Summary Business Analysis and Valuation

Financial Statement Analysis (Universiteit van Amsterdam)

Financial Analysis

Summary

Textbook

Business Analysis and Valuation

Content

Chapter 1:
A Framework for Business Analysis and Valuation Using Financial Statements

Financial statements provide the most widely available data on financial reports on public corporations' activities and so investors and other stakeholders rely on financial reports to assess the plans and performance of firms and corporate managers.

The **capitalist market model** broadly relies on the market mechanism to govern economies activity, and decisions regarding investments made privately. **Centrally planned economies** have used central planning and government agencies to pool national savings and to direct investments in business enterprises, obviously, this model failed.
Matching savings to business investments opportunities is complicated because:
1. Entrepreneurs typically have better information than savers on the value of investment opportunities.
2. Communication by entrepreneurs to investors isn't completely credible, because entrepreneurs have an incentive to inflate value of their ideas.
3. Savers lack financial sophistication needed to analyze and differentiate between various business opportunities.
These issues can lead to the so called **lemons problem**, which can potentially breakdown the capital market system. It basically means that all ideas are valued as average, because investors can't distinguish the good from the bad ideas. That means the good ideas are undervalued and bad ideas 'crowd out' good ideas. The emergence of intermediaries can prevent such a market breakdown; they help invertors distinguish good and bad ideas. There are **financial intermediaries** like venture capital firms, banks, insurance companies etc. and there are **information intermediaries** such as auditors, financial analysts, credit rating agencies etc.
A firm creates value when it earns a return on its investment in excess of the return required by its capital suppliers. Business strategies are formulated to achieve this goal, together with a certain business environment this leads to a set of business activities. An Accounting system measures and reports the economies consequences of these business activities. Financial statements summarize the economies consequences of the business activities.

The institutional features of accounting systems are:
1. **Accrual accounting**: unlike cash accounting, accrual accounting, distinguishes between the reporting of costs and benefits associated with economic activities and the actual payment and receipt of cash, this provides more complete information on a firm's periodic performance.
2. **Accounting conventions and standards**: a number of accounting conventions have evolved, for example measurability and conservatism conventions, that concern about distortions from managers' potentially optimistic bias. There is also an increased uniformity from accounting standards (IFRS).
3. **Managers' reporting strategy**: the manner in which managers use their accounting discretion.
4. **Auditing**: this is a verification of the integrity of the reported financial statements by some one other that the preparer and it ensures that managers use accounting rules and conventions consistently over time, and that their accounting estimates are reasonable.

Business intermediaries add value by improving investors understanding of a firms 'current performance and its future prospects, they use financial statements to accomplish four key steps:

1. Business strategy analysis: analyzing a firm's industry and its strategy to create a sustainable competitive advantage.
2. Accounting analysis: evaluate the degree to which a firm's accounting captures the underlying business reality.
3. Financial analysis: has the goal of using financial date to evaluate the current and past performance of a firm and assess its sustainability. Ratio analysis and cashflow analysis are important tools.
4. Prospective analysis: focuses on forecasting a firm's future and is the final step in business analysis. Two commonly used techniques are financial statement forecasting and valuation

Chapter 2:

Strategy Analysis

The profit potential of a company is determined by its own strategic decisions. Strategy analysis involves industry analysis, competitive analysis and corporate strategy analysis.

Industry analysis

The firm assesses the profit potential of each of the industries in which the firm is competing because the profitability of various industries differs systematically and predictably over time. This profitability is influenced by five forces. The intensity of competition (rivalry among firms, threat of new entrants and substitutes) determines the potential for creating abnormal profits and whether or not these profits are kept by the industry is determined by the relative bargaining power of the buyers and suppliers. The five forces are as follows:

