

The importance of capital gearing finance essay



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Financing and investment are two major decision areas for a company. In the financial decision, the company concerns with determining the best capital structure. There are only two ways that a business can raise money – debt or equity. With the right option, the business can minimize its cost and maximize company value. Bos and Fetherston (1993) described that determining debt and equity is an important financial decision faced by companies. The relationship between debt and equity is considered as capital gearing. Hence, in this report, the gearing ratio and its influence to WACC, company value and shareholder wealth will be assessed through the two major theories.

Capital Gearing

“ Capital gearing is a term describing the relationship between debt funding and equity funding in a company” (Financial Management, 2007).

The simplest formula for gearing ratio = (%)

For example, ABC Ltd has £1, 000 of debt and £2, 500 of total assets. Thus, capital gearing of this company is: = 40%

According to NGFL Wales Business Studies (2009), a company with high gearing is the one who has most of the funding coming from borrowing. It leads to reduced profits available to shareholders because of the increase in interest rate. Moreover, if interest rate increases, the financial costs of business will also go up, thereby total costs of business will rise. However, if a company has a high gearing, it is not really a bad thing. The company may need more money for their expansion activities, taking the opportunity to

invest by borrowing at low rates. By using capital from borrowing, the company can take advantage of tax shields.

A company with low gearing is the one who has most of the funding coming from investment of shareholders. It proves that the company is developing through reinvestment of profits, minimizing risk (NGFL Wales Business Studies, 2009). For example, in 2009, Apple Inc had Total debt/equity also known as gearing ratio at 0% (ADVFN, 2010). However, low gearing may indicate that the company is not aggressive enough to survive, and may not be seeking opportunities for growth (Pham, 2009).

Thus, according to Accounting for Management (n. d.), the importance level of capital gearing is subject to various views.

Effects upon WACC, company value and shareholder wealth

Debt and equity

Debt and equity are the two major sources of funds for a company. So, using of debt and equity proportions are the measurement tools for capital structure. (Glen and Pinto, 1998)

In fact, cost of debt is generally less expensive than cost of equity. Nemethy (2010) provided two major reasons for that. Firstly, debt is a secured loan, which may be seized by the lender when the borrower cannot payment their loans. Meanwhile, equity is an unsecured loan because the shareholder cannot seize anything, they only have the right to vote at a shareholders' meeting. Thus, an unsecured loan has to a higher interest rate than a secured loan. In other words, cost of equity is expensive than cost of debt.

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Secondly, Nemethy (2010) said that when the company issues debt in the form of bonds, they pay interest out to their investors, this interest has to be deducted by taxation. It is also called the debt tax shield. Conversely, when the company issues equity, they pay out dividends. These dividends represent corporate income, and they are subject to double taxation: one time by corporation and another time by shareholders. Thereby, the cost of debt is less than the cost of equity.

With the two major reasons above, virtually all companies prefer to use debt than equity. However, the increase of debt leads to the increase of risks because when the company borrows money, they would be dependent on the lenders. UoS (2007) stated that “ a highly geared company may also experience difficulties in attracting fund from investors, who are not attracted by the risks involved in a high-gear company. At that time, the market price of the company’s shares will fall.” So, the company should choose debt or equity, and the influence of capital gearing to WACC, company value and shareholder wealth. We will assess this problem based on the two theories.

The traditional view

Modigliani and Miller

The traditional view

The traditional view of capital structure theory, based on observation and intuition, suggests that an optimum capital structure exists (Cornelius, 2002). In other words, the capital structure of a company has effected on the

cost of capital. The more debt in the capital structure of a company, the lower of WACC is.

“ The weighted-average cost of capital (WACC) represents the overall cost of capital for a company, incorporating the costs of equity, debt and preference share capital, weighted according to the proportion of each source of finance within the business” (Cornelius, 2002).

