Capital and its Cost – a primer for SA shareholders, their managers and regulators[1]

Brian Kantor; Feb 21st 2013

Capital is everything

Capitalism is a very good description of our economic system. The modern economy revolves about the competence with which firms use capital entrusted to them. Successful, profitable firms, consistently invest in projects that return more than the cost of the capital they employ. They are strongly encouraged to expand. That is to make more of the economy's scarce resources – people, natural resources and capital. Firms unable to cover these costs of capital are as strongly encouraged to waste less, that is to yield scarce resources to those firms that are able to put them to better use.

We should take capital and its use very seriously

Another word for capital is wealth and wealth is accumulated through savings, that is by sacrificing consumption, which is very hard to do. It is essential to our economic purpose to put these savings to good use, investing them well to create additional wealth, so that we can consume more in the future. It is very understandable why we would take our savings and wealth as seriously as we do.

Our future economic well being depends essentially on the success with which firms and their owners and managers allocate capital. And accordingly we shower rich rewards on those who prove capable of earning more than the cost of capital they employ.

What is the cost of capital? How do we measure it? Time only can tell for sure if capital has been well used and compensated for the risks of doing so

What then is this all-important cost of capital that successful firms are able to recover in their operations and unsuccessful firms are unable to do? The cost of capital may be regarded as the returns required by wealth owners , or rather more accurately, expected by them when they make capital available to the firm. If the firm proves able to generate returns in excess of these required returns, the owners of the capital will have realized a true economic profit. The firm will be adding wealth for them.

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[1] This was written after much interaction public and private with the Energy Regulators (NERSA)over the ESKOM application for 16% p.a price increases over he next five years and in response to a request from a senior regulator SA energy regulator to "tell them where they a e wrong"

It should be appreciated that it is expected returns that drive the allocation of capital. Actual returns can only be calculated over the life of a project or series of projects that a firm undertakes. Only time can tell but clearly past performance, the track record of the firm, will be an important influence on expectations of it.

The outcomes of some projects are much less certain than others given the nature of the enterprise and the activities it undertakes. The economic performance and the returns realized by the capital employed for example in an electric utility are typically much more easily predicted than those of a steel mill. Or in other words producing electricity is much less risky than producing steel.

The expected returns that direct capital expenditure are therefore adjusted for risk, that is the danger than the best laid plans may not be realized. The greater the risk of failure to meet the costs of capital, the higher will be the expected return, the higher the cost of capital.

The theory and the practice of measuring the cost of capital. The costs of debt are explicit- the costs of equity is implicit and has to be inferred.

How is the cost of capital to be measured? How in other words are the firms contemplating or undertaking a project that requires additional capital to know how much their capital costs. If they hope to realize genuine profits, that is plan to earn returns on capital in excess of the cost of that capital, they clearly need an objective measure of this cost. The market in capital, the debt and equity markets, will provide them with much of this vital information though not always obviously or unambiguously. The owners of unlisted companies with similar operations can take their cue from the share market performance of their listed peers

The firm can contract with providers of capital in two broad ways. Either by offering creditors a promise to pay them an interest rate and to repay such debts incurred at an agreed point in time. Or they can offer a share of the company in exchange for the cash provided. The offering may also be a mixture of debt and equity as for example in an offer to issue debt with an option to convert the debt into equity in due course under agreed contingencies.

The firm will make the choice between more or less debt or equity capital in the light of their expected costs in the from of interest paid or in dividends or share price appreciation sacrificed when a share of the company is given up. The terms on which funds are made available to the firm will be influenced by the preference of some wealth owners for more certain interest income, or for less certain, but presumably higher expected equity returns in the form of dividends or share price appreciation. (capital gains) The taste for risk by the capital providers, the savers and their agents, influences the availability of equity or debt finance and so the terms in which funds are provided. It makes good sense for the firms raising capital to adapt their financing arrangements accordingly. But the same cost of capital applies to all capital,

whether it is called debt or equity capital. Furthermore if the projects do beat their cost of capital, the firm should have no difficulty in meeting the financing terms put to it.

The terms at which debt finance will be made available to the firm is usually highly explicit in the interest rate and repayment terms agreed. These terms will depend on the borrower's credit rating. This credit rating will be revealed in a interest rate spread over the interest paid by the sovereign government, the most credit worthy borrower, for debt of a similar duration and repayment terms.

Much of the extra capital employed by a firm in its projects will be generated in the form of cash flow from its operations that is it own savings or more correctly the savings it has made on behalf of its owners. The firm has to decide whether to employ such cash in its operations or to give it back to the shareholders in the form of dividends or buying back shares. The economic logic guiding such choices is clear enough. The firm should ideally utilize the cash in expanding or maintaining the scale of its operations only if it can expect a return in excess of its cost of the capital, that is the returns required of the firm by its shareholders.