1. *Rivalry among existing firms*: the nature of rivalry among existing firms is influenced by the factors:
    - Industry growth rate: when growing very rapidly; no need to grap market share, when stagnant; taking market share from each other is the only way to grow.
    - Concentration and balance of competitors: if an industry is fragmented, price competition is likely to be severe, if there is one firm it can set and enforce the rules of competition and if there are only two or three companies they can implicitly cooperate with each other to avoid destructive price competition.
    - Degree of differentiation and switching costs: if the products are similar, customers will switch on the basis of price; when switching costs are low, there is a greater incentive for firms to engage in price competition.
    - Scale/learning economies and the ratio of fixed to variable costs: is there is a steep learning curve or other economies of scale, there are incentives to engage in aggressive competition for market share. If the ratio of fixed to variable costs is high, prices will be reduced to utilize installed capacity.
    - Excess capacity and exit barriers: if capacity is larger than demand, firms cut prices to fill capacity.
2. *Threat of new entrants*: several factors determine the height of the barriers to entry:
    - Economies of scale: large economies of scale results in a choice for new entrants to invest in a large capacity which might not be utilized right away of to enter with less than the optimum capacity.
    - First mover advantage: set industry standards, exclusive arrangements with suppliers of cheap raw materials, acquire scarce government licenses, absolute cost advantage and significant switching costs for customers.
    - Access to channels of distribution and relationships: limited capacity in the existing distribution channels, high costs of developing new channels and existing relationships are enter barriers.
    - Legal barriers: for example patents and copyrights
3. *Threat of substitute products*: products that perform the same function. The threat of substitutes depends on the relative price and performance of the competing products or services and on customers' willingness to substitute.

4. *Bargaining power of buyers*: price sensitivity determines the extent to which buyers care to bargain on price and relative bargaining power determines the extent to which they will succeed in forcing the price down.
    - Price sensitivity: buyers are more price sensitivity when the product is undifferentiated and there are few switching costs. When the product represents a large fraction of the buyers' cost and when the product is important to the buyers' own product quality, the buyer is more price sensitive.
    - Relative bargaining power: determined by the number of buyers relative to the number of suppliers, volume of purchases by a single buyer, number of alternative products available to the buyer, buyers' cost of switching and the threat of backward integration by the buyers.
5. *Bargaining power of suppliers*: powerful when there are only a few companies, when there are few substitutes available to their customers, when the suppliers' product or service is critical to buyers' business and when they pose a credible threat of forward integration.

A limitation of the industry analysis is the assumption that industries have clear boundaries. In reality, it is often not easy to clearly demarcate industry boundaries.

<u>Competitive strategy analysis</u>

There are two generic competitive strategies:

1. *Cost leadership*: enables a firm to supply the same product or service offered by its competitors at a lower cost. A cost leader earns above-average profitability by merely charging the same price as its rivals, can force its competitors to cut prices and accept lower returns or to exit the industry and focus on tight cost controls.
2. *Differentiation*: providing a product or service that is distinct in some important respect valued by the customer. The company needs to identify one or more attributes of a product or service that customers value, it has to position itself to meet the chosen customer need in a unique manner and it has to achieve differentiation at a cost that is lower than the price the customer is willing to pay for the differentiated product.

The uniqueness of a firm's core competencies and its value chain and the extent to which it is difficult for competitors to imitate them determines the sustainability of a firm's competitive advantage.

<u>Corporate strategy analysis</u>

The industry analysis and competitive analysis are focused on an individual business, while the corporate analysis focus on companies that operate in multiple businesses. In a corporate analysis, the most essential part is to examine whether a company is able to create value by being in multiple businesses at the same time. A good corporate strategy reduces the transaction costs or increases revenues from running several businesses in one firm relative to the same business operating independently and transacting with each other in the marketplace.

Transaction costs can arise out several sources (e.g. market imperfections). Further, the transaction costs can vary across economic sectors. Inside transaction can be less costly than market-based transactions.

One reason here fore is that the communication costs inside are reduced, because confidentially can be protected and credibility can be assured through internal mechanism. Another reason is that the headquarter office can play a critical role in reducing costs of enforcing agreements between organizational subunits. The last reason is that organizational subunits can share value non-tradable assets (e.g. organizational skills, systems and processes) or non-divisible assets (e.g. brand names, distribution channels and reputation).
Nevertheless, when a company has a lack of expertise it can negatively influence the transaction costs. This problem can be remedied by creating a decentralized organization, hiring specialist managers and providing these managers with proper incentives. In reality, it is very difficult to create value through multi business corporate strategy (it is context dependent). So when you evaluate a companies' corporate strategy, you need to be sceptical, because in theory these companies can create value through innovative corporate strategies, however, there are many ways in which this potential fails to get realized in practice.

Chapter 3:

Overview of Accounting Analysis

Accounting analysis: evaluate the degree to which a firm's accounting captures its underlying business reality. By identifying places where there is accounting flexibility, and by evaluating the appropriateness of the firm's accounting policies and estimates, analysts can assess the degree of distortion in a firm's accounting numbers. Recasting a firm's accounting numbers using cash flow and footnote information to "undo" any accounting distortions.