The formula to calculate WACC:

$$\text{WACC} = [x] + [x]$$

For example, a company has an issued share capital of 1, 000 ordinary £1 shares. The company wants to buy two machines with the price of a machine as £1, 000.

As mentioned above, cost of debt is generally less expensive than cost of equity, so, we can assume that cost of debt = 15% and cost of equity = 20%. To buy two machines, the company needs to have £1, 000 for the second machine. There are two options for the company.

Option 1: Issuing share (ungeared company)

It means that the company will have 2, 000 shares in total with £1 per share.

$$\text{€} \text{ Total equity} = 2, 000 \times \text{€}1 = \text{€}2, 000 = \text{Total assets}$$

$$= \mathbf{0\%}$$

$$= 20\% \times = 20\%$$

Option 2: Borrowing (geared company)

In this option, the company has £1, 000 from initial issuing shares and £1, 000 from borrowing with 15% of interest.

€ç Total debt = Total equity = £1, 000

Total assets = Total debt + Total equity = 1, 000 + 1, 000 = £2, 000

= = 0. 5 or 50%

= [15% x] + [20% x] = 0. 075 + 0. 1 = 0. 175 or 17. 5%

It is clear that when the gearing capital of a company increases, its WACC will decrease. According to Watson and Head (2006), “ the market value of a company is equal to the present value of its future cash flows discounted by its WACC”.

Market value of a company =

Thus, when WACC of the company decreases, assuming that other factors are constant, the market value of the company increases, in other words, the company value and shareholder wealth increase.

The traditional view is usually represented as follows.

According to UoS (2007), from all equity financing, WACC first declines because debt financing is cheaper. At higher level of debt (beyond X), cost of equity increases because of higher risks out weights the advantage of cheaper debt financing. Hence after X, the WACC will rise. X will be the optimal debt ratio, where the company will minimize its cost of capital and the company value is maximized. In conclusion, gearing capital is very

important because it effects to WACC, company value and shareholder wealth of a company.

Modigliani and Miller view

In 1958, American academics France Modigliani and Merton Miller (M&M), “ presented a radically different view of capital structure theory. They demonstrated that two companies with identical investments would have the same value, regardless of their gearing capital” (Cornelius, 2002). As a result, there is no optimal capital structure for a company. M&M’s propositions can be presented as follows.

M&M’s proposition (without tax)

UoS (2007, p. 274) argued that with the same size and the same level of business risks of two companies: one company was ungeared company, another one was geared company. The value of an ungeared company equals value of equity in an identical geared company plus value of borrowings in an identical geared company.

Therefore, the only factors that influence the value of a company are risk and return. Returns required by shareholders as reward for risk, , will increase at a constant rate as gearing increases due to the perceived increased financial risk. The rising would exactly offset the benefit of the additional cheaper debt in order for the WACC to remain constant. Lenders have security for their debt so they will not feel at risk whatever the level of gearing; therefore, is constant (ACCA – F9 Financial Management: Study Text, 2009).

This can be shown as a graph.

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The WACC, the total value of the company and shareholder wealth are constant and unaffected by gearing levels. No optimal capital structure exists.

For instance, there are two companies with the same size and the same level of business risk: one company was ungeared company, another one was geared company. One machine got back £200 profit yearly. The data of the two companies as follows.

Ungeared Company

Geared Company

Share capital

£1, 000

£1, 000

Debt

—

£1, 000

Machines

1

2

EPS at £200 profit level

0. 20p

0. 25p

If the investor in an ungeared company borrows £1, 000 at 15% interest, after buying the second machine, that company has the profit = £200 x 2 = £400.

€¢ EPS = = 0. 4 p

After receiving dividends from ungeared company, that investor has to pay interest for the lender with 15% interest per £1. Hence, the actual return that investor can receive = $0.4 - [15\% \times 1] = 0.25$ p. This is the same return as that expected by shareholder in geared company and it had been created entirely by the ungeared shareholder.

