3 Discounted Cash Flow – Internal Rate of Return

One problem in practice with using a Discounted Cash Flow approach to investment appraisal is that it is virtually impossible to calculate accurately the Cost of Capital for a company.

In the previous example, we decided that using a Cost of Capital of 10% the project was worthwhile. However, suppose the Cost of Capital was not 10% but 11%. With a higher rate of interest we would expect the NPV to be lower. If still positive then we would still be happy to accept, but if it were negative then we should reject.

Even if it is positive at 11%, what about 12%? What about 13%?

Because of the uncertainty regarding the Cost of Capital it would be useful to know the breakeven rate of interest i.e. the rate of interest at which the project would have an NPV of zero.

The rate of interest at which the NPV of the project is zero is known as the Internal Rate of Return (IRR).

In order to estimate the IRR, we calculate the NPV of the project at two different rates of interest and estimate a rate giving an NPV of zero assuming linearity. (In fact the relationship of the NPV to the rate of interest is not linear but curvilinear. However, the approximation resulting from an assumption of linearity is sufficient for our purposes.

For the project in example 1:

(a) Calculate the NPV of the project at an interest rate of 15%

(b) Estimate the IRR of the project using your results from part (a) and from Example 1.

(c) Interpret the result of (b).

Chapter 14

SOURCES OF FINANCE – ISLAMIC FINANCE

1 Introduction

Under the principles of Islamic law, wealth must be generated from legitimate trade and asset-based investment. Also, investments must have a social and ethical benefit. Speculative investments are not allowed, and investments in such areas as alcohol and gambling are forbidden.

2 Riba

As a consequence of the laws regarding the generation of wealth, it is strictly forbidden to use money for the purpose of making money – i.e. it is forbidden to charge interest **(riba)**.

Financial institutions cannot therefore make money by charging interest, but instead provide services for a fee or enter into a form of agreement with the client in which the risk and the profits or losses are shared between the institution and the client.

3 Islamic financial instruments

You should be aware of the following Islamic financial instruments and be able to briefly discuss them:

(a) Murabaha

This is effectively a form of **credit sale**, where the customer receives the goods but pays for them later on a fixed date.

However, instead of charging interest, a fixed price is agreed before delivery – the mark-up effectively including the time value of money.

(b) Ijara

This is effectively **a lease**, where the lessee pays rent to the lessor to use the asset.

Depending on the agreement, at the end ot he rental period the lessor might take back the asset (effectively an operating lease) or might sell it to the lessee (effectively a finance lease – Ijara-wa-Iqtina).

Whatever the agreement, the lessor remains the owner of the asset and is responsible for maintenance and insurance, thus incurring the risk of ownership.

(c) Muduraba

This is similar to **equity finance**, or a special kind of partnership. The investor provides capital and the business partner runs the business. Profits are shared between both parties, but all losses are attributable to the investor (limited to the capital provided).

$$\frac{59,000}{660,000}$$

= **1.1 months**

This ratio reveals that receivables are taking an average of 1.1 months to pay amounts owing. Where a company is overtrading, it may decide to reduce the receivables payment period to a minimum in order to improve its cash flows.

Sales/non-current assets $= \frac{\text{Sales}}{}$

$$\frac{660,000}{84,000}$$

= **7.9 times**

This ratio reveals that for every $ invested in non-current assets there is $7.90 generated in sales during the year. A very high ratio may suggest that the company has under-invested in non-current assets for the given level of sales.

Acid-test $= \frac{\text{Current assets (less inventory)}}{\text{Current liabilities}}$

$$= \frac{59,000}{105,000}$$

= **0.6 : 1**

This ratio compares the liquid assets of the business with the maturing obligations. In this particular case, it shows that the company has insufficient liquid assets to meet short-term obligations. The company is, therefore, in a weak liquidity position.

$$\frac{\text{Current assets}}{\text{Current liabilities}}$$

$$\frac{85,000}{105,000}$$

= **0.8 : 1**

This ratio compares the current assets with the maturing obligations. It is a further measure of liquidity. The ratio reveals that the current assets do not cover the maturing obligations of the company. Although this is a less stringent test of liquidity than the acid-test ratio, the ratio helps confirm the liquidity problems of the company.

(ii) Available put options (put, because sterling is to be sold) are at $1.70 (cost 3.45 cents per $) and at $1.80 (cost 9.32 cents per $).