Understanding Financial Management
(MCR006)

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Session #1 - The Introduction: Finance Manager and Financial Systems

This Session focuses on what will be covered in this subject.

Overview

There is a long list of problems that confront an organisation's financial manager (Chief Financial Officer) s and shareholders. We will commence with a brief discussion of the role of the financial manager and is followed by an examination of the different legal forms. Most common organisational forms are discussed but the emphasis will be on the company form. We will consider the financial function of the manager and the goal of the company, which is to maximise shareholder wealth. It is this goal that requires that we recognise its conflicts such as agency and ethical problems.

The key financial decisions facing the financial manager

In running a business, the financial manager faces three key basic decisions, and these decisions should be made in a way that maximises the current value of the company's shares. The three decisions are:

- which productive assets the company should buy (capital budgeting),
- how the company should finance the productive assets purchased (financing decision) and
- how the company should manage its day-to-day financial activities (working capital decisions).

The basic forms of business organisation in Australia

The three basic ways to run a business are as a sole trader, a partnership or a company (public or private). The owners of a business select the form of organisation that they believe will best allow management to maximise the value of the business. Most large businesses elect to trade as public companies because of the ease of raising money; the major disadvantage is high regulation and compliance costs. Very small businesses tend to organise as sole traders or partnerships. The advantages of these forms of organisation include ease of formation and taxation at the personal income tax rate. The major disadvantage is the owners' unlimited personal liability, and it is because of this major disadvantage smaller businesses also trade as a company, but as a private company, rather than a private one which has all the disadvantages of regulation.

Managing the financial function of a large company

In a large company, the financial manager generally goes by the title of chief financial officer (CFO). The CFO reports directly to the company's CEO. Positions reporting directly to the CFO generally include the accountant, the risk manager, the company secretary and the internal auditor. Often it includes the procurement and sales managers. The audit committee of the board of directors is also important in the financial function. The committee hires the external auditor for the company, and the internal auditor, external auditor and compliance officer all report to the audit committee. The owners of a company are called its shareholders, and may be directors as well, which usually occurs in smaller firms. A director is an elected officer of the firm, who manages the business of the firm, and is a member of the Board of Directors, called the 'Board'. The Board represents the shareholders' interests and ensures that the company's management acts on their behalf. The CEO has ultimate management responsibility and decision-making power in the firm,

and reports directly to the board of directors, which is accountable to the company's owners. It is not considered a good practice to have the CEO on the Board because it is a natural conflict of interest for executives to serve equally on the entity that supervises them. The CFO reports directly to the CEO and manages all aspects of the company's financials.

The Goal of the Company

The goal of the financial manager is to maximise the current value of the company's shares. Maximising share value is an appropriate goal because it forces management to focus on decisions that will generate the greatest amount of wealth for shareholders. Since the value of a share (or any asset) is determined by its cash flows, management's decisions must consider the following:

- the *size* of the cash flow (larger is better),
- the *timing* of the cash flow (sooner is better), and
- the *riskiness* of the cash flow (given equal returns, lower risk is better).

Agency conflicts: separation of ownership and control

In most large companies, there is a significant degree of separation between management (those who manage the company, including the directors) and ownership (the shareholders). As a result, shareholders have little control over managers, and management may thus be tempted to pursue its own self-interest rather than maximising the wealth of the owners. The resulting conflicts give rise to agency costs. Ways of reducing agency costs include developing salary agreements that link employee salary to the longer-term company's performance and having independent boards of directors' monitor management. Care is required here as Enron is the classic example of the renumeration incentive going very wrong.

The importance of ethics in business

If we lived in a world without ethical norms, we would soon discover that it would be difficult to do business. As a practical matter, the law and market forces provide important incentives that foster ethical behaviour in the business community, but they are not enough to ensure ethical behaviour. An ethical culture is also needed. In an ethical culture, people have a set of moral principles — a moral compass — that helps them identify ethical issues and make ethical judgements without being told what to do.

Key things to take away

- Identify the key financial decisions facing the financial manager of any company.
- Know the strengths, weaknesses of the basic forms of business organisation.
- The corporate goal should be about maximising the current value of the company's shares, that is to maximise the wealth of the shareholders.
- Presence of agency conflicts affect the goal of maximising shareholder value.
- Ethics are important in the study of corporate finance.
- The financial system institutions move money from lender-savers (whose income exceeds their spending) to borrower-spenders (whose spending exceeds their income)
- Interest rates tend to follow business cycle.
- During periods of economic expansion interest rates tend to rise (and vice versa).

Session #2 - The time value of money and Discounted Cash Flow

This Session focuses on compounding, discounting and the time value of money

Overview

The material covered in this and the next Session form the foundation for understanding the material following and may be viewed as the most fundamental concepts of finance along with risk and return.

The time value of money

The idea that money has a time value is one of the most fundamental concepts in the field of finance. The concept is that *a dollar today is worth more than a dollar received in the future*. That is your money is worth more today than at some point in the future because, if you had the money now, you could invest it and earn interest. Thus, the time value of money is the opportunity cost of forgoing consumption today.

The trade-off

Applications of the time value of money focus on the trade-off between current dollars and dollars received at some future date. This is an important element in financial decisions because most investment decisions require the comparison of cash invested today with the value of expected future cash inflows. Time value of money calculations facilitate such comparisons by accounting for both the magnitude and timing of cash flows. The general rule is that investment opportunities are undertaken only when the *current* value of future cash inflows exceeds the *current* cost of the investment (the initial cash outflow).

Future value and compounding

There are several key terms -

- The *future value* is the sum to which an investment will grow after earning interest;
- The *principal* is the amount of the investment;
- *Simple interest* is the interest paid on the original investment; the amount of money earned on simple interest remains constant from period to period;
- *Compound interest* includes not only simple interest, but also interest earned on the reinvestment of previously earned interest, the so-called earning ‘interest on interest’;
- For *future value* calculations, the higher the interest rate, the faster the investment will grow.

Present value and discounting

The present value is the value today of an amount, or amounts, in the future. Calculating the present value involves discounting future cash flows back to the present at an appropriate discount rate. The process of discounting cash flows adjusts the cash flows for the time value of money. Mathematically, the present value factor is the reciprocal of the future value factor, or $1/(1 + i)$.