Therefore, in this proposition, capital gearing does not effect to the WACC, company value and shareholder wealth.

M&M's proposition (with tax)

“ Because interest is tax-deductible, the use of debt finance gives rise to a tax saving” (Cornelius, 2002). In 1963, M&M developed a second version to take account of taxation. M&M argued that the value of a geared company was the value of ungeared company plus the present value of any tax shield generated by using debt finance.

= + T

With:: The value of geared company

: The value of ungeared company

: The market value of debt

T: Corporate tax rate

With tax, M&M view can be represented as below.

According to ACCA – F9FM (2009, p. 1111), remains constant whatever the level of gearing. Likely as M&M's proposition without tax, increases as gearing levels increase to reflect additional perceived financial risk. Because interest on debt is tax-deductible, WACC will fall when gearing increases.

And:

$$= x [1 -]$$

$$= + (1 - T) (-)$$

: cost of equity in an ungeared company

: cost of equity in a geared company

: cost of debt

, : market value of debt and equity in the geared company

T: corporate tax rate

For example, considering two companies, one ungeared and another geared, both of the same size and level of business risk.

Ungeared Company

Geared Company

£

£

EBIT

1, 000

1, 000

Interest

—

(200)

PBT

1, 000

800

Corporation Tax @25%

(250)

(200)

Dividends

750

600

Returns to the investors

Equity

750

600

Debt

–

200

750

800

Suppose that the business risk of the two companies requires a return of 10% and the return required by the debt holders in geared company is 5%, looking at the table above, tax relief on debt interest (also known as tax shield) in geared company = $800 - 750 = £50$

For ungeared company

Market value of ungeared company will be the market value of equity. It will be the dividend capitalized at the equity holders' required rate of return.

$$= 750 / 0.1 = £7,500$$

$$= 10\%$$

For geared company

Market value of the equity of geared company is determined by the equity shareholders' analysis of their net operating income into its constituent parts and the capitalization of those elements at appropriate rates

$$= \frac{7,500}{0.10} = £75,000$$

$$= £75,000 - £4,500 = £70,500$$

Market value of debt is determined by the debt holders capitalizing their interest at their required rate of return.

$$= \frac{4,000}{0.10} = £40,000$$

$$\text{€ Total market value of geared company} = 70,500 + 40,000 = £110,500$$

According to M&M's proposition with tax, it has:

$$= 7,500 + (4,000 \times 25\%) = £8,500$$

Cost of equity in a geared company: $= 10\% + 13.33\%$

$$= 5\% \times (1 - 25\%) = 3.75\%$$

$$\text{€ } = 13.33\% \times 0.75 + 3.75\% \times 0.25 = 8.82\%$$

According to M&M's proposition:

$$= 10\% \times [1 - 0.25] = 7.5\%$$

$$\text{And } = 7.5\% + (1 - 0.25) \times (10\% - 5\%) \times (4,000 / 70,500) = 13.33\%$$

33% as per the dividend valuation model above.

Thus, under M&M theory with tax, there is an optimal gearing level at 100% debt in the capital structure. This is not true in practice because companies do not gear up to 100%. In his research, Cornelius (2002) argued that, in the real world, companies do not raise their gearing ratios to such extreme levels because the high levels of gearing may lead to higher risk of liquidation. Hence, for this proposition, there is no optimal gearing structure, in other words, WACC, company value and shareholder wealth do not depend on the level of capital gearing.

The drawback of the two theories

According to UoS (2007), both of the two theories may seem to be based on unrealistic assumptions. For traditional view, they ignored taxation, companies have complete choice between debt & equity finance, and can change this decision quickly and without cost. It is impossible in the real world. The company could change their decision but it has cost and not quickly. For M&M, it was built with assumptions that no transaction costs and individuals or corporations can borrow money at the same rate. In fact, individuals and companies cannot borrow at the same rate, since companies usually have a higher credit rating. Therefore, personal debt usually costs more than corporate debt and is riskier. Moreover, the theory does not mention the issue of bankruptcy costs and other agency costs, as well as personal income tax.