The institutional framework for financial reporting

Firms typically produce three financial reports:

- An income statement
- A balance sheet
- A cash flow statement

Building Blocks of Accrual Accounting

Corporate financial reports: prepared using accrual rather than cash accounting. Accrual accounting distinguishes between the recording of costs and benefits associated with economic activities and the actual payment and receipt of cash.
The principles that define a firm's assets, liabilities, equities, revenues, and expenses are as follows:

• **Assets** are economic resources owned by a firm that
• **Liabilities** are economic obligations of a firm arising from benefits received in the past
• **Equity** is the difference between a firm's net assets and its liabilities
Assets = Liabilities + Equity
Balance sheet: Point in time

Income statement: summarizes a firm's revenues and expenses and its gains and losses arising from changes in assets and liabilities
• **Revenues** are economic resources earned during a time period
• **Expenses** are economic resources used up in a time period.
• **Profit** is the difference between a firm's revenues and expenses in a time period

Delegation of Reporting to Management

Corporate managers have intimate knowledge of their firms' businesses, they are entrusted with the primary task of making the appropriate judgments in portraying myriad business transactions using the basic accrual accounting framework. corporate managers have intimate knowledge of their firms' businesses, they are entrusted with the primary task of making the appropriate judgments in portraying myriad business transactions using the basic accrual accounting framework. Accounting rules and auditing are mechanisms designed to reduce the cost and preserve the benefit of delegating financial reporting to corporate managers.

International Financial reporting standards

A number of accounting conventions have evolved to mitigate the problem to determine whether managers have used their accounting flexibility to signal their proprietary information or merely to disguise reality. For example: The concept of prudence, to ensure assets are recorded at their fair values and liabilities are not recorded below fair values. Accounting standards and rules also limit management's ability to misuse accounting judgment by regulating how particular types of transactions are recorded. For example standards for leases or post-employment benefits. These standards are set by the International Accounting standards board (IASB).

External Auditing

Broadly defined as a verification of the integrity of the reported financial statements by someone other than the preparer, external auditing ensures that managers use accounting rules and conventions consistently over time, and that their accounting estimates are reasonable. Auditing improves the quality and credibility of accounting data by limiting a firm's ability to distort financial statements to suit its own purposes. However, third-party auditing
may also reduce the quality of financial reporting because it constrains the kind of accounting rules and conventions that evolve over time. The primary responsibility for the statements still rests with the corporate managers.

Legal Liability

The legal environment in which accounting disputes between managers, auditors, and investors are adjudicated can also have a significant effect on the quality of reported numbers. For example lawsuits have the beneficial effect of improving the accuracy of disclosure. Also the potential for significant legal liability might discourage managers and auditors from supporting accounting proposals requiring risky forecasts.

Public Enforcement

In recent years, several European countries have set up proactive enforcement agencies that should enforce listed companies' compliance with IFRS. These agencies are coordinated by the Committee of European Securities Regulators (CESR) Strict public enforcement can reduce the quality of financial reporting because enforcement bodies may pressure companies to exercise excessive prudence in their accounting choices.

Factors influencing accounting quality

Three potential sources of noise and bias in accounting data:

- The noise and bias introduced by rigidity in accounting rules,
- Random forecast errors, and
- Systematic reporting choices made by corporate managers to achieve specific objectives.

Noise from accounting rules

Accounting rules introduce noise and bias because it is often difficult to restrict management discretion without reducing the information content of accounting data. Broadly speaking, the degree of distortion introduced by accounting standards depends on how well uniform accounting standards capture the nature of a firm's transactions.

Forecast errors

Another source of noise in accounting data arises from pure forecast error, because managers cannot predict future consequences of current transactions perfectly. The extent of errors in managers' accounting forecasts depends on a variety of factors, including the complexity of the business transactions, the predictability of the firm's environment, and unforeseen economy-wide changes.

Managers' accounting choices

Corporate managers also introduce noise and bias into accounting data through their own accounting decisions. Managers have a variety of incentives to exercise their accounting discretion to achieve certain objectives, leading to systematic influences on their firms' reporting:

- Accounting-based debt covenants
- Management compensation.
- Corporate control contests.
- Tax considerations.
- Regulatory considerations.
- Capital market considerations.
- Stakeholder considerations.
- Competitive considerations.

The level of disclosure is also an important determinant of a firm's accounting quality. Corporate managers can choose disclosure policies that make it more or less costly for external users of financial reports to understand the true economic picture of their businesses.

