte van die gebrek aan ooreenstemming met betrekking tot die relevansie van die dividendbesluit, is die relevansie van die koste van kapitaal nie die onderwerp van die beredenering van die dividendbesluit nie — dit staan sentraal in die beredenering. In 'n poging om die rol en funksie van die koste van kapitaal met betrekking tot die dividendbesluit in Suid-Afrika vas te stel, is 'n empiriese ondersoek van alle genoteerde ondernemings op die Johannesburgse Effektebeurs gedoen. Die bevindinge van die ondersoek dui daarop dat vir die meerderheid van die respondente die koste van kapitaal geen formele of eksplisiete invloed op die dividendbesluit uitoefen nie.

Introduction

The pivotal role and function of the cost of capital, also known as the required rate of return, to all financial decisions, is well documented (Paulo & Bosch, 1989). As part of an investigation into the determination and use of the required rate of return within financial management in South Africa, information concerning the role and function of the cost of capital with regard to the dividend decision was obtained. The purpose of this article is to report those findings of the empirical survey which specifically concern the impact of the cost of capital on the dividend decision.

The article commences with an outline of relevant aspects of the theory of dividends, is followed by the method of the empirical survey, and then proceeds to the findings.

Dividend theory

Net income after tax can be grouped into two components, non-discretionary income and discretionary income. Non-discretionary income refers to the income whose destination has already been determined by the firm's investment, financing, and dividend decisions in previous financial periods. For example, a past investment decision and the way in which it was financed may obligate the firm to establish certain specific reserves, and to maintain particular levels of liquidity, solvency, and interest cover. Such prescriptions often form part of the implicit costs of debt finance and are contained in the standard and restrictive loan covenants. With regard to this component of net income after tax, financial managers have little discretion because they are obliged to allocate such funds according to contractual agreement. Valuations which incorporated the

cost of capital, were performed when the firm committed itself to these decisions.

The discretionary component of net income after tax is the focus of the dividend decision, for financial management can decide whether to retain or distribute this income by way of dividends. The decision to declare a dividend and the dividend coverage ratio should be the result of valuations based on the cost of capital and the internal rate of return. When the internal rate of return of retained earnings does not exceed the firm's cost of capital, a strong case exists for high rates of dividend distribution.

When net income after tax is considered as comprising a non-discretionary as well as a discretionary component, it is apparent that the various theories of the dividend decision refer to the discretionary component.

The dividend decision, as the third of the three major decisions taken by financial management, should be taken in such a way so as to be consistent with the goal of shareholder wealth maximization. Just as in the case of the financing decision, the dividend decision too has been the subject of debate, with numerous models, theories, and considerations covering a wide spectrum being proposed and criticized as academicians argue the merits, relevance and irrelevance of the dividend decision (Miller & Modigliani, 1961: 411-433). Despite the lack of agreement as to the relevance or irrelevance of the dividend decision, the relevance of the cost of capital is not, *per se*, the subject of the dividend debate: it is central to the debate.

Retained earnings, which constitute that part of earnings which have not been distributed by way of dividends, are an

important source of equity finance (Tinic & West, 1979: 30). Empirical research, internationally (Dobrovolsky, 1971: 330; Sametz, 1964: 450-469; Neveu, 1985: 610), and in South Africa (Reynders, 1977: 102-103) clearly demonstrates the significance of retained earnings as a major source of finance, and as such it does have a cost and therefore a cost of capital. Since retained earnings have a cost of capital they must have an internal rate of return. The choice of which application to follow, namely, whether to retain or distribute by way of a dividend, depends on which application enables a higher internal rate of return to be earned (Stern, 1987: 23; Porterfield, 1965: 88-93; Van Horne, 1980: 340).

Cost of capital and the theorem of Miller and Modigliani

Miller & Modigliani (1961: 414) have argued that the dividend decision will affect neither the current price of the firm's shares nor the total return to its shareholders, because the dividend decision is merely a variation of the basic question of whether or not the financing decision can affect the value of the firm. Modigliani & Miller's position with regard to this question is that the financing decision is irrelevant, and does not affect the total return to shareholders because it does not affect the value of the firm (1958: 261-297). This being the case, the dividend policy is irrelevant because value is determined only by real considerations, namely, the earning power of the firm's assets and its investment policy, and not by how the fruits of the earning power are packaged for distribution (Miller & Modigliani, 1961: 414). In their seminal argument, which enabled them to conclude that dividend policy is irrelevant, these authors rely heavily on 'p', the cost of capital and 'p*', the internal rate of return, as well as on the relationship between 'p' and 'p*' (Miller & Modigliani, 1961: 414-427). Thus, the cost of capital plays a pivotal role in the Miller & Modigliani theorem.