Conclusion

In conclusion, according to traditional view, gearing capital is very important because the changing of gear may lead to changes of WACC as well as company value and shareholder wealth. If gearing capital increases, WACC

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will fall. It leads to the increase of profits, in other words, company value will increase. Theoretically, there is an optimal capital structure, in which, the company will minimize its cost of capital and the company value is maximized. In fact, it hasn't found an optimal capital structure yet.

Conversely, based on M&M theory, it argued that the two companies with the same size and the same level of business risk would have the same value. It does not depend on their gearing. In other words, the level of capital gearing is not quite important for WACC, company value and shareholder wealth.

Part B: Explain then critically compare and contrast two investment appraisal techniques indicating their merits and limitations in aiding the sound financial management of a company

Introduction

Nowadays, investing is very important for a company to survive. According to UoS (2007, p. 63) " an investment involves the outflow of cash at a point in time in order to obtain benefits in the future". Companies make these investment decisions in order to increase the value of the firm and maximizing shareholders wealth. However, funds are limited, thereby, companies cannot invest in all projects, they must choose between alternative investments. There are four commonly techniques for appraising capital investment projects.

Payback

Accounting rate of return (ARR)

Net present value (NPV) also known as Discounted Cash Flow or DCF

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Internal rate of return (IRR) also known as Discounted Cash Flow technique

In this report, we will look at payback and NPV as two investment appraisal techniques to find out how they can inform future projects, their merits and limitations, and which technique the company would prefer.

Explanation of two investment appraisal techniques

Payback

“ Payback is the number of years required to recover the original cash flow outlay investment in a project” (Brealey, Myers and Marcus, 2001).

If the cash flows are constant, the formula is: Payback period =

If the cash flows are not constant, the calculation must be in cumulative form.

The payback is a commonly used method of evaluating investment proposals. Among alternative investments, the company should decide to invest in the project which payback period is shorter, in other words, this is a project which can recover the initial investment quicker (Ross et al., 2007).

For example, ABC Ltd has two projects A and B which cash flows as follows.

Year

Cash flows from Project A (£)

Cash flows from Project B (£)

0

(100, 000)

(100, 000)

1

10, 000

20, 000

2

30, 000

20, 000

3

40, 000

30, 000

4

20, 000

20, 000

5

30, 000

50, 000

Using cumulative form, we have:

Year

Cash flows from Project A (£)

Cumulative (£)

Cash flows from Project B (£)

Cumulative (£)

0

(100, 000)

(100, 000)

1

10, 000

(90, 000)

20, 000

(80, 000)

2

30, 000

(60, 000)

20, 000

(60, 000)

3

40, 000

(20, 000)

30, 000

(30, 000)

4

20, 000

0

20, 000

(10, 000)

5

30, 000

30, 000

50, 000

40, 000

It is clearly that after 4 years, project A has recovered all original investment and it will begin making the profit for the company from the fifth year, so payback period of project A is 4 years. As for project B, after 5 years, the original investment has recovered and it also generates £40, 000 of profits, so the payback period of this project is:

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Payback period of project B = 4 + = 4. 2 years

Thus, following the rule of payback period method, ABC Ltd should invest into project A because payback period of project A is shorter than project B. It means that the company can recover the original investment quicker if they decide to invest into project A.

Net present value (NPV)

Based on Professional Management Education (2010), " The net present value (NPV) method is the classic economic method of evaluating the investment proposals. It is discounted cash flow technique that explicitly recognizes the time value of money. It correctly postulates that cash flows arising at different time periods differ in value and are comparable only when their equivalents present values are found out".

The formula to calculate NPV is:

NPV = Initial Investment + = Initial Investment +

With r is the rate of interest

It should be made clear that the acceptance rule using the net present value (NPV) method is to accept the investment project if NPV is positive, to reject it if NPV is negative and consider accepting the project when NPV is zero.