The ability of a company to add value for its owners by investing in projects that return more than their cost of capital again can only be known after the event. However It is changing expectations of future returns, for which past performance may be the only incomplete guide, that will influence the price owners of capital or their agents, the fund managers, will be willing to buy or sell the shares listed on a stock exchange. The share market does not make clear announcements about the cost of capital facing the firm. Such costs have to inferred, from the market value of the shares in a listed company that can change from day to day and week to week as economic and company events are interpreted that change the outlook for the future.

Accounting data supplied by the company is not always well suited to the purpose of measuring how well a company has done with its capital expenditure programmes. Turning such inferences into explicit measures of the cost of capital or of past returns on capital employed is an art form rather than a pure science about which there is widespread acceptance of the methods employed. But art or science has to be practiced well by both the firm and investors buying ot contemplating buying its debt or shares. We refer below to systems of analysis that assist in the task of turning accounting information into cost of capital calculation.

Measuring risks; calculating the betas

It is widely accepted that the risks of owning a share in a firm and the projects it undertakes can be well represented by the history of its price movements. The more day to day variability of its share price, the higher the standard deviation of the share price around its average, the less predictable its share price and so the more risky the shares of the company and so the higher its cost of capital.

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Such riskiness is a relative measure. The stock market performance of a company, or sector of the stock market that aggregates companies with similar operations and therefore risks, must be compared to other companies or sectors. The exercise usually undertaken in this regard is to measure the *beta* of the company or sector. The *beta* is the second co- efficient of a simple linear regression (y=a+bx) equation where y is the weekly or monthly share price move and x is the market move over the same period. The overall market will be represented by an Index representative of all shares listed on the stock exchange, weighted by their market value. The average risky counter or sector will have a beta of one. The above (below) average risky counters or sectors will realize betas greater (less) than one.

How reliable and consistent are the betas?

A few caveats need to be recognized. Firstly the market moves may only help explain a small proportion of the observed behavior of the share price changes. The model may produce a very low R squared or goodness of fit. In which case firm specific, rather than market risks, have been driving the share price and the market beta cannot be regarded as a consistent measure of the risks facing the firm or the investor in it. For this reason combinations of firms with similar economic characteristics included in some sub-sector of a stock exchange will produce a stronger relationship with the market and a more reliable beta, than would an individual company. In this way risks that are highly specific to one firm rather than another will even out in the performance of the sector. For example the losses of market share by one company included in the sub-sector Index might well be tha gains of another member of the sub-Index.

Furthermore the beta itself, even when statistically significant, in what may be regarded as a satisfactory model with a high R squared may prove highly variable over time. To cope with this potential instability of the beta, the calculation of a rolling beta may be helpful to indicate the reliability of the beta itself. By a rolling beta one means the coefficient measured as result of regression equation that rolls forward adding and dropping a month as the equation is re-measured over different time periods.

In the figures below we show the 36 month rolling Betas and Rolling R-squares ending February 2012 for three sub sectors of the JSE, Oil Producers, consisting of only one company represented, Sasol, Banks and General Retailers.[2] As may be seen all three sectors now have a Beta close to one. Though, as may also be seen, the relationship of the Banks and the Retailers

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[2] The same exercise can be easily undertaken for all the sectors of the JSE. The tree cases are included as an example of the method.

to the market was much weaker after September 2008 in the aftermath of the Global Financial Crisis. It should also be noticed that the predictive capability of the model between 2008 and 2011 was also rather limited, as measured by the low rolling R-squares. The more recent results for the model with R-quares of 0.5 and more may be regarded as satisfactory

JSE 36 month rolling Betas
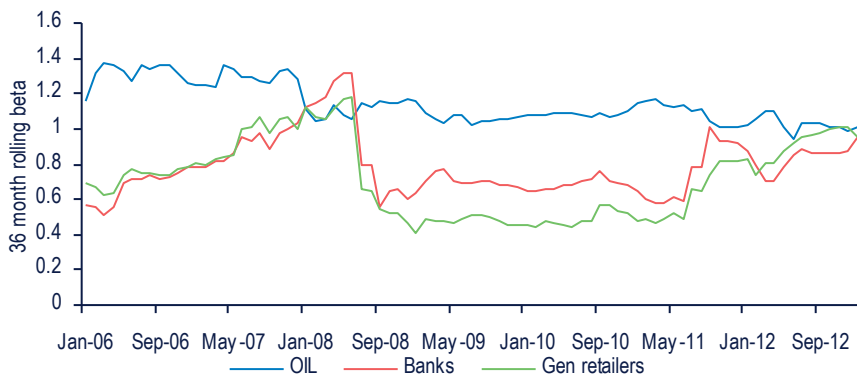
Source; Investec Securities