Key things to take away

- The materials in this and the next Session are vital for an understanding of the subject.
- Compounding converts a present value into its future value, considering the time value of money.
- Discounting converts a future value into its present value, considering the time value of money.
- Using the above you can determine the present and future value for multiple cash flow and an ordinary annuity.
- The general rule is that investment opportunities are undertaken only when the *current* value of future cash inflows exceeds the *current* cost of the investment (the initial cash outflow).
- The effective annual interest rate (EAR) is the appropriate way to annualise interest rates and calculate EAR.

Session #3 - Risk and Return

This Session focuses on how risk and return affect investing.

Overview

This is a key Session in that it addresses the measurable aspect of the risk and return relationship for assets. It provides important background material for later Sessions such as the cost of capital, capital budgeting, and dividends.

The relationship between risk and return

It is understandable that investors require greater returns for taking greater risk. They prefer the investment with the highest possible return for a given level of risk or the investment with the lowest risk for a given level of return.

Quantitative measures of return

The total holding period return on an investment consists of a capital appreciation component and an income component. Investors do not care whether they receive a dollar of return through capital appreciation or as a cash dividend, as they value both sources of return equally.

The expected returns

The expected return is a weighted average of the possible returns from an investment, where each of these returns is weighted by the probability that it will occur.

The variance and standard deviation as measures of risk

The standard deviation of returns is a measure of the total risk associated with the returns from an asset. It is useful in evaluating returns in finance because the returns on many assets tend to be normally distributed, that is the measure tells us about the probability that a return will fall within a particular distance from the expected value or within a particular range. That is, the standard deviation is a measure of how spread-out numbers are from the simple average of the group. In a bell-shaped curve, we can say that any value is -

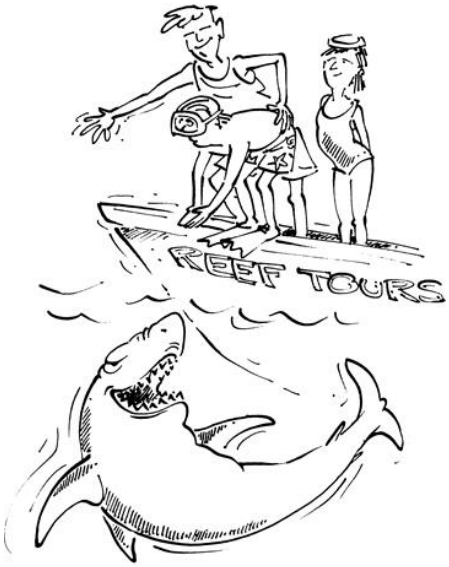
- Likely to be within 1 standard deviation (68 out of 100 should be, that is 68%);
- Very likely to be within 2 standard deviations (95 out of 100 should be, 95%);
- Almost certainly within 3 standard deviations (99.7 out of 100 should be, 99.7%).

Risk and diversification

Diversification is a strategy of investing in two or more assets whose values do not always move in the same direction at the same time to reduce risk. This reduces risk because some of the changes in the prices of individual assets offset each other resulting in the overall volatility in the value of the portfolio to be lower than if it were invested in a single asset. An example is an investor deciding to invest in property *and* shares to reduce risk through diversification.

Systematic risk

Systematic risk is risk you cannot diversify. Investors care about systematic risk because they can eliminate unique (non-systematic) risk by holding a diversified portfolio. Diversified investors will bid up prices for assets to the point at which they are just being compensated for the systematic risks they must bear.



Are you identifying, assessing, treating and monitoring and reviewing your financial management risks?

The Capital Asset Pricing Model (CAPM)

The CAPM is a model that shows the relationship between expected risk and expected return on an investment, based on the accepted theory that the higher the risk associated with an investment, the higher the required return. From the CAPM we know what rate of return investors will require for an investment with a particular amount of systematic risk (beta). This means that we can use the expected return predicted by the CAPM as a benchmark for evaluating whether expected returns for individual assets are sufficient. If the expected return for an asset is less than that predicted by the CAPM, then the asset is an unattractive investment because its return is lower than the CAPM indicates it should be. However, if the expected return for an asset is greater than that predicted by the CAPM, then the asset is an attractive investment because its return is higher than it should be. Beta is a measure of the price volatility of a security or portfolio, compared with the market -

- *Zero beta*: A zero-beta portfolio is a portfolio constructed to have zero systematic risk;
- *Beta of 1*: This is the level of risk where the market is. This risk is called ‘systemic’ risk, or ‘market’ risk, and is the risk that influences many assets.

Key things to take away

- Investors require greater returns for taking greater risk and prefer the investment with the highest possible return for a given level of risk or the investment with the lowest risk for a given level of return. Investors value both capital appreciation and dividend sources of return equally. The expected return is a weighted average of the possible returns from an investment.

- Standard deviation is a measure of how spread-out numbers are from the simple average of the group. It is a measure of the total risk associated with the returns from an asset and tells us about the probability that a return will fall within a particular distance from the expected value or within a particular range.
- Diversification is a strategy of investing in two or more assets whose values do not always move in the same direction at the same time to reduce risk.
- Investors care about only systematic risk. This is because they can eliminate unique risk by holding a diversified portfolio.
- The Capital Asset Pricing Model (CAPM) is the equation of the security market line (SML) showing the relationship between expected return (E(R)) and Beta.

Session #4 - Bond valuation and the structure of interest rates

This Session focuses on bonds and how they are valued or priced in the marketplace.

Overview

The bond valuation models presented in this Session are derived from the present value materials discussed.