Cost of capital and the Gordon model

The dividend valuation model is defined (Gitman, 1988: 261):

$$P_0 = D_1/(1+k)^1 + D_2/(1+k)^2 + \dots + D_t/(1+k)^t, \text{ where}$$

P_0 = the value of an ordinary share today;

D_t = the expected cash dividend per share distributed at the end of year t ;

k = the cost of ordinary shares; and,
= infinity.

In this model, where the cost of capital features prominently, dividends can either have no growth, constant growth, variable growth, or negative growth. Where the dividend is subject to either one of these situations, the dividend valuation model can be accordingly re-specified.

(a) Zero growth

Where zero growth in dividends is anticipated, a constant non-growth stream of dividends manifests, and in terms of the notation already introduced, the dividend stream is:

$$D_1 = D_2 = \dots = D$$

in which case the dividend valuation model becomes:

$$P_0 = D_1 / k,$$

$$\text{i.e. } k = D_1 / P_0$$

In other words, when a zero growth rate attaches to an ordinary share's dividends, the value of an ordinary share equals the present value of a perpetuity of D_1 discounted at the required rate of return. Apart from a zero growth rate in dividends, there can be a constant rate of growth in dividends.

Constant growth

One of the most commonly discussed dividend valuation approaches is the constant dividend growth model, known as the Gordon model (Gordon & Shapiro, 1965: 102-110). Where dividends grow at a constant rate, 'g', and using the already introduced notation, the dividend valuation model can be re-written:

$$P_0 = D_0(1+g)^1/(1+k)^1 + D_0(1+g)^2/(1+k)^2 + \dots + D_0(1+g)^t/(1+k)^t,$$

which when simplified becomes:

$$P_0 = D_1 / k - g$$

$$\text{i.e. } k = (D_1 / P_0) + g$$

Provided that the constant growth rate 'g' is not equal to or greater than the cost of capital, this model is operative. For the purposes of this article, yet again the central role of the cost of capital is revealed, for without it the Gordon model can not be defined and valuations cannot be performed.

Variable growth

Perhaps situations where dividends exhibit zero growth or constant growth err on the unrealistic, in which case, a variable rate of growth in dividends which provides for a change in the dividend growth rate needs to be considered. Where dividends are subject to a variable rate of growth, using the already introduced notation, the dividend valuation model is defined (Gitman, 1988: 265):

$$P_0 = \sum_{t=1}^N D_t / (1+k)^t + 1/(1+k)^N \times (D_{N+1} / k - g^*), \text{ where}$$

N = the end of the year in which a single change in the dividend growth rate occurs; and,

g^* = a constant growth rate for the period $N=1$ to N .

The cost of capital forms an integral part of the dividend valuation model regardless of whether dividends do not grow, grow at a constant rate, or grow at a variable rate.

Negative growth

Where dividends are expected to decline as a result of an expected decline in the earning capacity of a firm, a situation of negative growth prevails. For such circumstances, the Gordon model also has relevance, and the net effect is to increase the denominator and reduce the value of the

ordinary share being valued. For example, using the previously introduced notation, when the growth rate 'g' is negative, the Gordon model is:

$$P_0 = D_1 / k - (-g),$$

i.e. $P_0 = D_1 / k + g,$

i.e. $k = (D_1 / P_0) + g.$

Once again the role of the cost of capital is apparent.

Cost of capital and the Gordon/Lintner approach

Gordon & Lintner (Brigham & Gapenski, 1985: 424) have contested Miller & Modigliani's dividend irrelevance theorem by challenging their assumption that dividend policy does not affect investors' costs of equity capital. Gordon & Lintner assert that the cost of equity increases as the dividend payout declines because investors are more certain of receiving dividend payments than income from capital gains which should result from retained earnings. In other words, dividends are capitalized at a lower required rate of return than capital gains, and therefore the dividend decision is highly relevant to shareholder wealth maximization.