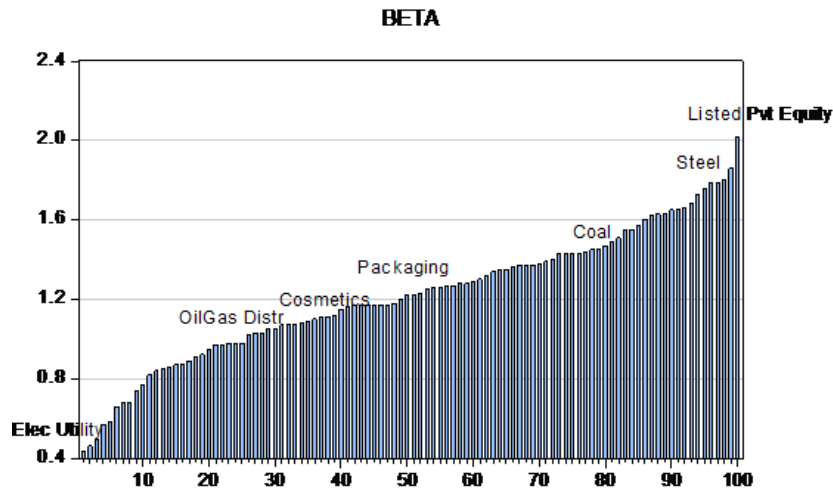JSE 36 month rolling R-squares for the market models
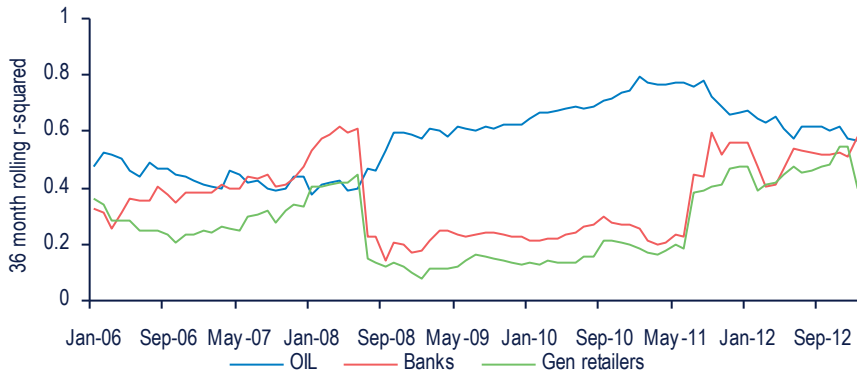
Source; Investec Securities

In the figure below we rank the betas as calculated by the Stern School of New York University for 100 identified sectors of the New York Stock Exchanges. The results can be regarded as according well with prior beliefs. As may be seen Electrical utilities are the lowest risk sector as measured by the beta and clearly much less risky than say steel companies in the US. Distributors of Gas and Oil, that is pipeline companies also have well below average betas while the most risky of all sectors are the Publically Listed Private Equity Funds.

Betas for 100 sectors of the New York Stock Exchanges [3]

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[3] Note the average beta is 1.17- because the sectors are not market weighted — as is the market Index. If the sectors were market weighted then the average beta would be one. Note that electric utilities are the very lowest risk (according to beta) and gas and oil distribution are well below average — ranked 27/100 on this scale. These betas can be found at he following site
http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/Betas.html

BETA

2.4

2.0   Listed Pvt Equity

1.6   Steel

             Coal
1.2   Packaging
      Cosmetics
0.8 OilGas Distr

Elec Utility
0.4
    10   20   30   40   50   60   70   80   90   100

Measuring the equity risk premium. The past performance of the share market, at least over any decade or longer may not be representative of required returns and the cost of capital.

The conventional approach to measuring the cost of capital is derived from the Capital Asset Pricing Model (CAPM) for which many a Nobel prize in economics was awarded. The cost of capital calculation has as its first component the interest rate on a short dated bill issued by the relevant sovereign government in its own currency. This is called the risk free rate, that is default risk free rate of interest. An alternative default free interest rate that might be used is a longer dated government bond, for example a ten year government bond or Treasury Bond. This long term rate may be regarded as the compound average of the short term rates expected over the next ten years and will have the advantage of being much more stable than more variable short rates. Stability in the estimated cost of capital is helpful to the firm undertaking capital expenditure as well as the investors or potential investors trying to evaluate the success of such expenditure.