Capital market efficiency

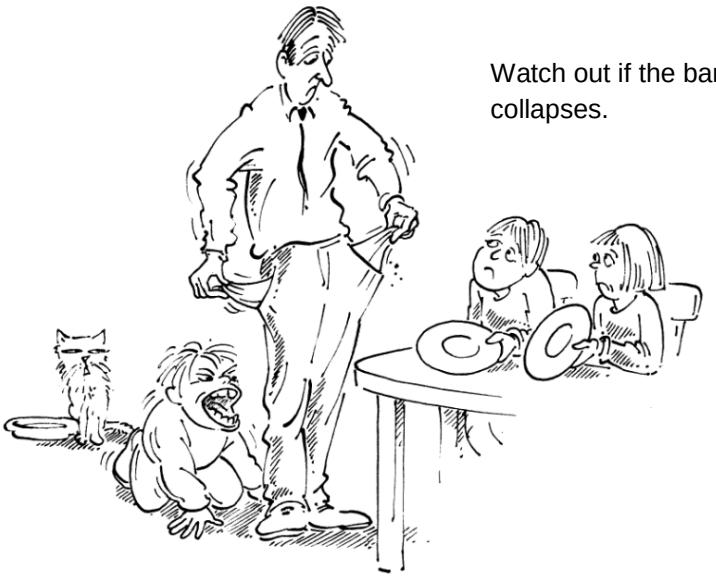
An efficient capital market is a market where security prices reflect the knowledge and expectations of all investors. Public markets, for example, are more efficient than private markets because issuers of public securities are required to disclose a great deal of information about these securities to investors and investors are constantly evaluating the prospects for these securities and acting on the conclusions from their analyses by trading them. Market efficiency is important to investors because it assures them that the securities, they buy are priced close to their true value.

The Corporate bonds

The market for corporate bonds is a very large market in which the most important investors are large institutions. Most trades in this market take place through dealers in the over the counter (OTC) market, and the corporate bond market is relatively thin. Prices of corporate bonds tend to be more volatile than prices of securities that trade more frequently, such as share and money markets, and the corporate bond market tends to be less efficient than markets for these other securities.

Bond valuation

The value of a bond is equal to the present value of the future cash flows (coupons and principal repayment) discounted at the market rate of interest for bonds with similar characteristics. Bond prices vary negatively with interest rates because the coupon rate on most bonds is fixed at the time the bond is issued. Therefore, as interest rates go up, investors seek other forms of investment that will allow them to take advantage of the higher returns. Because the bond's coupon payments are fixed, the only way the yields can be adjusted to the current market rate of interest is to reduce the bond's price. Interest rate increases decreased the Silicon Valley Bank's bond prices leading to the bank's 2023 collapse.



Watch out if the bank collapses.

Bond yields

A bond's coupon rate is the stated interest rate on the bond when it is issued. Australian bonds typically pay interest semi-annually, whereas European bonds pay once a year. The yield to maturity is the expected return on a bond if it is held to its maturity date. The effective annual yield is the yield an investor earns in one year, adjusting for the effects of compounding. If the bond pays coupon payments more often than annually, the effective annual yield will be higher than the simple annual yield because of compounding.

Interest rate risk

Because interest rates are always changing in the market, all investors who hold bonds are subject to interest rate risk. Interest rate risk is uncertainty about future bond values caused by fluctuations in interest rates. Three of the most important bond theorems are -

- Bond prices are negatively related to interest rate movements;
- For a given change in interest rates, the prices of long-term bonds will change more than the prices of short-term bonds;
- For a given change in interest rates, the prices of lower coupon bonds will change more than the prices of higher coupon bonds.

The structure of interest rates

Default risk is the risk that the issuer (borrower) will be unable to pay its debt obligation (interest and the principal). Since investors are risk averse, they must be paid a premium to purchase a security that exposes them to default risk. The default risk premium has two components: (1) compensation for the expected loss if a default occurs and (2) compensation for bearing the risk that a default could occur. All factors held constant, the degree of default risk a security possesses can be measured as the difference between the interest rate on a risky security and the interest rate on a default-free security.

The term structure of interest rates

The level and shape of the yield curve are determined by three factors: (1) the real rate of interest, (2) the expected rate of inflation and (3) interest rate risk. The real rate of interest is the base interest rate in the economy and varies with the business cycle. The real rate of interest affects only the level of the yield curve and not its shape. The expected rate of inflation does affect the shape of the yield curve. If investors believe inflation will be increasing in the future, for example, the curve will be upward sloping, as long-term rates will contain a larger inflation premium than short-term rates. Finally, interest rate risk, which increases with a security's maturity, adds an upward bias to the slope of the yield curve.

Key things to take away

- An efficient capital market is a market where security prices reflect the knowledge and expectations of all investors.
- Prices of corporate bonds tend to be more volatile than prices of securities that trade more frequently, such as share and money markets.
- The value of a bond is equal to the present value of the future cash flows (coupons and principal repayment) discounted at the market rate of interest for bonds with similar characteristics.
- A bond's yield to maturity changes daily as interest rates increase or decrease.
- Because interest rates are always changing in the market, all investors who hold bonds are subject to interest rate risk.
- Default risk is the risk that the issuer (borrower) will be unable to pay its debt obligation (interest and the principal) causing investors to be paid a premium to purchase a security that exposes them to default risk.
- The level and shape of the yield curve are determined by three factors.

Session #5 - Share Valuation

This Session focuses on equity securities (shares) and how they are valued.

Overview

We will consider the fundamental factors that determine a share's price or value, and then several valuation models that estimate this price. These models tell us what the share's price *should* be and can then be used to compare our estimate against the *actual* market price.

The four types of secondary market for shares

The four types of secondary markets are: (1) direct search, (2) broker, (3) dealer and (4) auction. In direct search markets, buyers and sellers seek each other out directly. In broker markets, brokers bring buyers and sellers together for a fee. Trades in dealer markets go through dealers who buy securities at one price and sell at a higher price. The dealers face the risk that prices could decline while they own the securities. Auction markets have a fixed location where buyers and sellers confront each other directly and bargain over the transaction price.

Ordinary and preference shares and the ordinary share valuation

Preference shares represent ownership in a company and entitle the owner to a dividend, which must be paid before dividends are paid to ordinary shareholders. Like bonds, preference share issues have credit ratings, are sometimes convertible to ordinary shares and are often callable. Unlike owners of ordinary shares, owners of non-convertible preference shares do not have voting rights and do not participate in the company's profits beyond the fixed dividends they receive. Because of their strong similarity to bonds, many financial analysts treat preference shares that are not true perpetuities as a form of debt rather than equity.

The general dividend valuation model

The general dividend valuation model values a share as the present value of all future cash dividend payments, where the dividend payments are discounted using the rate of return required by investors for a particular risk class.