Since the dividend, according to the Gordon-Lintner approach, is subject to considerably less risk than the growth rate, shares which have a high payout ratio are capitalized at a lower cost of capital than shares having lower payout ratios. It is worthy of note that Rayner & Little (1971: 2, 62) demonstrated that it was neither low nor high dividend payout ratios which contributed to the value of the firm, but the internal rate of return earned from retained earnings in excess of the cost of capital which was crucial to the enhancement of shareholder wealth.

Statistical support for shareholder preference for dividends as opposed to retained earnings was demonstrated by Friend & Puckett (1964: 658-682), and Malkiel & Cragg (1970: 601-617). Graham & Dodd (1962: 517-518) asserted that apart from growth shares, a R1.00 increase in dividends may increase the market price of the share by up to three times as much as an additional R1.00 of retained earnings.

Nevertheless, without the cost of capital, the Gordon-Lintner approach, which represents the most explicit and sophisticated formulation of the 'bird-in-the-hand' theory currently available, nor the above-mentioned studies could have been formulated. Less elaborate statements of essentially the same 'bird-in-the-hand' theory include those of Graham & Dodd (1962: 517-518), and Clendenin & Van Cleave (1954: 365-376), and are also dependent upon the cost of capital.

Cost of capital and the Walter model

The Walter dividend model (Solodofsky & Olive, 1974: 204), which is explicitly dependent upon the relationship between the cost of capital and the internal rate of return applicable to retained earnings, is defined:

$$P = [D + (IRR/k)(E-D)] \div k, \text{ where}$$

P = market price of share;

D = cash dividend per share;

E = earnings per share;

IRR = internal rate of return; and,

k = cost of equity capital.

According to the Walter model, retained earnings are discounted at the same rate as dividends, which may or may not be valid, and further, a change in the cost of capital would require a change in the payout ratio in order to maximize the market value of the ordinary shares. Clearly, the cost of capital is of considerable significance to this model.

Cost of capital and the Security Market Plane

The Security Market Plane model was developed for determining the cost of capital and dividend yields (Brigham & Gapenski, 1985: 426). According to this model, the cost of capital is a function of dividend yield and market risk. The greater the market risk the greater the cost of capital, and the greater the dividend yield the greater the cost of capital. This is so because shareholders require higher rates of return on high dividend yield shares to offset the higher rates of taxation applicable to dividends as opposed to capital gains (Brigham & Gapenski, 1985: 428).

This argument is the antithesis of the Gordon-Lintner approach, for in terms of the Security Market Plane model the value of the firm is maximized when firms have a low dividend payout (Brigham & Gapenski, 1985: 428).

Just as in the cases of the above-mentioned dividend approaches, so too with the Security Market Plane, the cost of capital is a pivotal and inescapable reality.

Cost of capital and some empirical evidence concerning dividend policy

Stern (1987: 23) has presented factual evidence showing that the most important consideration governing the dividend decision is that the expected rate of return from retained earnings must exceed the cost of capital. He further shows that firms which pay dividends do not invest less; rather they raise more debt finance, in effect substituting debt for equity, and he has empirically established that in the case of United States corporations, from 1979 to 1987 the amount of dividends distributed equalled new borrowings. In similar vein, evidence from the United States of America over the period 1974 to 1984 (Ben-Horim, 1987: 335-336) shows that of profits after tax, on average 42.5% was distributed by way of dividend declarations, totalling \$468 billion over this period, and \$605 billion in new finance was raised, of which debt finance accounted for \$396 billion, or 65%. Referring to 1976 data, Miller & Scholes reported that:

'... At the same time that corporations were shovelling \$31 billion of dividends out of the front door, they were raking in \$47 billion through the back door in the form of new equity issues, new bond issues and new bank credit' (Ben-Horim, 1987: 335).

No source of finance has a cost of capital equal to or less than zero, and this applies to retained earnings just as it applies to debentures. If other sources of finance, particularly debt, are being substituted for retained earnings, this surely

suggests that these other sources have a lower cost of capital than retained earnings, otherwise shareholder wealth maximization cannot be achieved. This supports the contention that financing decisions are dependent upon the cost of capital and are relevant in the imperfect world of financial management, in which case there is some relationship between the cost of capital and the dividend decision.

Hypotheses

This empirical survey tests in the most general terms the following competing hypotheses.

H_0 : There are *no differences* among the normative financial theories of the cost of capital and the practice of financial management by South African listed corporations,

against

H_1 : There is *a difference* between the normative financial theories of the cost of capital and the practice of financial management by South African listed corporations.