The equity risk premium (ERP) to compensate for investors assuming business and operational risk of a company has to be added to the risk free rate of interest. This average equity risk premium is then increased or decreased by the sector or firm beta that may be above or below the market average beta of one. The average equity risk premium is also not announced by the market place, it too has to be inferred by reference to past equity returns.

The problem in measuring the ERP is that actual average returns on the equity market can vary widely, not only from month to month, but even from decade to decade. For example over the 12 years between 2000 and 2012 an investor in the S&P 500 Index would have received a well below long term, average annual return, calculated each month, of only 1.56% p.a. This was a very poor reward for holding an average US equity over the twelve years given an average inflation rate of 2.54% p.a. or in other words real returns were negative. Such realized returns over the past twelve years are clearly unacceptably low for investors assuming equity risk. They

would therefore have to be regarded as a very poor guide to the equity risk premium required to justify holding equities in a balanced portfolio of securities currently. These S&P 500 returns may well increase significantly in the future. They would have to do if the taste for assuming the risk of holding equities equity and supplying equity finance is to be maintained.[4]

The equivalent investor in the JSE All Share Index by contrast over the same twelve years, enjoyed very much higher average annual returns. These were of the order of 15.52% p.a. Inflation averaged 5.84% p.a. over the period. When converted to USD, these returns average a handsome 11.62% p.a. - far in excess of the returns provided by the S&P 500.

These JSE returns must be regarded as exceptionably and unsustainably good. That is too good to serve as representative of the equity risk premium and the returns required of investors in equities in the future. They represent much too high a cost of capital or reward for bearing equity risk. If such measures of the cost of capital were now applied to the investment decision taken by the average firm it would invalidate much economically useful capital expenditure given a more acceptably lower target for required returns that is by assuming a lower, more realistic cost of capital.

The exceptional returns provided by the JSE in recent years are in line with the equally good returns provided by the average emerging equity market. They are the result presumably of too much SA or Emerging Market risk having being attached to the values of JSE listed counters earlier in the early 2000's. As these risks failed to materialize the prices of the shares rose in sympathy and realized the exceptional returns, mostly in the form of capital gains, referred to above.

The recent history of realized returns in the equity markets leads to the conclusion that JSE returns over the past twelve years have far exceeded the average cost of capital while S&P returns over the same period have fallen well short of what can be regarded as the cost of capital. This suggests that when we use realized rates of return in the equity markets as the basis for measuring the equity risk premium we need to do so with caution. A very long run view is called for of the equity risk premium and the cost of capital generally.

For the record it may be reported the average real return on US equities over the 100 years 1900-2000 was 6.7% pa. while the real return on government bonds was 1.6% and on government bills of 0.9% p.a over the same period. This translated to a very long run average

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[4] The S&P 500 represents the 500 largest US listed companies listed on US stock exchanges weighted by their market value.

equity risk premium of about 5% p.a. For SA the average annual real return on equities between 1900 and 2000 was about the same 6.8% p.a with the real return on bonds averaging 1.4% p.a and that on government bills 0.8% p.a. making for a long run equity risk premium of about 5.5% p.a.[5] The latest estimate by Dimson et. al. [6]of the long run real return on global equities realized since 1980 is just over 6% p.a while global bonds realized about the same real rate of return. Or in other words equity investors received nothing extra for bearing equity risk. The equivalent returns since 1950 were nearly 7% real for equities and nearly 4% p.a. for global bond investors, that is a realized ERP of about 3% p.a.

Annualized historical equity risk premia (%), 1900–2012

Source: Elroy Dimson, Paul Marsh, and Mike Staunton, Triumph of the Optimists; authors' updates
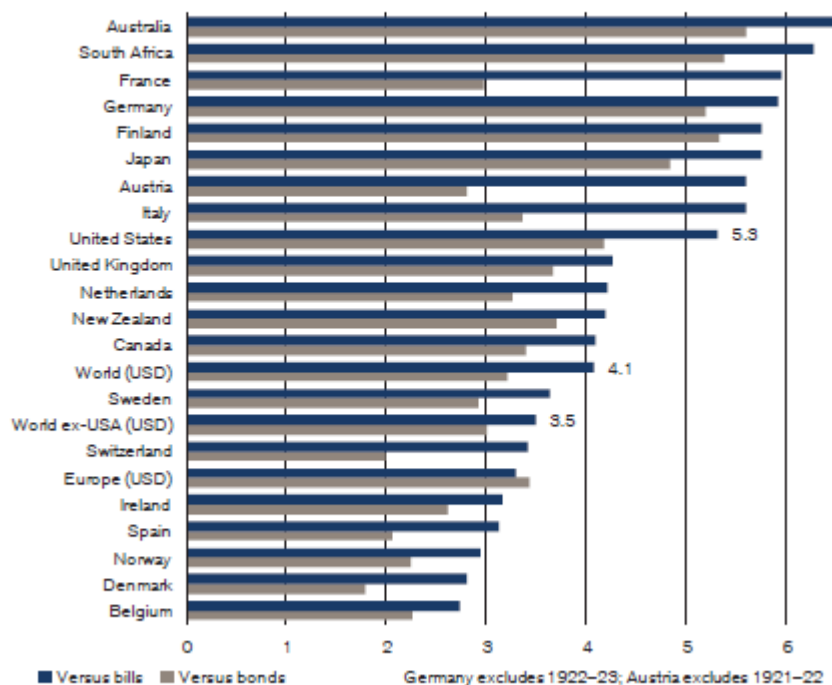
Source; Credit Suisse, Research Insitute, Global Investment Returns Yearbook, 2013, Figure 6.