Steps in accounting analysis

Step 1: Identify Key Accounting Policies

A firm's industry characteristics and its own competitive strategy determine its key success factors and risks. One of the goals of financial statement analysis is to evaluate how well these success factors and risks are being managed by the firm. In accounting analysis, therefore, the analyst should identify and evaluate the policies and the estimates the firm uses to measure its critical factors and risks.

Step 2: Assess Accounting Flexibility

Not all firms have equal flexibility in choosing their key accounting policies and estimates. Some firms' accounting choice is severely constrained by accounting standards and conventions. If managers have little flexibility in choosing accounting policies and estimates related to their key success factors, accounting data are likely to be less informative for understanding the firm's economics. Regardless of the degree of accounting flexibility a firm's managers have in measuring their key success factors and risks, they will have some flexibility with respect to several other accounting policies. For example, all firms have to make choices with respect to depreciation policy, inventory accounting policy, policy for amortizing goodwill, and policies regarding the estimation of pension and other post-employment benefits.

Step 3: Evaluate Accounting Strategy

When managers have accounting flexibility, they can use it either to communicate their firm's economic situation or to hide true performance. Some of the strategy questions one could ask in examining how managers exercise their accounting flexibility include the following:

- How do the firm's accounting policies compare to the norms in the industry?
- Does management face strong incentives to use accounting discretion for earnings management?
- Has the firm changed any of its policies or estimates? What is the justification? What is the impact of these changes?

Step 4: Evaluate the Quality of Disclosure

Managers can make it more or less easy for an analyst to assess the firm's accounting quality and to use its financial statements to understand business reality. While accounting rules require a certain amount of minimum disclosure, managers have considerable choice in the matter. Some of the questions that can be asked:

- Does the company provide adequate disclosures to assess the firm's business strategy and its economic consequences?
- Do the footnotes adequately explain the key accounting policies and assumptions and their logic?
- Does the firm adequately explain its current performance?

Step 5: Identify Potential Red Flags

In addition to the above analysis, a common approach to accounting quality analysis is to look for "red flags" pointing to questionable accounting quality. These indicators suggest that the analyst should examine certain items more closely or gather more information on them. For example:

- Unexplained changes in accounting, especially when performance is poor.
- Unexplained transactions that boost profits.
- Unusual increases in accounts receivable in relation to sales increases.
- Unusual increases in inventories in relation to sales increases.

Before making final conclusions it is important to do further analysis because these red flags have multiple interpretations.

Step 6: Undo Accounting Distortions

If the accounting analysis suggests that the firm's reported numbers are misleading, analysts should attempt to restate the reported numbers to reduce the distortion to the extent possible. If the analyst is unsure of the quality of the firm's accrual accounting, the cash flow statement provides an alternative benchmark of its performance. The cash flow statement also provides information on how individual line items in the income statement diverge from the underlying cash flows. Financial statement footnotes also provide a lot of information that is potentially useful in restating reported accounting numbers.

Accounting analysis pitfalls

Conservative accounting is not "good" accounting

Some firms take an too conservative approach in financial reporting and set aside as much as possible for contingencies. Financial statement users want to evaluate how well a firm's accounting captures business reality in an unbiased manner, so conservative accounting can be as misleading as aggressive accounting. It also may prevent analysts from recognizing poor performance in a timely fashion.

Not all unusual accounting is questionable

Unusual accounting choices might make a firm's performance difficult to compare with other firms performance. It is important to evaluate a company's accounting policies in the context of its business strategy.

Value of accounting data and accounting analysis

Given the incentives and opportunities for managers to affect their firms' reported accounting numbers, some have argued that accounting data and accounting analysis are not likely to be useful for investors. A number of research studies have examined whether superior accounting analysis is a valuable activity. Research findings indicate that companies criticized in the financial press for misleading financial reporting subsequently suffered an average stock price drop of 8 percent. There are also findings that imply that analysts who are able to identify firms with misleading accounting are able to create value for investors.

Chapter 4:

Implementing Accounting Analysis

This chapter is about analyzing and adjusting the firm's accounting numbers to "undo" the financial statements from any accounting distortions. **(*Recasting the financial statements)*** Ensure that performance metrics used for financial analysis are calculated using comparable definitions *across companies* and *over time*.