Scope and method of research

An empirical survey was conducted of all firms listed on the Johannesburg Stock Exchange (JSE). A complete survey was done and in total 733 questionnaires were mailed in July 1989 to the financial managers/directors of all firms which were listed on the JSE and which had a registered office in the Republic of South Africa. Of the 733 questionnaires mailed, 174 usable questionnaires were returned, representing a 23.7% response rate.

Questionnaire

The questionnaire was constructed on the basis of statements with the possible response continuum linked to a Likert-style four-point-scale, or five-point-scale, requesting the respondents to indicate one of either four or five possible reactions to each statement. For example, the four-point-scale, was constructed as follows:

1 = never, 2 = seldom, 3 = often, 4 = always.

The five-point-scale was constructed in terms of the following percentage intervals.

1 = not used (0-9%); 2 = hardly used (10-24%), 3 = infrequently used (25-49%); 4 = used (50-74%), 5 = frequently used (75-100%).

In open spaces provided, the respondents were invited to provide additional information and also to record their comments on each statement in writing.

The main advantage of the *modus operandi* as described, is that it is uncomplicated and direct, hence easily comprehended. However, a serious point of criticism relates to the possibility that it is not the respondent's personal opinion that is under scrutiny, but rather his inclination to agree or disagree with the statements *per se*. None of the questions referred to the personal performance of the respondents, thus no reasons are likely to have existed for any bias in the responses.

The BMDP statistical package was used for calculations of frequency and percentage response scores. It was not feasible to perform analyses of association between responses and chi-square tests which serve as the basis for

testing the Null Hypothesis, because of empty cells and low cell values. When the chi-square (X^2) statistic was used to determine whether any differences existed among the respondents, this statistic was found to be inapplicable as Cochran's rules (Cochran, 1954: 417-451) were violated in so far as the minimum expected values were smaller than one, and, at least 20% of the expected values were smaller than five. Thus due to low cell values and empty cells inferential statistical testing was not feasible; consequently descriptive statistics are reported. However, in this regard it needs to be borne in mind that the empirical survey was in essence conceptual in nature, for it sought to establish how the cost of capital was determined and used by South African business practitioners.

At no stage was the financial performance of respondents contemplated in terms of the required rate of return. The conceptual empirical research of authors such as Brigham (1974: 17-26), Lambrechts (1975: 39-43), Petty, Scott & Bird (1975: 159-172), Oblak & Helm (1980: 37-41), and Gitman & Mercurio (1982: 21-29), similarly reported conceptual information which could be used at a later stage for the construction of a model to determine financial performance.

Extent of response

Shown in Table 1 are the extent and distribution of JSE respondents using the Stock Exchange classification as an index. Responses were received from all sectors barring the 'Fishing' sector. As already reported, 174 useable questionnaires were returned which is equivalent to a response rate of 23.7%. The response rate per sector varied considerably, with particularly low rates of response occurring in Clothing, Footwear and Textiles (2.5%), Development Capital (3.0%), and Banks and Financial Services (3.4%). High response rates were obtained from Steel and Allied (100%), Sugar (100%), Coal (83.3%), and Mining Houses (75%).

Problems experienced with respondents

There were three sources of disappointment. *Firstly*, replies were received from several large corporations which stated that it was not corporate or group policy to participate in any surveys.

Secondly, it was disappointing to receive numerous letters from prominent corporations stating that the cost of capital was a concept that was irrelevant to their financial management, or was not used, and consequently their participation was in their opinion meaningless. Such testimony, especially coming from firms listed in the sectors banking, finance, insurance and investments, is difficult if not impossible to accept.

Thirdly, from a relatively early stage it became apparent that corporations whose majority shareholders comprised two major life insurers were not responding at all. Letters were then addressed to various members of these two controlling organizations, explaining the situation and attempts were made to cajole them into completing the questionnaire. The response was swift and direct: it was alleged that the cost of capital played no part in their decision making