Some simplifying assumptions about share valuation

The problems with the general dividend valuation model are that the exact discount rate that should be used is unknown, dividends are often uncertain, and some companies do not pay dividends at all. To make the model easier to apply, we make assumptions about the dividend payment patterns of businesses. These simplifying assumptions allow the development of more manageable models, and they also conform with the actual dividend policies of many companies. Dividend patterns include the following: (1) dividends are constant (zero growth); (2) dividends have a constant growth pattern (they grow forever at a constant rate g); and (3) dividends grow first at a non-constant rate then at a constant rate.

Valuing preference shares

When a preference share has a maturity date, financial analysts value it as they value any other fixed obligation — that is, like a bond. To value such a preference share, we can use the bond valuation model we have already covered. Before using the model, we need to recognise that we will be using dividends in the place of coupon payments and that the par value of the share will replace the par value of the bond. Additionally, in Australia, both bond coupons and preference share dividends are paid semi-annually. When a preference share has no stated maturity, it becomes perpetuity, with the dividend becoming the constant payment that goes on forever.

Key things to take away

- Investors have the choice of several investments including options, bonds, shares and property
- There are two markets, primary (when the security is first issued) and secondary (all subsequent transactions)
- There are four types of secondary markets direct search, broker, dealer and auction.
- There are two types of equity securities -
    - Ordinary shares: they represent a basic ownership claim in a company and have voting rights;
    - Preference shares also represent ownership interest in a company, but they get preferential treatment over ordinary shares in relation to dividends and capital in a windup. They have no voting rights and are often seen as a special type of bond.
- The general dividend valuation model values a share as the present value of all future cash dividend payments, where the dividend payments are discounted using the rate of return required by investors for a particular risk class.
- Since preference share dividends are declared by the board of directors, failure to pay dividends does not result in default.
- Failure to pay a preference share dividend as promised is a serious financial breach and signals to the market that company is in serious financial difficulty.

Session #6 - The fundamentals of capital budgeting

This Session focuses on capital budgeting and includes a discussion of the types of capital projects that companies undertake and how the capital budgeting process is managed within the company.

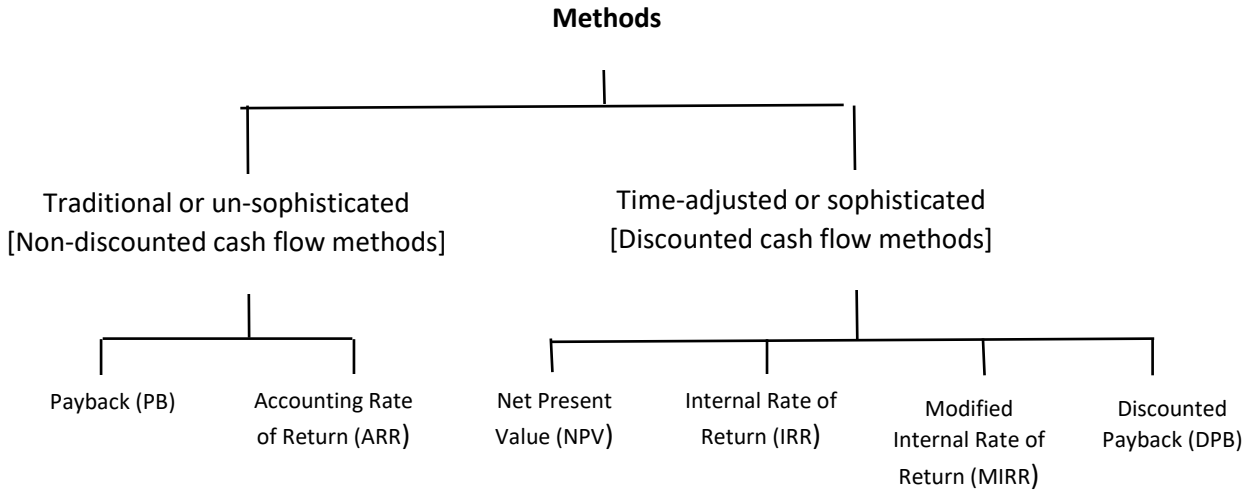
What is capital purchasing?

Capital budgeting is the process that a business uses to determine which proposed fixed asset purchases it should accept, and which should be declined. This could be the purchase of a large truck, a property, a factory or a business. This process is used to create a quantitative view of each proposed fixed asset investment, thereby giving a rational basis for making a judgment.

How do we budget for capital purchasing?

We have a few traditional unsophisticated methods (including the Payback or the Accounting Rate or Return, also called the Average Rate of Return) but these have their drawbacks and thus affect the accuracy of the information they provide. We now have more sophisticated methods including the Net Present Value, Internal Rate of Return, Modified Internal Rate of Return and the Discounted Payback methods. The difference between these two categories is that the 'sophisticated' methods discount the cash flows, and this results in more accurate information for decision making. See the below Exhibit.

Exhibit 6.1 Various Capital Expenditure Evaluation Methods



Note: If possible, you should be using the time adjusted (discounted) methods. One could use the net present value and the discounted payback methods together.

What is discounting?

Discounting was discussed in Session 2 (Time value of money and discounted cash flows), where we saw that if we have a series of cash flows over several years you cannot compare the sums to be received or paid today with that in the future. To compare we need to discount the future sums

to today's dollar values. For example, if we are to receive $10,000 in 4 years from now it will be worth only $6,830 today if discounted at 10%. Conversely, if we invest $6,830 at 10% our investment should have grown to $10,000 in 4 years, with the difference being $3,270 (that is, $10,000 - $6,630). Thus, we need to compare 'apples with apples' and this is done by using discounting, as the $3,270 difference affects the accuracy of decision making. Hence, as a rule we seek to use discounting methods if we can.

What are the different methods?