For instance, using the same data with example above, in additional, the original proposal of ABC Ltd uses a discount rate of 10%.

Using discounted cash flow technique to the present value, we have:

Year

Cash flows from Project A (£)

Present value (£)

Cash flows from Project B (£)

Present value (£)

0

(100, 000)

(100, 000)

(100, 000)

(100, 000)

1

10, 000

9, 091

20, 000

18, 182

2

30, 000

24, 793

20, 000

16, 529

3

40, 000

30, 052

30, 000

22, 539

4

20, 000

13, 660

20, 000

13, 660

5

30, 000

18, 628

50, 000

31, 046

NPV

$$\text{NPV (A)} = -3,776 < 0$$

$$\text{NPV (B)} = 1,956 > 0$$

Because NPV of project A is negative and that of project B is positive, in accordance with the acceptance rule, ABC Ltd should choose project B to invest because this project will bring more profits.

Analyzing of two investment appraisal techniques

Compare and contrast

In every company, payback period and NPV are very important to evaluate the value of a proposed project before investing on it. Both of two investment appraisal techniques can measure the sustainability and value of long-term projects. From that, the company can make sound financial decisions. (DifferenceBetween. net, 2010)

Regarding calculate technique, payback period is used to calculate a period within which the initial investment of a project is recovered (UoS, 2007). It is equal to the initial net investment divided by annual expected cash flows. For example, a company wants to invest £10,000 in a new project and they expect to have annual cash flows of £2,000, so the payback period of this project will be $= 10,000/2,000 = 5$ years. The shorter the payback period, the better investment is. A long payback period means that the investment will be locked up for a long time, thereby this project is relatively ineffective.

Meanwhile, net present value (NPV) uses the time value of money to appraise long-term projects. According to UoS (2007), “ NPV uses the opportunity cost of capital to discount the flows of cash in and out, over the

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life of a project to give their value at the present day". NPV method focuses on the present value (PV) because NPV equates to the sum of present values of individual cash flows. For example, a project invests £1, 000 and it will bring cash flows of £2, 000 in the next year, so $PV \text{ of } £2, 000 = 2000/(1+0.1) = £1, 818$ with discount rate of 10%. Thus, the NPV of this project = $-1000 + 1, 818 = £818$. When choosing between alternative investments, NPV can help to define the project with highest present value, and also apply the acceptance rule of NPV, if $NPV > 0$ accept the investment, if $NPV < 0$ reject the investment, and if $NPV = 0$ may accept this project.

Ross et al. (2007) stated that NPV method removes the time element in weighing alternative investment, while payback period focuses on the time required to recover the initial investment. From that, payback period method does not assess the time value of cash, inflation, financial risks, etc. as opposed to NPV, which measures the investment's profitability.

In addition, although payback period method indicates the acceptable period of investment, it does not take into account what will happen after the payback period and their impact on total incomes of this project. But it is contrary to NPV. Thereby, NPV will provide better decisions than payback when the company makes capital investments. In fact, companies use more often NPV than payback period method.

Merits and limitations

Merits

The most significant merit of payback period is that it is simple to understand and easy to calculate than other appraisal investment

techniques (UoS, 2007). Comparing with NPV method, payback method uses fewer costs and less analysts' time than NPV. For this method, an investor can have more favorable short term effects on earnings per share by setting up a shorter standard payback period. Professional Management Education (2010) believed that payback period can control investment risks because the longer it takes to recover the initial investment, the more uncertainties there will be during the recovery period. In addition, payback method focuses on the time to recover of the initial investment, so it gives an insight into the liquidity of the project. The shorter payback period, the higher liquidity is.

On the other hand, Brealey et al. (2001) stated that NPV is more accurate and efficient as it uses cash flow, not earnings and results in investment decisions that add value. By discounting the flows, NPV can create the comparison between alternative investments, and then, making right capital decisions. NPV method is always consistent with the long-term objective of the shareholder value maximization. We can say that this is the greatest merit of this method.