Assets according to accountants: are resources that a firm owns or controls as a result of past business transactions, and which are expected to produce future economic bnefits that can be measured with a reasonable degree of certainty.
Distortions in assets values generally arise because there is ambiguity about whether:

- The firm owns or controls the economic resources in question
- The economic resources are likely to provide future economic benefits that can be measured with reasonable certainty
- The fair value of assets fall below their book values
- Fair value estimates are accurate

Who owns or controls resources?
The firm using the resource owns the asset, in general. However, some types of transaction are difficult. The IASB sets a principles-based approach for this. For example company A reports all the assets of firm B on its balance sheet when firm A has the power to govern the financial and operating policies of firm B. (This doesn't mean they need to have more than 50%)

Can economic benefits be measured with reasonable certainty?
It is almost always difficult to accurately forecast the future benefits associated with capital outlays because the world is uncertain. Due to several causes.
Accounting rules deal with these uncertainties by setting rules for which types of resources can be seen as assets and not. R&D is very uncertain and therefore not accounted for as an assets in contrast plant acquisitions are considered less uncertain and are required to be capitalized.

Have fair values of assets declined below book value?
An asset is impaired when its fair value falls below its book value. International rules state that an impairment loss be recognized on a non-current asset when its book value exceeds the greater of its net selling price and the discounted cash flows expected to be generated from future use.

Are fair value estimates accurate?
Fair value is needed for measuring the value when the revaluation method is used instead of the historical cost method. Revaluation adjustments are recorded in the statement of comprehensive income and not in the income statement.
The fair value is used as well for measuring the value of Goodwill. Goodwill is not amortized but regularly tested for impairment.

Asset distortions, reasons enough for this. You can think of a few by yourself, otherwise check p148. The most common items that can lead to overstatement or understatement of assets (and earnings) are the following:

- Depreciation and amortization on non-current assets
- Impairment of non-current assets
- Leased assets
- Intangible assets
- The timing of revenue (and receivables) recognition
- Allowances (e.g. allowances for doubtful accounts or loan losses)
- Write-downs of current assets
- Discounted receivables

Examples of asset understatements

On page 150 and 151 is a good example given of asset understatement and the changes that should be made. It is a example of Lufthansa and British Airways. This is a good example because these are companies with heavy asset businesses. Lufthansa and BA used a different depreciations percentages and this resulted in different performance numbers of the companies. The adjustment that should be made is: original minus adjusted depreciation rate x average asset age x initial asset cost. For calculating the offsetting increase in equity and in the deferred tax liability you should multiply the amount calculate with 25% for the adjustment to the deferred tax liability and 75% for the adjustment to the shareholders equity.

For more details check the points 1, 2, 3 and 4 on p150 and p151.

Leased assets off balance sheet

Two ways in which a firm can record its leased assets

- Operating method, the firm recognizes the lease payment as an expense in the period in which it occurs, keeping the leased asset off its balance sheet.
- Financial method, the firm records the asset and an offsetting lease and an offsetting lease liability on its balance sheet. During the lease period, the firm then recognizes depreciation on the asset as well as interest on the lease liability.

So operational lease isn't mentioned on the balance sheet and there for as an accountant you should correct for this. Because a comparable company could have a totally different mixture of operational and financial lease agreements.

Given the present values of the minimum future rental payments an analyst should can make the a few adjustments given at p153. This is part of a example of another airway company.

Key intangible assets off balance sheet

Some firm's most important assets are excluded from the balance sheet. Examples include investments in R&D, software developments outlays, and brand and membership bases that are created through advertising and promotions. These are excluded because of high uncertainty. This count especially for pharmaceutical, software, branded consumer products and subscription businesses.

How should the a analyst approach the omission of intangibles? One way is to leave the accounting as is, but to recognize that forecasts of long-term rates of return will have to

reflect the inherent biases that arise from this accounting method. A second approach is to capitalize intangibles and amortize them over their expected lives.

Discounted Receivables

According to current IAS (39) receivables that are discounted with a financial institution are considered "sold" if the "seller" cedes control over the receivables to the financier. Control is surrendered if the receivables are beyond the reach of the seller's creditors should the seller file for bankruptcy, if the financier (and not the seller) has the right to pledge or sell its interest in the receivables, and if the seller has no legal right or commitment to repurchase the receivables.

Examples of asset overstatements

Delayed write-downs of non-current assets

When a industry is deteriorating or firm economic conditions affect the value of non-current assets and current assets. The fair value of an asset falls below its book value so the assets is impaired. This has to be recognised however second-hand markets for non-current assets are typically illiquid and incomplete, estimate of assets valuations and impairment are inherently subjective. This is particularly true for intangible assets (such as goodwill). As a result managers can use their reporting judgment to delay write-downs on the balance sheet and avoid showing impairment charges in the income statement.