In summary the different methods are as follows -

- **Payback** this is how long it will take to pay back your initial investment;
- **Accounting Rate of Return** this is just the total income for the project divided by the total invested, and this it is an average return on the investment. It is also called the 'Average Rate of Return';
- **Net Present Value** is how much the future cash flows will total in today's dollars compared to the present value of what we spend. The rule is to only accept the project if the NPV is positive, that is where the present value of future cash inflows exceeds the present value of outgoings;
- The **Internal Rate of Return** is what interest rate is needed to use to get a zero net present value and you then compare that rate to the one you seek for the project and take the project if the IRR exceeds the rate you seek. As this method can result in a mathematical error it should not be used. However, it is still being widely used;
- The **Modified Internal Rate of Return** is a modification of the internal rate of return and as such aims to resolve some problems with the IRR. It assumes that positive cash flows are reinvested at the firm's cost of capital and that the initial outlays are financed at the firm's financing cost;
- The **Discounted Payback** method uses discounting to make this method more accurate, but it still has its problems as cashflows after the payback date are ignored, even if these cash flows are large.

Which method to use?

The best overall method is the net present value method because it gives the most accurate answer. However, it does take some effort to learn and then understand how to do the calculation, but the most difficult part is the determination of the cash flows and the discount rate. What often occurs is that both the net present value method and the payback method are used together. When using the payback method, it would be better to use the discounted version to obtain more accuracy. The problem with the payback method irrespective whether to discounted or not is that once the payback time has been determined the method requires one to ignore the subsequent cash flows. Therefore, it is not a good method to use unless one wants to determine risks. That is, in theory a project which pays back in two years is seen to be less risky than one which pays back in five years. However, the cash flows need to be considered and that is the role of the net present value method.

How did capital purchasing activity go?

It is beneficial to have a post capital project implementation review. Managers should also conduct ongoing reviews of capital projects in progress. The review should challenge the business plan, including the cash flow projections and the operating cost assumptions. Management should also evaluate people responsible for implementing a capital project.

Key things to take away

- Capital budgeting decisions are the most important investment decisions made by management.
- Net present value (NPV) is the most important capital budgeting tool.
- The payback period tool has drawbacks: (a) amounts are not discounted; and (2) ignores post payback figures.
- The accounting rate of return (ARR) method is not a capital expenditure decision-making tool.
- The internal rate of return (IRR) for a capital project can make mistakes, thus focus on the NPV method.
- It is beneficial to have a post audit review of a capital project.

Session #7 - Cash flows and capital budgeting

The focus of this class is on the detail on how to do the capital budgeting calculation.

Overview

This is an important Session for all students as they will undoubtedly be involved in project analysis at some point in their careers. The material in this Session is central to Finance and incorporates several tools described in earlier Sessions.

Calculating project cash flows

The incremental after-tax free cash flows, FCFs, for a project equal the expected change in the total after-tax cash flows of the company if the project is adopted. The impact of a project on the company's total cash flows is the appropriate measure of cash flows because these are the cash flows that reflect all the costs and benefits from the project.

How are your cashflows? Does your company have onerous obligations?

Estimating cash flows in practice

The five general rules are as follows -

- *Rule 1: Include cash flows and only cash flows in your calculations*. Shareholders care about only the impact of a project on the company's cash flows;
- *Rule 2: Include the impact of the project on cash flows from other product lines.* If a project affects the cash flows from other projects, we must take this fact into account in NPV analysis to fully capture the impact of the project on the company's total cash flows;
- *Rule 3: Include all opportunity costs.* If an asset is used for a project, the relevant cost for that asset is the value that could be realised from its most valuable alternative use. By

including this cost in the NPV analysis, we capture the change in the company's cash flows that is attributable to the use of this asset for the project;
- Rule 4: Forget sunk costs. The only costs that matter are those to be incurred from now;
- *Rule 5: Include only after-tax cash flows in the cash flow calculations.* Since shareholders receive cash flows after taxes have been paid, they are concerned only about after-tax cash flows.

Projects with different lives

The lowest common multiple method is the method of making two investments the same by assuming repeated investments over an identical period. The NPV perpetuity (NPV_∞) of an investment is the total NPV of an investment if it is replaced with an identical investment, at the end of its useful life, infinitely. The equivalent annual cost (EAC) is the annualised cost of an investment that is stated in nominal dollars. In other words, it is the annual payment from an annuity that has the same NPV and the same life as the project. Since it is a measure of the annual cost or cash inflow from a project, the EAC for one project can be compared directly with the EAC from another project, regardless of the lives of those two projects.

When to harvest an asset

The appropriate time to harvest an asset is that point in time where harvesting the asset yields the largest present value, in today's dollars, of the project NPV.

Key things to take away

- The incremental after-tax free cash flows are relevant in evaluating a project.
- The five general rules for incremental after-tax free cash flow calculations are -
    - Include cash flows and only cash flows in your calculations;
    - Include the impact of the project on cash flows from other product lines;
    - Include all opportunity costs;
    - Forget sunk costs;
    - Include only after-tax cash flows in the cash flow calculations.
- Know the concepts of lowest common multiple, NPV (net present value) perpetuity and equivalent annual value, and apply them to compare projects with unequal lives, decide when to replace an existing asset and calculate the opportunity cost of using an existing asset.
- The appropriate time to harvest (or replace) an asset is the point in time where harvesting (or replacing) the asset yields the largest present value of the project NPV.

Session #8 - Cost of Capital

The focus of this Session is on the tools needed to determine the company's cost of capital and understand the complications and corresponding limitations associated with this value.

Overview

The cost of capital appears to be a relatively simple concept that is described by a static equation. In this Session we will use the weighted average cost of capital (WACC) as a snapshot that is based on the companywide systematic risk, which is affected by the current portfolio of projects as well as the financial leverage that the company is employing. We will also consider the subcomponents of WACC: the cost of debt, the cost of ordinary equity, and the cost of preferred equity for the company.

The 'Company's overall cost of capital

The weighted average cost of capital (WACC) for a company is a weighted average of the current costs of the different types of financing that a company has used to finance the purchase of its assets. When the WACC is calculated, the cost of each type of financing is weighted according to the fraction of the total company value represented by that type of financing. The WACC is often used as a discount rate in evaluating projects because it is not possible to directly estimate the appropriate discount rate for many projects. A single discount rate reduces inconsistencies that can arise when different analysts in the company use different methods to estimate the discount rate and can also limit the ability of analysts to manipulate discount rates to favour pet projects.