The cost of capital for SA business – a rule of thumb

We would suggest, that as a working rule of thumb the average equity risk premium to be including in the cost of capital and added to the risk free rate, represented by the yield on a long dated government bond, should be of the order of 4- 5 per cent per annum. Given current

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[5] See Elroy Dimson, Paul Marsh and Mike Staunton, Triumph of the Optimists: 101 years of Global Investment Returns, Princeton University Press, Princeton , 2002

[6] Credit Suisse Global investment Returns yearbook 2013,Elroy Dimson, Paul Marsh, Mike Staunton and Andrew garthwaite,

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RSA long dated government bond yields of about 7- 8% p.a. this average real equity risk premium of 5% p.a. would translate currently into a nominal cost of capital for the average project or firm today of about 13% in nominal terms or 7% in real terms. The RSA long dated inflation linked government bonds currently yield about a real 2% p.a. With vanilla bonds yielding, as indicated, 7-8 per cent per annum, this implies a long term expected rate of inflation of about 6% p.a in South Africa. And so given a 2% real rate of return as the default free rate plus an equity risk premium of 4- 5 per cent would give a real cost of capital of about 7% p.a. for the average listed company.

Such measures of the cost of capital for SA firms may be regarded as a benchmark for both owners and managers of firms to aim at. SA fund managers would surely be very well satisfied with an average return on their equity investments of about 5% p.a. ahead of inflation, if this could be guaranteed to them- that of course it cannot be. Firms that could consistently realize an internal rate of return on their capital expenditure that exceeded this beta or risk adjusted cost of capital measure on their projects, that is their cost of capital, would surely gain the approval of the share market over the long run. They would also have little difficulty in raising debt finance should they call for it.

For a well below average project, say a listed electric utility with an assumed beta of .50 (half the average beta) the equity risk premium becomes 0.5*5%= 2.5% Assuming a government bond yield of 7% p.a this means a nominal cost of capital of 9.5% p.a. or a real cost of capital of about 3.5% p.a. for a SA electric utility.

The sovereign has no risk of default on debt issued in its own fiduciary currency. Recognizing inflation and exchange rate risks

It should be appreciated that there is no default risk attached to the SA government debt denominated in rands. The government can always print rands to pay of its rand debt should it have to do so because raising additional debt is impossible or too expensive. There is however inflation risk for long term investors in rand bonds paying a fixed coupon in rands. If the RSA does resort to printing money to pay its debts then inflation will surely follow and be expected to follow.

Such inflation risk is reflected in the difference in the yield on an inflation linked RSA bond and a vanilla RSA bond of the same duration. The extra return compensates for the risks of inflation to the interest income and the market value of the bonds in issue. As indicated this is currently of the order of 6% p.a. For the foreign investor in RSA, or other rand denominated debt, the risk is that the extra interest earned on the RSA bond compared to US Government Treasury Bonds will not compensate for exchange rate weakness. And so the difference between the yield on an RSA bond and a US T Bond of similar duration can be regarded as break even exchange rate

depreciation. The difference in interest yield is meant to compensate for the expected weakness in the foreign exchange value of the rand. This difference is currently of the order of 4.5% p.a. This 4.5% p.a. can also be regarded as a measure of the difference between inflation expected in the US over the next ten years, approximately 2.5% p.a. and inflation expected in SA over the same period, the 6% p.a expected SA inflation indicated before.

This outcome is made on the assumption that exchange rates move in the long run to compensate for differences in inflation rates across economies. That is exchange rates approximate what is known as Purchasing Power Parity or similar goods or services will cost more or less the same in both countries when measured in a common currency at the prevailing market rate of exchange.