Warning signs of impairments in non-current assets include declining non-current asset turnover, declines in return on assets to levels lower than the weighted average cost of capital, write-downs by other firms in the same industry that have also suffered deteriorating asset use, and overpayment for or unsuccessful integration of key acquisitions.

Delayed write-downs of current assets

Analysts that cover firms where management of inventories and receivables is a key success factor (e.g. the retail and manufacturing industries) need to be particularly cognizant of this form of earnings management. If managers over-buy or over-produce in the current period, they are likely to have to offer customers discount to get rid of surplus inventories.

Warning signs for delays in current asset write-downs include growing days' inventory and days' receivable write-downs by competitors, and business downturns for a firm's major customers.

Managers potentially have an incentive to overstate current asset write-downs during years of exceptionally strong performance so they safe money for a worse period. And when managers are less optimistic about the firm's future prospects than the analyst.

Underestimate allowances

Managers make estimate of expecte customer defaults on trade receivalbes and loans. If managers underestimate the value of these allowances, assets and earnings will be overstated.

Warnings signs of inadequate allowances include growing days receivables, business downturns for a firm's major clients, and growing loan delinquencies.

For an examples check p163.

Key analysis questions

- *Depreciation and amortization.* Are the firm's depreciation and amortization rates in line with industry practices?
- *Asset impairment.* Have industry or firm economic conditions deteriorated such that non-current assets' fair values could have fallen below their book values? Have industry peers recently recognized asset impairments? Does the firm have a history of regular write-downs, suggesting a tendency of delay?
- *Leased assets.* Does the firm have a material amount of off-balance sheet lease commitments? Is there a large variation in the proportion of operating leases to finance leases across industry peers?
- *Intangible assets.* Does the firm make material investments in non-current intangible assets, such as R&D, that are omitted from the balance sheet>
- *Revenue recognition.* Are trade receivables abnormally high (relative to sales) suggesting aggressive revenue recognition?
- *Allowances.* Did the firm make unexplained changes in its allowance for doubtful accounts (or loan losses)? Is the size of the allowance in line with industry practices>? Did the characteristics of the firm's receivables (e.g. concentration of credit risk) change such that firm should adjust its allowance?
- *Discounted receivables.* Is the recourse liability sufficiently large to cover the amount of collection losses that the firm guarantees?

Recognition of liabilities

Liabilities are defined as economic obligations arising from benefits received in the past, and for which the amount and timing is known with reasonable certainty.
Distortions in liabilities generally arise because there is ambiguity about whether an obligation has really been incurred or the obligation can be measured.

Can the obligation be measured?

In most of the cases it is very clear but for example if a company is responsible for an environmental clean-up clearly has incurred an obligation, but the amount is highly uncertain. And post employment benefits for employees are very uncertain as well. Of course there are accounting rules but as mentioned before accounting rules are imperfect.

Liability distortions

The most common forms of liability understatements arise when the following conditions exist:

- Unearned revenues are understated through aggressive revenue recognition
- Provisions are understated
- Loans from discounted receivables are off-balance sheet
- Non-current liabilities for leases are off balance sheet
- Post-employment obligations, such as pension obligations, are not fully recorded

Examples of liability understatement

Unearned revenue understatement

When a product or service has yet to be provided, a liability is created. This liability reflects the company's commitment to provide the service or product tot het customer and it extinguished once that is accomplished. Firms that recognize revenues prematurely, after the receipt of cash but prior to fulfilling their product or service commitment ro customers, understate deferred revenue liabilities and overstate earnings. Firms that bundle service contract with the sale of a product are particularly prone to deferred revenue liability understatement since separating the price of the product from the price of the service is subjective.

Provision Understated

Many firms have obligations that are likely to result in a future outflow of cash or other resources but for which the exact amount is hart to establish. Examples of such uncertain liabilities are liabilities that arise from obligations to clean up polluted production sites or to provide warranty coverage for products sold. International accounting rules prescribe that a firm recognizes a provision, or nonfinancial liability, on its balance sheet for such uncertain liabilities when:

- It is probable that the obligation will lead to a future outflow of cash
- The firm has no or little discretion to void the obligation
- The firm can make a reliable estimate of amount of the obligation

When an uncertain liability does not meet these requirements for recognition, the firm discloses the liability only in the notes to the financial statements.