Cost of debt

The cost of debt can be calculated by solving for the yield to maturity of the debt using the bond pricing model, calculating the effective annual yield and adjusting for tax.

Cost of equity capital

The cost of ordinary shares can be estimated using the CAPM (described in Session 3), the constant-growth dividend formula and a multistage-growth dividend formula. The cost of preference shares can be calculated using the perpetuity model for the present value of cash flows.

Using the WACC in Practice

When a company uses a single rate to discount the cash flows for all of its projects, some project cash flows will be discounted using a rate that is too high and other project cash flows will be discounted using a rate that is too low. This can result in the company rejecting some positive NPV projects and accepting some negative NPV projects. It will bias the company towards accepting more risky projects and can cause the company to create less value for shareholders than it would have if the appropriate discount rates had been used. One approach to using the WACC is to identify a company that engages in business activities that are like those associated with the project under consideration and that has publicly traded shares. The returns from this pure-play company's shares can then be used to estimate the ordinary share beta for the project. In

instances where pure-play companies are not available, financial managers can classify projects according to their systematic risks and can use a different discount rate for each classification.

Key things to take away

- The weighted average cost of capital (WACC) for a company is a weighted average of the current costs of the different types of financing that a company has used to finance the purchase of its assets.
- The WACC is used as a discount rate to evaluate projects (in NPV and IRR calculations) because it is not possible to directly estimate the appropriate discount rate for many projects.
- The cost of debt for a company can be calculated by solving for the yield to maturity of the debt using the bond pricing model, calculating the effective annual yield and adjusting for tax.
- The cost of ordinary shares can be estimated using the CAPM, the constant-growth dividend formula and a multistage-growth dividend formula.
- The cost of preference shares can be calculated using the perpetuity model for the present value of cash flows.
- The WACC is estimated using the weighted cost of each individual type of financing.
- The WACC is the appropriate discount rate for evaluating a project only when it has cash flows with systematic risks that are the same as those for the company as a whole.

Session #9 - How Companies Raise Capital

The focus of this Session is on how companies raise capital so that they can acquire the productive assets needed to grow and remain profitable.

Overview

The Session begins by examining how many new businesses acquire their first equity funding, and then subsequent funding options. This Session allows readers to get a grasp of how companies can raise long-term capital in both public and private markets.

Bootstrapping

Bootstrapping is the process by which many entrepreneurs raise ‘seed’ money and obtain other resources necessary to start new businesses. Seed money often comes from the entrepreneur’s savings and credit cards and from family and friends. Bootstrapping is important for the economy too, because business start-ups are a significant factor in determining and sustaining long-term economic growth in an economy. Indeed, some governments have invested heavily in business incubators, hoping to foster new business formation.

Venture Capital

Venture capitalists specialise in helping businesses move to the next stage by advising management and providing early-stage financing. Because of the high risk of investing in start-up businesses, venture capitalists finance projects in stages and often require the owners to make a significant personal investment in the company. The owners’ equity stake signals their belief in the viability of the project and ensures that management actions are focused on building a successful business. Risk is also reduced through syndication and because of the venture capitalist’s in-depth knowledge of the industry and technology.

Initial public offering (IPO)

The major advantages of entering public markets are that they provide companies with access to large quantities of money at relatively low cost, enable companies to attract and motivate good managers, and provide liquidity for existing shareholders, such as entrepreneurs, other managers and venture capitalists. Disadvantages include the high cost of the IPO, the cost of ongoing Australian Securities and Investments Commission (ASIC) disclosure requirements, the need to disclose sensitive information, and possible incentives to focus on short-term profits rather than on long-term value maximisation.

IPO pricing and cost

When underwriting new securities, investment bankers prefer that the issue be underpriced because it increases the likelihood of a successful offering, and reduces the likelihood that the underwriter will end up buying unsubscribed securities. Furthermore, many investment bankers will argue that some underpricing helps attract long-term institutional investors who help provide stability for the share price. The total cost of issuing an IPO includes three elements: (1) the underwriter’s spread (this is the difference between the amount paid by the underwriting group in a new issue of securities and the price at which securities are offered for sale to the public. It is the underwriter's gross profit

margin, usually expressed in points per unit of sale, ehether bond or stock); (2) outof- pocket expenses, which can include legal fees, ASIC lodgement fees and other expenses; and (3) the cost of underpricing. The total cost of bringing an open public offer to market is lower than the cost of issuing an IPO because these seasoned offerings do not include a large underpricing cost and underwriting spreads are smaller.

Private markets and bank loans

There are a number of advantages to private placement, even for companies with access to the public markets, and include that a private placement may be more cost effective and can be accomplished much more quickly. In addition, some larger companies, especially those owned by entrepreneurs or families, may not wish to be exposed to the public scrutiny that comes with public sales of securities.

Watch out, as government induced interest rate increases could squash your business!

Advantages of borrowing from a commercial bank

Most small and medium-sized companies borrow from commercial banks on a regular basis. There are advantages of this borrowing rather than selling securities in financial markets. Small and medium-sized companies may have limited access to the financial markets. For these companies, banks provide not only funds but a full range of services, including financial advice. Furthermore, if a company's financial circumstances change over time, it is much easier for the company to borrow or renegotiate the debt contract with a bank than with other lenders. For many companies, bank borrowing may be the lowest cost source of funds. Bank term loans are business loans with maturities greater than 1 year. Most bank term loans have maturities from 1 to 5 years, though the maturity may be as long as 10 years. The cost of the loans depends on three factors: the reference rate, an adjustment for default risk and an adjustment for the term to maturity.

Key things to take away

- Many entrepreneurs raise seed money and other resources necessary to start a new business through bootstrapping.
- Venture capitalists specialise in helping businesses to progress by advising management and providing early-stage financing.
- The major advantages of entering public markets are that they provide companies with access to large quantities of money at relatively low cost, enable companies to attract and motivate good managers, and provide liquidity for existing shareholders.
- Underwriters prefer new security offerings to be under-priced as it increases the likelihood of a successful offering.
- Most small and medium-sized companies borrow from commercial banks on a regular basis. There are advantages of this borrowing rather than selling securities in financial markets.