Table 1 JSE respondents by industrial activity

Sector	Firms	Respondents	
	listed	Number	% of Sector
Coal	6	5	83.3
Diamonds	5	2	40.0
Gold Mines	61	39	47.5
Curtailed operations	1	0	0.0
Metals & minerals	20	11	55.0
Mining houses	12	9	75.0
Mining holding	18	8	44.4
Mining exploration	10	2	20.0
Banks & financial services	29	1	3.4
Insurance	16	1	6.2
Investment trusts	12	1	9.0
Property	29	4	13.8
Property trusts	14	3	21.4
Industrial holding	58	12	20.6
Beverages, hotels & leisure	16	3	18.7
Building & construction	28	12	42.8
Chemicals & oil	10	4	40.0
Clothing, footwear & textiles	40	1	2.5
Electronics, electrical, battery	47	6	12.8
Engineering	42	4	9.5
Fishing	2	0	0.0
Food	16	5	31.3
Furniture & household goods	21	6	28.6
Motor	18	2	11.1
Paper & packaging	21	4	19.0
Pharmaceutical & medical	10	1	10.0
Printing & publishing	10	2	20.0
Steel & allied	3	3	100.0
Retailers & wholesalers	59	7	11.9
Sugar	2	2	100.0
Tobacco & match	6	1	16.7
Transportation	11	2	18.2
Development capital	67	2	3.0
Preference shares	13	1	7.7
Obliterated codes*	—	8	—
Total	733	174	100.0

*Eight respondents obliterated every 'firm-code' from the questionnaires which otherwise were satisfactorily completed. These eight responses have been included in the empirical survey.

and consequently no worthwhile purpose could be served by participation in the survey.

Biographic details of respondents

Biographic information concerning the respondents was obtained with regard to job title, years of business experience, professional and academic qualifications, and the number of years of formal study necessary to attain such qualifications. From the biographic information obtained from the respondents it was evident that:

- only top management completed the questionnaire;
- almost 79% of the respondents were financial managers or financial directors;

— on average, the respondents had 12 years of business experience;

— 76% of the respondents were qualified/certified accountants.

Judged on the basis of their biographic profiles, the respondents would seem to be sufficiently well qualified and experienced to occupy the position of financial manager.

Empirical findings on the impact of the cost of capital on the dividend decision

When asked as to the impact of their firm's dividend policy on the cost of capital (Table 2), the majority of the respondents (39.9%) indicated that dividend cover was fixed and that they subscribed to the notion of target dividends. If dividend cover is fixed with a target in mind, then it is reasonable to infer that the cost of capital is not used to perform current valuations of the discretionary component of net income after tax. The application of an heuristic based on historic reasons, is inconsistent with fundamental principles of financial management (Paulo, 1991: forthcoming) which recognise that the cost of capital, a current cost concept, and the expected rate of return are in a continual state of flux.

Of the respondents 13.9% indicated that their dividend policy affected the level of retained earnings and thus shareholder funds in the calculation of the weighted average cost of capital. From this response it is evident that the cost of capital did have an impact on the dividend decision and was used to perform valuations related to the decision of retentions as opposed to distributions of discretionary income after tax.

For 13.3% of the respondents, the cost of capital had no impact on dividend policy and was not used when decisions were taken regarding retentions and distributions of discretionary income after tax.

In excess of 22% of the respondents provided no indication as to the impact or otherwise of the cost of capital on their dividend policy.

Table 2 Impact of the cost of capital on dividend policy

Impact	Frequency	%
Dividend cover fixed/target dividends	69	39.9
No response	39	22.5
Affects retained earnings, shareholders' funds and the weighted average cost of capital	24	13.9
Has no impact	23	13.3
Ignored/not taken into account	10	5.8
Affects cost of capital via Gordon model	3	1.7
High dividend payouts affect the cost of capital	2	1.2
Internal rate of return confused with the cost of capital	2	1.2
Unsure/do not know	1	0.6
Dividends directly related to earnings and not to the cost of capital	1	0.6
Total	174	100.0

From the foregoing it would thus seem apparent that for the majority of the respondents the cost of capital does not have a formal or explicit impact on the dividend decision.

Conclusion

The comment recorded at the outset of this article that the empirical survey is conceptual in nature, needs to be reiterated, for such surveys and their findings tend to generate descriptive statistical information unsuitable for inferential statistical testing. The respondents were qualified and experienced financial managers, and provided conceptual information concerning the impact of the cost of capital on the dividend decision.

From the empirical evidence it would seem that the cost of capital is insufficiently utilized when taking the dividend decision. Financial valuations taken in the absence of the cost of capital raise questions concerning the process of financial management. On the basis of the evidence obtained, the null hypothesis of this survey that there are no differences among the normative financial theories of the cost of capital and the practice of financial management of South African listed corporations, cannot be supported.

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