Discounted receivables off balance sheet

As mentioned before, receivables that are discounted with a financial institution are considered "sold" if the "seller" cedes control over the receivables to the fancier. Yet if the sale permits the buyer to have recourse against the seller in the event of default, the seller continues to face collection risk. Given the management judgment involved in fore casting default and refinancing costs, as well as the incentives faced by managers to keep debt off the balance sheet, it will be important for the analyst to evaluate the firm's estimate for default as well as the inherent commitments that is has for discounted receivables.

Post-employment benefit obligations not fully recorded

Many firms make commitments to provide pension benefits and other post-employment benefits, such as healthcare, to their employees. International accounting rules require managers to estimate and report the present value of the commitments that have been earned by employees over their years of working for the firm. This obligation is offset by any assets that the firm has committed to post-employment plans to fund future plan benefits. Several important issues arise for analyzing post-employment benefit obligations. The following factors should be reflected:

- Current service cost
- Interest cost
- Actuarial gains and losses
- Past service cost
- Benefits paid

For a large example check p171

Key analyzing questions

- *Unearned revenues.* Has the firm recognized revenues for services or products that have yet to be provided.
- *Provisions.* Did the firm disclose contingent liabilities that expose the firm to material risks?
- *Post-employment benefits.* Are the assumptions made by the firm to estimate its post-employment obligations realistic? What is the effect of smoothing differences between actual and forecasted parameters for post-employment benefits ont the off-balance sheet post-employment obligations?

Equity distortions

Equity distortions arise primarily from distortions in assets and liabilities. But there are forms of equity distortions that would not typically arise in assets an liabilities analyses.

Contingent claims

A stock options gives the holder the right to purchase a certain number of shares at a predetermined price for a specified period of time. When deciding on how to account for contingent claims the following two factors are important to consider:

- Dilution for current shareholders. This imposes an economic cost on the firm's shareholders. To improve current net profit as a measure of the firm's current economic performance the economic cost of contingent claims should therefore be included in the income statement in the same period in which the firm receives the benefits from these claims.
- To improve current net profit as a predictor of the firm's future net profit the income statement should include an expense that reflects the value of the contingent claims to the recipients.

International rules require firms to report stock options using the fair value method.

Recycling of gains and losses

IAS 39 states that firms record securities held available for sale at *fair value* including any fair value gains/losses in the statement of changes in equity. Because of cumulative unrealized gains/losses recognized in the income statement, gains/losses that were *previously included* in statement of changes in equity are "recycled" and reincluded in profit.

A *disadvantage* of recycling unrealized gains/losses held available for sale is the *discretionary* timing of determination in *which period* gains/losses become realized.

The *difference* between securities with one available for sale and one held for short-term trading is that the *former* one is a *long-term investment*. The revaluation gains/losses held for short-term trading is considered as profit from operating activities and included in the income statement, directly. The analyst can use the information on changes in equity to *undo distortions* from discretion and *incorporate unrealized gains/losses* on financial instruments held available for sale in profits.

Chapter 5:

Financial Analysis

The goal of financial analysis is to access the performance of a firm in the context of its stated goals and strategy. There are two principal tools of financial analysis:

- Ratio analyse
- Cash flow analyse

Ratio analysis

The value of a firm is determined by its profitability and growth. This is influenced by iets product market and financial market strategy. The four levers managers can use to achieve their growth and profit targets are:

- Operating management
- Investment management
- Financing strategy
- Dividend policies

The objective of ratio analyses is to evaluate the effectiveness to the firm's policies in each of these areas.

Measuring overall profitability

The starting point for a systematic analysis of a firm's performance is its return on equity (ROE), defined as

$$ROE = \frac{\text{Net profit}}{\text{Shareholders' equity}}$$

ROE is a comprehensive indicator of a firm's performance because it provides an indication of how well managers are employing the funds invested by the firm's shareholders to generate returns

Decomposing profitability: Traditional approach

A company's ROE is affected by two factors:
How profitably it employs its assets
How big the firm's asset base is relative to shareholders' investment

ROE can be composes into return on assets (ROA) and a measure of financial leverage.

$$ROE = ROA \times \text{Financial leverage}$$

$$= \frac{\text{Net profit}}{\text{Assets}} \times \frac{\text{Assets}}{\text{Shareholders' equity}}$$

ROA tells us how much profit a company is able to generate for each euro of assets invested. Financial leverage indicates how many euro's of assets the firm is able to deploy for each euro invested by its shareholders.