Session #10 - Capital Structure Policy

This Session discusses capital structure and how it affects company value.

Overview

This Session discusses capital structure and how it affects company value. It introduces the Modigliani and Miller (M&M) theory of capital structure as well as the three major assumptions required for the theorem to hold. These assumptions are (1) that neither the company nor the investor is subject to tax, (2) there are no information or transactions costs, and (3) the way in which the company is financed does not affect its real investment policy.

The Modigliani and Miller propositions

Modigliani and Miller made two propositions-

- **M&M Proposition 1** states that the value of a company is unaffected by its capital structure if the following three conditions hold: (1) there is no tax, (2) there are no information or transaction costs and (3) capital structure decisions do not affect the real investment policies of the company;
- **M&M Proposition 2** states that the expected return on a company's equity increases with the amount of debt in its capital structure. This proposition also shows that the expected return on equity can be separated into two parts: (1) a part that reflects the risk of the underlying assets of the company, and (2) a part that reflects the risk associated with the financial leverage used by the company. This proposition helps managers understand the implications of financial leverage for the cost of the equity they use to finance the company's investments.

The use of debt

Using debt financing provides several benefits. A major benefit is the tax deductibility of interest payments. Since interest payments are tax deductible and dividend payments are not, distributing cash to security holders through interest payments can increase the value of a company. Debt is also less expensive to issue than equity. Finally, debt can benefit shareholders in certain situations by providing managers with incentives to maximise the cash flows produced by the company and by reducing their ability to invest in negative NPV projects. The costs of debt include insolvency and agency costs. Insolvency costs arise because financial leverage increases the probability that a company will get into financial distress. Direct insolvency costs are the out-of-pocket costs that a company incurs when it gets into financial distress, while indirect insolvency costs are associated with actions the people who deal with the company take to protect their own interests when the company is in financial distress. Agency costs are costs associated with actions taken by managers and shareholders who are acting in their own interests rather than in the best interests of the company. When a company uses financial leverage, managers have incentives to take actions that benefit themselves at the expense of shareholders, and shareholders have incentives to take actions that benefit themselves at the expense of lenders. To the extent that these actions reduce the value of lenders' claims, the expected losses will be reflected in the interest rates that lenders require.

Capital structure theories

There are two main theories, with empirical evidence supporting both theories, suggesting that each help explain the capital structure choices made by managers. The theories are -

- The *trade-off theory* says that managers balance, or trade off, the benefits of debt against the costs of debt when choosing a company's capital structure in an effort to maximise the value of the company;
- The *pecking order theory* says that managers raise capital as they need it in the least expensive way available, starting with internally generated funds, then moving to debt, then to the sale of equity. In contrast to the trade-off theory, the pecking order theory does not imply that managers have a particular target capital structure.

Practical considerations in choosing a capital structure

The practical considerations that concern managers when they choose a company's capital structure include the impact of the capital structure on financial flexibility, risk, profit and the control of the company. Financial flexibility involves having the necessary financial resources to take advantage of unforeseen opportunities and to overcome unforeseen problems. Risk refers to the possibility that normal fluctuations in operating profits will lead to financial distress. Managers are also concerned with the impact of financial leverage on their reported profit, especially on a per-share basis. Finally, the impact of capital structure decisions on who controls the company also affects capital structure decisions.

Key things to take away

- M&M have two propositions. The first states that the value of a company is unaffected by its capital structure as long as there are no taxes, no information or transaction costs and capital structure decisions do not affect the real investment policies of the company. The second states that the expected return on a company's equity increases with the amount of debt in its capital structure.
- Using debt financing provides several benefits, including the deductibility of interest payments and lower issue costs than equity. Costs of debt financing include insolvency and agency costs.
- There are two key capital structure theories. The first is the trade-off theory which states that managers trade-off the benefits of debt against the costs of debt when choosing a company's capital structure. Whereas the second, the pecking order, theory says that managers raise capital as they need it in the least expensive way available. Empirical evidence suggests that these two theories help to explain the capital structure choices made by managers.
- Practical considerations that managers are concerned with when choosing a company's capital structure include impact on financial flexibility, risk, profit and control of the company.

Session 11 - Options and Corporate Finance

This Session considers the description, valuation, and use of options.

Overview

This Session considers the description, valuation, and use of options. The discussion considers financial options and how they are valued in a simple model, agency costs of debt and the ways in which managers use financial options to alter their companies' exposures to various types of risks.

Financial options

An option is the right, but not the obligation, to buy or sell an asset for a given price on or before a specific date. The price is called the exercise or strike price, and the date is called the exercise date or expiration date of the option. The right to buy the asset is known as a "call option". The pay-off from a call option equals $0 if the value of the underlying asset is less than the exercise price at expiration. If the value of the underlying asset is higher than the exercise price at expiration, then the pay-off from the call option is equal to the value of the asset value minus the exercise price. The right to sell the asset is called a "put option". The pay-off from a put option is $0 if the value of the underlying asset is greater than the exercise price at expiration. If the value is lower than the exercise price, then the pay-off from a put option equals the exercise price minus the value of the underlying asset.

Option valuation

The value of an option is affected by five factors: (1) the current price of the underlying asset, (2) the exercise price of the option, (3) the volatility of the value of the underlying asset, (4) the time left until the expiration of the option, and (5) the risk-free rate. Calculations are required to value call and put options, both at expiration and at some point, before the expiration date.

Real options

Real options that are associated with investments include options to defer investment, make follow-on investments, change operations, and abandon projects. Traditional NPV analysis is designed to decide to accept or reject a project at a particular point in time. It is not intended to incorporate potential value associated with deferring the investment decision. Incorporating the value of the other options into an NPV framework is technically possible but would be very difficult to do because the rate used to discount the cash flows would change over time with their riskiness. In addition, the information necessary to value real options using the NPV approach is not always available.

Agency costs

There are two principal classes of agency conflicts. The first is between shareholders and lenders. When there is a risk of insolvency, shareholders may have incentives to increase the volatility of the company's assets, turn down positive NPV projects, or pay out assets in the form of dividends. Shareholders have these incentives because their pay-off functions look like those for the owners of a call option. The second is between managers and owners. Managers tend to prefer less risk than shareholders and prefer to distribute fewer assets in the form of dividends because their pay-

off functions are more like those of lenders than those of shareholders. These preferences are magnified by the fact that managers are risk-averse individuals whose portfolios are not well diversified.