Limitations

Payback

Consider XYZ Ltd with two projects A and B. It has the same three years payback period, whose flows are as follows.

Year

Cash flows from Project A (£)

Cumulative (£)

Cash flows from Project B (£)

Cumulative (£)

0

(100, 000)

(100, 000)

(100, 000)

(100, 000)

1

20, 000

(80, 000)

50, 000

(50, 000)

2

30, 000

(50, 000)

30, 000

(20, 000)

3

50, 000

0

20, 000

0

4

30, 000

30, 000

100, 000

100, 000

Payback Period (Year)

3

3

Ross et al. (2007) stated that the first limitation of payback method is the timing of cash flows within the payback period. Looking at the table above, from year 1 to year 3, the cash flows of project A increase from £20, 000 to £50, 000, while the cash flows of project B decrease from £50, 000 to £20, 000. Because the large cash flow of £50, 000 comes earlier with project B, its

NPV must be higher. However, as mentioned above, the payback periods of the two projects are identical. Thus, the problem with the payback period is that it does not consider the timing of the cash flows within payback period. It also shows that the payback method is inferior to NPV because NPV method discounts the cash flows properly.

The second limitation is payment after the payback period (Ross et al., 2007). Let's consider projects A and B in the same three years payback period, project B is clearly preferred because it has a cash flow of £100, 000 in the fourth year. Thus, a problem here is that payback method ignores all cash flows occurring after the payback period. For the short-term orientation of the payback method, some valuable long-term projects may be rejected. NPV method does not encounter this problem because this method uses all the cash flows of the project. Because of the first two limitations, the payback method cannot maximize shareholders wealth.

According to UoS (2007), the payback period method ignores inflation and discriminates against large capital-intensive infrastructure projects with long times, because it only focuses on the earliest time to recover the initial investment.

Net present value (NPV)

NPV is the true measure of an investment's profitability. But, in practice, it still has some problems. The first limitation of NPV method is cash flow estimation (Professional Management Education, 2010). The NPV method is easy to use if forecasted cash flows are known. However, it is quite difficult to obtain the estimates of cash flows due to uncertainty. The second

limitation of NPV is unrealistic assumptions (UoS, 2007). Under NPV method, there is a single market rate of interest for both borrowing & lending and an individual can borrow or lend any amount of money at that rate. It is unrealistic, in practice, the interest rate for borrowing and lending is different and everyone has to follow the interest rate for each kind. For example, for Vietnam market in 2011, the interest rate for borrowing at 9% and for lending at 17% per year (Trading Economics, 2012). NPV also ignores transaction costs or taxes.

Conclusion

In a survey carried out by Graham and Harvey (2001), it was found that 74.9% of respondent companies use net present value (NPV) and 56.7% use payback period method when they appraise the investment projects. It means that in fact, NPV method is used more than payback period method.

Techniques

% Always or Almost Always

Internal Rate of Return (IRR)

75.6

Net present value (NPV)

74.9

Payback period

56.7

Accounting rate of return

30. 3

Source: Graham and Harvey, “ The theory and practice of corporate finance: Evidence from the Field”, Journal of Financial Economics 60 (2001), based on a survey of 392 CFOs

According to the survey of Graham & Harvey (2001) and Sandahl (2003), payback period method is often used in small size companies. The major reason for this can be that payback period method is more simple, cheaper and easier to calculate. Small companies are only interested in the shortest time to recover initial investment because they often lack the source for fund. Moreover, the complexity of the other investment appraisal methods is always a barrier for the small company.

However, net present value (NPV) is often used in medium and large size companies (Graham and Harvey, 2001). The major reason for this can be that these companies are interested in the profitability and time value of money than the payback period. They have the source of funds and consider maximizing shareholders wealth as their long-term objective.