There is however always the possibility of a sovereign defaulting on its foreign currency denominated debt. The investor then may demand a sovereign risk premium, that is extra interest over and above the interest paid by the government that issues the currency in which the debt is denominated. The sovereign risk premium for the RSA is currently of the order of 1.5% p.a and the yield on long dated USD denominated RSA debt is currently about 3.5% p.a.

In the figures below we identify nominal and real long term interest rates in SA and inflation compensation in the SA bond market over the past twelve months. We also show the difference between RSA and US T Bond yields that we call SA risk. The further figure graphs the RSA sovereign risk premium.

RSA vanilla and inflation linked bonds

Source; Investec Securities

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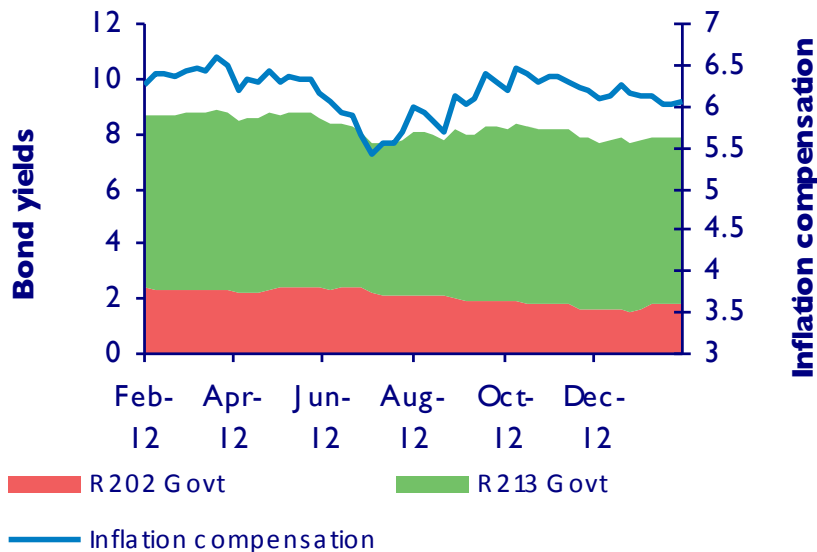
RSA yields and US T Bond Yields. The RSA risk premium.
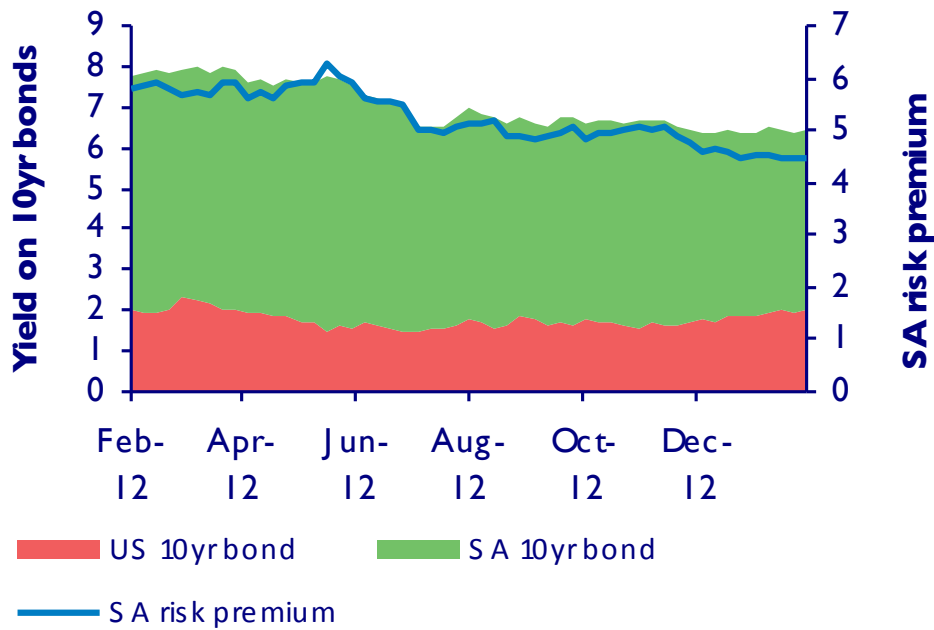
Source; Investec Securities

The RSA sovereign risk premium

Source; Investec Securities

The firm and how it allocates capital expenditure to positive present value projects.