Agency disputes ae not uncommon.

Options and risk management

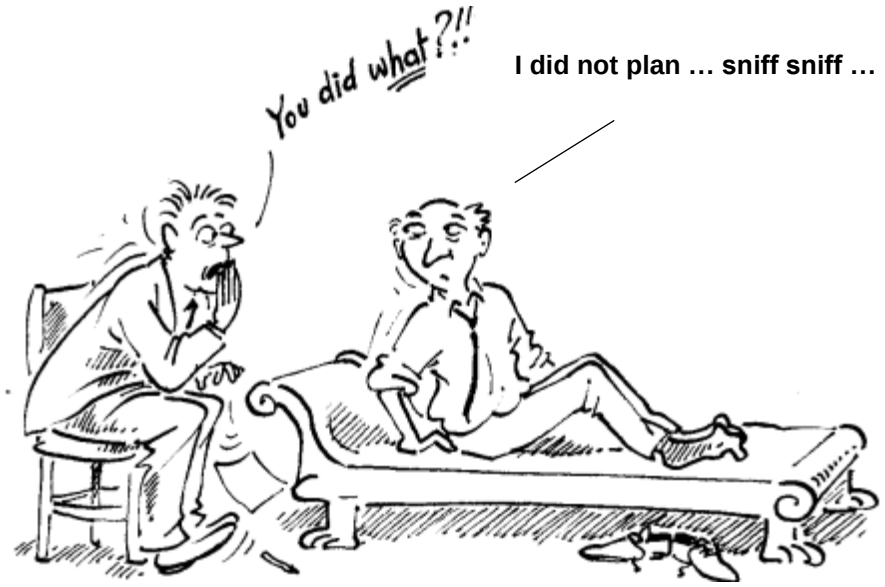
A company can adjust its exposure to risks associated with commodity prices, interest rates, foreign exchange rates, and equity prices by buying or selling options. For example, a company that is concerned about the prices it will receive for products that will be delivered in the future can purchase put options to eliminate that risk partially or totally.

Key things to take away

A company can adjust its exposure to risks associated with commodity prices, interest rates, foreign exchange rates, and equity prices by buying or selling options. Agency conflicts arise between shareholders and lenders (creditors and bondholders) and between shareholders and managers because the interests of shareholders, lenders and managers are not perfectly aligned.

POST SCRIPT: A key rule

A key rule is whatever you do in Finance, is that you MUST plan!



Session #12 – Summary and Revision

In this subject we will consider the financial function of the manager and the goal of the company, which is to maximise shareholder wealth. It is this goal that requires that we recognise its conflicts such as agency and ethical problems.

Session #1 – Overview

Life is not easy for the financial manager, also called the Chief Financial, Officer, or CFO). The corporate goal should be about maximising the current value of the company's shares, that is to maximise the wealth of the shareholders. Presence of agency conflicts affect the goal of maximising shareholder value. Ethics are important in the study of corporate finance.

Session #2 - The time value of money

The time value of money materials in this and the next Session are vital for an understanding of the subject. Your money is worth more today than at some point in the future because, if you had the money now, you could invest it and earn interest. The general rule is that investment opportunities are undertaken only when the *current* value of future cash inflows exceeds the *current* cost of the investment (the initial cash outflow).

Session #3 - Risk and return

It is understandable that investors require greater returns for taking greater risk. This Session addressed the measurable aspect of the risk and return relationship.

Session #4 - Bond valuation and the structure of interest rates

An efficient capital market is a market where security prices reflect the knowledge and expectations of all investors. Prices of corporate bonds tend to be more volatile than prices of securities that trade more frequently, such as share and money markets. Because interest rates are always changing in the market, all investors who hold bonds are subject to interest rate risk.

Session #5 - Share valuation

The general dividend valuation model values a share as the present value of all future cash dividend payments, where the dividend payments are discounted using the rate of return required by investors for a particular risk class.

Session #6 - The fundamentals of capital budgeting

Capital budgeting decisions are the most important investment decisions made by management. Net present value (NPV) is the most important capital budgeting tool.
The payback period tool has two main drawbacks: amounts are not discounted, and it ignores post payback figures. The accounting rate of return (ARR) method is not a capital expenditure decision-making tool. The internal rate of return (IRR) for a capital project can make mistakes. We thus focus on the NPV method, but one can also use the payback method, preferably using discounted figures, to help determine risk. It is beneficial to have a post audit review of a capital project.

Session #7 – Cash flows and capital budgeting

The incremental after-tax free cash flows, FCFs, for a project equal the expected change in the total after-tax cash flows of the company if the project is adopted. The impact of a project on the company's total cash flows is the appropriate measure of cash flows because these are the cash flows that reflect all the costs and benefits from the project.

Session #8 – The cost of capital

The weighted average cost of capital (WACC) for a company is a weighted average of the current costs of the different types of financing that a company has used to finance the purchase of its assets. The WACC is used as a discount rate to evaluate projects (in NPV and IRR calculations) because it is not possible to directly estimate the appropriate discount rate for many projects.

Session #9 – How companies raise capital

Companies need to raise capital so that they can acquire the productive assets needed to grow and remain profitable. There are several alternatives including bootstrapping, venture capitalists, public markets and underwriters. Most small and medium-sized companies borrow from commercial banks on a regular basis as there are advantages of this borrowing rather than selling securities in financial markets.

Session #10 - Capital structure policy

Using debt financing provides several benefits. A major benefit is the tax deductibility of interest payments, and debt is less expensive to issue than equity. The costs of debt include insolvency and agency costs.

Session #11 - Options and Corporate Finance

A company can adjust its exposure to risks associated with commodity prices, interest rates, foreign exchange rates, and equity prices by buying or selling options. Agency conflicts arise between shareholders and lenders (creditors and bondholders) and between shareholders and managers because the interests of shareholders, lenders and managers are not perfectly aligned.

Key thing to remember

This subject provided a systematic study of corporate finance. A key rule is whatever you do in Finance, you MUST plan!

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