

# Factors driving the cost of capital in Egypt

Mohammed Omran and John Pointon identify the key determinants of the cost of equity capital in different sectors of the Egyptian economy.

The actual cost of capital is an important factor for capital investment, for it provides an initial benchmark for the overall required rate of return. But clearly adjustments need to be made for different factors, including risk. We can, of course, break down the cost of capital into its various components.

As far as debt finance is concerned, the cost of capital is easy to work out. We can take the interest rate and make appropriate adjustments for any tax benefits. In Egypt, for example, interest rates have been high, with a Treasury bill rate of about 9% and corporate borrowing rates even higher.

More difficult is to determine the cost of equity. Several choices are generally available to the treasurer. For example, the capital asset pricing model provides a rationale for taking a risk-free rate, say, the Treasury bill rate, and adding a premium for risk. The representative premium for the stockmarket as a whole would, be multiplied by the beta risk factor, as a measure of the sensitivity of a particular security to movements in a portfolio representative of the whole stock market.

## The Egyptian stockmarket

In Egypt, although stockmarket activity goes back to 1881, its history has been chequered, for example, by nationalisation in the 1950s and a fairly inactive market until the 1970s. Changes in securities' law and financial disclosure requirements have enabled the stockmarket to grow. But the most radical feature in Egypt has been its programme of economic reform since 1991, an initiative of the Egyptian government which was triggered by economic requirements set out by the International Monetary Fund (IMF). There followed a phenomenal growth in the Egyptian stockmarket, evidenced by dramatic increases in the volume of

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trade, the number of transactions, market capitalisation, and the number of financial intermediaries. To take just one statistic, from 1991 to 1997 the number of stockmarket transactions increased by over eleven thousand per cent.

As Egypt is an emerging market, it is not surprising that financial data is not always as readily available as would otherwise be expected.

Individual company betas, for example, are not provided by Datastream. So approaches other than the capital asset pricing model need to be considered when investigating the cost of equity in some emerging markets.

## Modelling the cost of equity

Here we will consider three alternative models to capital asset pricing:

- a simple estimate for the cost of equity is the earnings yield, that is the inverse of the price earnings (p/e) ratio. This might be reasonable for a firm adopting a policy of a full payout of fairly stable earnings. It might also be appropriate for one that expects to reinvest in projects that do not earn an above-normal rate of return. On this basis, Egypt's cost of capital is

exceeded by only a few countries, such as Peru, Pakistan and Columbia;

- a refinement to this approach is to adjust the inverse of the p/e ratio for the impact of retentions and earnings growth. Here, we refer to this as the earnings growth model. To estimate earnings growth is difficult, so another device is to estimate growth on the basis of a more conservative procedure; and
- if the equity source of retentions earns only the cost of equity, then the p/e ratio need only be modified by the retention impact. This latter approach we can call the retentions-adjusted model. For example, suppose the p/e ratio is 8.9, dividends per share are 0.12 and earnings per share are 0.30 Egyptian pounds. The cost of equity would be  $1/[8.9 - (0.30 - 0.12)/0.30] = 12\%$  (see Davis and Pointon, *Finance and the Firm*, Oxford University Press, 1994).

## Factors driving the cost of capital

We are able to discuss only some of our key research findings here, which, in October 2000, were presented in more detail at the Economic Research Forum's Conference in Amman, Jordan.

We are interested in identifying the factors that determine the cost of capital in different industrial sectors. In particular, we looked at the food, heavy industries, contracting and service sectors.

Now, the cost of capital relates the financing costs of the business to the sources of finance, which in turn are identifiable on one side of the balance sheet. However, for this to balance, these sources are correspondingly represented by net assets. How these assets are employed are likely to vary between industries. Different industries have different levels of risk. The operating risks of heavy industry are likely to be much different from those of, say, the social healthcare services sector.

### **Food, including agriculture**

In the food sector, which for our purposes includes agriculture, roughly two-thirds of the variation in the cost of equity capital, based on the p/e approach, is explained by variations in liquidity. For this purpose, liquidity was defined by the quick ratio and also by the ratio of cash plus short-term investments to current liabilities. This result was also confirmed on the basis of the retentions-adjusted model. There are three important aspects that need to be taken into account:

- firms that hold too much cash are not utilising their resources in areas that are wealth-producing. So we would expect that the higher the ratio of cash and near-cash items to current liabilities, the lower the earnings generated and therefore, generally, the lower the cost of capital, as measured by the p/e model;
- there is a risk effect, because investments in cash and near-cash are less risky and therefore a lower cost of capital is more appropriate; and
- the food retail sector is characterised by cash transactions. However, firms that generate more sales are likely to have higher levels of debtors (accounts receivables) and therefore a correspondingly higher quick ratio, which incorporates debtors as well as cash and near-cash items. So a higher quick ratio may be associated with a higher cost of capital. This is borne out by the evidence of our regressions in the food sector. Under both the p/e model and the retentions adjusted model, a higher quick ratio is associated with a higher cost of capital, yet a higher cash and near-cash to current liabilities ratio is associated with a lower cost of capital.