It may be assumed that companies, when planning any capital expenditure programme, or when contemplating the acquisition of another firm, would undertake a discounted cash flow analysis. They would calculate the present value of a project by discounting the expected operating profits in cash over the estimated economic life of the project, by its cost of capital. If the present value of the project exceeded the estimated cost of the project in money of the day terms they would be inclined to go ahead. The operating profits would exclude depreciation but include maintenance of the assets. The economic depreciation is implicit in the estimated economic lfe of the project – the shorter the life the less the PV for any estimate of operating cash realized.

In this way having identified the projects with an estimated Present Value in excess of its cash cost, that is positive present value projects, the firm would then have to decide on how best to fund the project. Or indeed discover if it is possible to find financial support from lenders or shareholders to enable the firm to go ahead with the project.

An essential analytical task if the quality of a firm and its potential value for share or debt holders is to be recognized is to estimate the internal rate of return on capital being realized by the firm An outsider to the firm attempting to measure the returns on capital being realized by the firm, would have to rely on published financial reports for any such analysis.. Converting

historical accounting data into the return on cash invested by the company is no simple task. It is the difficult terrain of many a financial consultant.

Pioneering work adapting accounting data in order to measure the internal return on the capital employed by a firm was undertaken by the Stern-Stewart consulting group. Their concept of Economic Value Added (EVA) focused on measuring the difference between the internal rate of return or Return on Invested Capital (ROIC) realized by the company and the cost of capital as estimated in the way we have indicated. These measures are designed by Stern-Stewart to help align the interests of the managers undertaking capital expenditure, with their shareholders and to build incentives for managers based upon EVA improvements.

The Cash Flow Return on Investment (CFROI) method developed by HOLT, owned by Credit Suisse, is now used widely to guide fund managers and investment analysts in estimating the return on capital being generated by companies under review. It is also used to infer the discount rate used to value the company given past and expected operational performance. A low discount rate means more generous valuations being made by the market and a high discount rate the opposite. The potential or actual investor is then able to judge whether such assumptions that drive market values are realistic or not, and likely or not to be sustained.

Separating the Investment and the Financial decision making process

Ideally the investment decision should be separated in mind and practice from how the project is funded. Projects should only be undertaken when they return more than the cost of the capital employed. The cost of capital is not equivalent to the cost of finance. The cost of finance is highly firm specific and depends on its credit rating. This may have more to do with the strength of its balance sheet and its presumed ability to repay loans, than the quality of its current capital expenditure programme.

Society has every interest in seeing that its scarce valuable capital is well spent, independently on how it is contracted for, that is for interest payments or a share of profits. From this societal perspective and its concern for the efficiency with which its capital is employed, tax considerations or subsidies of investment activity, or debt management criteria should not be allowed to complicate the investment decision, though in practice they often will do so.

Reference is often made to the so called debt weighted average cost of capital or WACC. This calculation appears to lower the cost of capital by the tax shield provided by debt finance and not provided by equity. Borrowing costs can be deducted for the purposes of measuring taxable income. Opportunity costs of utilizing equity capital are not allowed as a business expense. This tax treatment encourages the use of debt rather than equity finance.

If any project, or series of them, can be certain to realize returns that exceed its cost of finance, then the more debt issued by the firm, the better for the shareholders expanding their operations. With more debt the shareholders can avoid giving up a share of their profits, provided the project is indeed successful - something again time only can tell. If all goes very well with the firm and it proves able to maintain a flow of capital expenditure that beats its cost of capital, then having issued equity capital, rather than debt to fund these projects will appear, with hindsight, as a very expensive option for its shareholders. Had they been sure of success, much more debt would have been called for and a smaller share of the firm given up to fund growth. Risks however are forward not backward looking. There are no risks to the punter after the race has been run, or for the shareholder after the project has been completed and served out its economic life. But looking forward using expected rather than realized returns, debt cannot be regarded as cheaper than equity – it is after all a more risky form of capital for the firm undertaking capital expenditure because it adds default risk ti operational risks for the shareholder.

In the case where the owner of the firm is the tax receiving government itself, the notion of reducing the cost of capital by saving taxes (in this case to be paid to the shareholder) appears particularly otiose. What is lost by the government owner in tax receipts would presumably made up by an increased flow of dividends or a more valuable enterprise.

Debt adds to risks and share price volatility.

The risks that the project will not yield returns that exceed the costs of debt finance adds to the risk of the project. The risk is that the firm encumbered with debt will not be able to avoid default on its debts which would be very bad news for its shareholders who stand last in line for a payout. Such risks of leverage will show up in a more volatile share price from which shareholders will suffer in the form of a larger equity risk premium and so a higher cost of capital, rather than benefit from lower costs of finance.

There may well be some optimum combination of debt and equity that a firm should seek. But more or less debt, while possibly helpful to shareholders, does not alter change the cost of capital from the perspective of the wider economy or society. Society has very good reasons to encourage the allocation of capital be it in the form of debt or equity, to the firms that can best employ capital.