Nevertheless, utilising the earnings growth model, about half of the variation in the cost of capital in the food sector can be explained by risk instead, both business and financial risk. We measured business risk by the standard deviation of earnings before interest and tax for the five years up to and including 1998. Firms with higher levels of business risk had higher costs of capital and so, broadly, investors are compensated for business risk. However, we found that firms that had lower levels of financial risk – that is, higher levels of times interest earned – also had higher costs of

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One possible explanation is that because high business risk firms have higher costs of equity, they should not add to overall risk by taking on higher levels of debt. Hence, those firms should have lower levels of debt – for example, higher levels of times interest earned – so that the total risk profile is properly managed.

We are also undertaking an in-depth study of capital structure in Egypt and will publish the results soon.

### **Heavy industries**

Let us now turn our attention to heavy industries. For the purposes of our investigation, this sector comprises textiles, paper, fertilisers, pharmaceuticals, building, cement, metallurgy and engineering. Utilising first the p/e model, more than 90% of the variation in the cost of equity capital is explained by variations in financial risk and size. The same factors were also revealed as significant when applying the retentions adjusted model, although half of the variation in the cost of equity capital was explained in this process. For heavy industries, a higher financial risk, characterised by a lower times interest earned and a higher ratio of long-term debt to total investment is associated with a higher cost of equity capital.

Our evidence, based on Egyptian heavy industries suggests that bigger firms have lower costs of capital. The p/e model translates this result into stating that smaller firms have a higher earnings' yield – that is, they perform better. This is consistent with evidence in other countries (see Fama and French, *Value versus Growth: International Evidence* Journal of Finance, December 1998). One explanation is that larger firms are the subject of greater interest and awareness, creating a stronger demand for shares and pulling up share prices

accordingly, although this would suggest some inefficiency in stock market pricing. We will revisit this issue later.

### **Contracting and real estate**

The third sector chosen for analysis was contracting and real estate. This sector has been characterised by a high rate of growth in assets and earnings. Under the earnings model, higher costs of capital are associated with higher levels of business risk (standard deviation of earnings) and higher levels of fixed asset growth. More than two-thirds of the variation in the cost of capital can be explained by these factors. By contrast, the p/e model and the retentions adjusted model each can explain over 80% of the variation of the cost of equity capital by a different set of factors. Four key factors were identified:

- financial risk (times interest earned);
- asset structure (fixed assets to total assets);
- previous net earnings' growth; and
- size (market capitalisation).

First, our regressions revealed that the lower the financial risk – the higher the times interest earned – the lower the cost of equity capital. This is consistent with an equity cost of capital being responsive to the debt capacity of the firm. Interest needs to be covered with a sufficient margin for the company to avoid insolvency threats. Furthermore, interest is a prior charge, so the rate of return available to shareholders has a wider dispersion than would be the case without the interest charge. Possible rates of return are more exaggerated: in good times, they are even better, but in bad times, they are even worse.

Secondly, the asset structure of the firm ought to be important particularly for real estate. We would have expected a higher asset backing, in terms of fixed assets to total assets, to be associated with a lower cost of capital on account of greater asset backing. However, the reverse was the case.

Third, higher costs of capital in this sector, according to both the p/e model and the retentions adjusted model are associated with firms that had previously experienced higher levels of net earnings growth. (It is worth mentioning that that growth estimates are not treated as input parameters to these two models and so there is no bias in the methodology.)

Fourth, a small company effect was also observed in this sector. Smaller firms have greater costs of equity capital. In measuring the size of the firm, its market capitalisation was taken and expressed as a logarithm as earlier, to avoid scale bias in the regressions. Again, this is consistent with the Fama French small firm effect found in other countries.

But why do smaller firms generate better rates of return than larger firms?

- as mentioned earlier, larger firms tend to have more media coverage stimulating investor interest. Perhaps shareholders over-invest in these larger firms driving up the share price too far and thus reducing the rate of return;
- company strategies may be focused more upon growth than financial success, so that larger firms can be identified as those that have expanded into areas which would not have been justified on strict financial criteria;
- or perhaps investors know that larger firms can obtain economies of scale in raising finance so that the cost of capital demanded by investors is lower; and

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- another possibility is that the larger firms are the ones that have grown through higher retentions in previous, more successful years, but investors have been overoptimistic in their expectations. A highly competitive environment of an industrial sector may be inconsistent with future successes being too highly dependent upon past successes.

#### Services

In the services sector, size was not significant. The best key factor that explains the cost of equity capital is tax. In fact, this sector suffers a higher corporate tax rate than any other.

Variations in the ratio of tax to net profit before tax can explain nearly half of the variation in the cost of equity capital, in each of the p/e and retentions adjusted models, and roughly one-fifth of the variation in the cost of equity, applying an earnings growth model. In the other sectors, however, tax did not feature as an issue.

So, in our investigation we have identified key determinants of the cost of equity capital in different sectors of the Egyptian economy. In such a dynamic environment, we are not necessarily saying that these factors will persist. However, in the future, financial data may be more readily available than we experienced, and more extensive, so the cost of capital in Egypt is likely to become the focus of further investigation. ■

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