A strong balance sheet that encourages lenders to provide credit at low financing costs should not be a reason for going ahead with capital expenditure that is not expected to cover its costs of capital. A project that does not cover its true cost of capital will, in time, undermine the strength of any balance sheet and not add value for shareholders. They would do better were the company to pay out more of its cash and borrow less and not to allow what may be called

an over protective or lazy balance sheet. The share market will value companies according to the expected quality of its capital expenditure programme and be well aware of the danger of a strong balance sheet that can be wasted on underperforming assets.

Hopefully a weak balance sheet would not fatally inhibit the undertaking of a large project that has every chance of beating its cost of capital. Ideally the capital market would be up to the task of bearing the risks of failure and will approve excellent projects with debt and or equity, even when existing balance sheets can provide little comfort. However for practical purposes, when it comes to raising capital, past performance as reflected in the state of a balance sheet, is inevitably going to reduce or add to the risks associated with any firm or project and influence its cost of finance if not its cost of capital.

True capitalism looks after itself. But the best firms do not provide the best returns

The capitalist economic system allows firms to sink or swim. They are in most cases free to price their goods or services as they see fit. They are mostly free to raise or attempt to raise capital in different ways. The providers of that capital are in turn free to evaluate the performance of the firm as they do in the debt and equity markets. Successful firms are expected to earn returns that exceed their costs of capital and are valued accordingly. The market is willing to pay up in advance for this expected success.

The capital markets, when they value the equity or debt of a firm constantly grapple with the task of converting exceptional good or poor performance into normal risk adjusted returns by adding or subtracting market value to its shares or debt. This is why the best managed firms, with proven ability to find and exploit cost of capital beating projects, do not necessarily provide recent shareholders with superior risk adjusted returns. The superior returns, when expected, are incorporated into higher share prices. This higher entry price makes it that much harder to achieve for new shareholders to achieve exceptional market returns, even as the company continues to post cost of capital beating performance. That is when internal rates of return exceed the required returns, or cost of capital. Shareholders pay up in advance for such expected results.

This is why managers should be judged on their ability to achieve cost of capital beating internal rates of return rather than on the stock market performance of their companies that may well have caught up fully with the capabilities of manaement. The firm even the best managed firms can also disappoint shareholders sometimes for reasons beyond the control of the firm itself. Similarly investors in less well managed firms can be compensated with lower share prices that make it that much easier to realize competitive returns in the share market.

Nevertheless from the perspective of allocating and attracting capital to the firms that can best use capital, the firms that enjoy a favourable rating in the market, in the form of high share

prices or low market discount rates applied to their expected performance, will fund it very easy to raise capital on favourable financial terms from the market place. The firms less favoured by the market place are likely to fund funding more difficult and expensive to acquire.

Conclusion; hat principles should apply to the regulated firm?

But what of those firms, whether they be private or publically owned that are not allowed to set their own prices. The regulated firms are regulated because they have monopoly powers and are thought likely to abuse such power in the absence of regulation.

How then should their prices be regulated? The answer is surely to regulate them as if the capital they employ is as valuable as all other capital employed in the economy. They too should be required to earn an appropriate risk adjusted rate of return on the capital provided for them by the private investor or the taxpayer. The government can inject equity capital and or guarantee the debt issued by the publically owned enterprise, in which case the tax base becomes the security for the funds borrowed. Furthermore the costs of finance for the enterprise that is backed by the government will be not much more than the costs of funding government debt itself. But such lower costs of finance while an advantage to the government as sole shareholder in the enterprise do not reduce the risk adjusted cost of capital, only its cost of finance.

The prices allowed by the regulator should be just high enough to provide the owner of the regulated firm, public or private, with a return that equals its risk adjusted cost of capital. If the prices are set too high and provide an excessive rate of return, consumers will be overcharged. If prices are set to low, leading to returns on capital that are below their cost, consumers would be subsidized, at the expense of the taxpayers who are providing the subsidy and the finance or loan guarantees necessary to sustain subsidies.

The risks of the projects undertaken by the regulated firm can be estimated by inferring its beta. Evidence from listed companies regulated in other economies would be valuable in this regard. Both publicly owned electricity generation and distribution facilities, as well as pipelines with monopoly powers, are well below average risk projects, for which a well below average cost of capital should be measured and reflected in their regulated charges. We have indicated our view of the cost of capital for an electric utility in SA, that is of the a real three to four per cent per annum. A pipeline with a highly predictable throughput and very low operating costs might be regarded as even less risky than generating electricity in South Africa.