Decomposing profitability: Alternative approach

$$ROE = \frac{NOPAT}{Equity} - \frac{\text{Net interest expense after tax}}{Equity}$$

$$= \frac{NOPAT}{\text{Net assets}} \times \left(\frac{\text{Net assets}}{Equity} - \frac{\text{Net interest expense after tax}}{Equity} \times \frac{\text{Net debt}}{Equity} \right)$$

$$= \frac{NOPAT}{\text{Net assets}} \left(1 + \frac{\text{Net assets}}{Equity} \right) - \frac{\text{Net interest expense after tax}}{Equity} \times \frac{\text{Net debt}}{Equity}$$

= Operating ROA + (Operating ROA – effective interest rate after tax) x Net financial Leverage

= Operating ROA + (Spread x Net financial leverage)

Operating ROA is a measure of how profitably a company is able to deploy its operating assets to generate operating profits. Spread is the incremental economic effect from introducing debt into the capital structure. NOPAT margin is a measure of how profitable a company's sales from an operating perspective.

Assessing operating management: Decomposing net profit margins

A firm's net profit margin or return on sales (ROS) shows the profitability of the company's operating activities. Further decomposition of the firm's ROS allows an analyst to assess the efficiency of the firm's operating management.

Decomposition by function

The functional decomposition requires the firm to use judgement in dividing total operating expenses into expenses that are directly associated with products sold or services delivered (cost of sales) and expenses that are incurred to manage operations (selling, admin expenses)

Decomposition by nature

The international accounting rules require that all firms reporting under IFRS classify an disclose their operating expenses by nature in the income statement or in the notes to the financial statement. Most company's distinguish four expense categories:

- Cost of materials
- Personnel expense
- Depreciation and amortization
- Other operating expenses

An advantage of classifying operating expenses by nature is that these expenses can more easily related to their main driver. (such as the number of employees)

NOPAT margin and EBITDA margin

NOPAT margin provides a comprehensive indication of the operating performance of a company because it reflects all operating policies and eliminates the effects of debt policy's

EBITDA margin provides similar information, except that it excludes depreciation and amortization expense, a significant noncash operating expense.

Tax Expense

There are two measures one can use to evaluate a firm's tax expense:
Ratio of tax expense to sales
Ratio of tax expense to earnings before taxes (average tax rate)

Evaluating Investment management: Decomposing asset turnover

There are two primary areas of asset management:

- Working capital management
- Management of non-current assets

Working capital management

Working capital management is defined as the difference between a firms current assets and current liabilities. However this definition didn't distinguish between operating components and financing components.. An alternative measure that makes this distinction is operating working capital. Definition:

Operating working capital= (Current assets-Cash and marketable securities) – (Current liabilities-Current debt and current portion of non-current debt)

The components of operating working capital that analysts primarily focus on are trade receivables, inventories and trade payables. The following ratios are useful in analysing a firms operating working capital:

- Operating working capital to sales ratio
- Operating working capital turnover
- Trade receivables turnover
- Inventories turnover
- Trade payables turnover
- Days' receivables
- Days' inventory
- Days' payables

(For more detailed information look al pages 209)

Non-current assets management

Net-current assets generally consist of PPE, intangible assets such as goodwill and other assets. Non interest-bearing non –current liabilities include such items as deferred taxes.
Ratios that are useful are:

$$\text{Net non-current asset turnover} = \frac{\text{Sales}}{\text{Net non-current assets}}$$

$$\text{PP\&E turnover} = \frac{\text{Sales}}{\text{Net PP\&E}}$$

Evaluating financial management: Financial leverage

Financial leverage enables a firm to have an asset base larger than its equity. The firm can augment its equity through borrowing and creation of other liabilities like trade payables, provisions and deferred taxes. While financial leverage can potentially benefit a firm's shareholders, it can also increase their risk. There are a number of ratios to evaluate the degree of risk arising from a firm's financial leverage.

Current liabilities and short-term liquidity

Useful ratio's are:

- Current ratio
- Quick ratio
- Cash ratio
- Operating cash flow ratio

(For more detailed information look al pages 212)

Debt and long-term solvency

A company's financial leverage is also influenced by its debt financing policy There are several potential benefits from debt financing:

- Cheaper
- Tax deductable
- Discipline on the firm's management
- Easier to communicate of private lenders than to public capital markets

Useful ratio's to evaluate the mix of debt and equity in a firm capital structure are:

- Liabilities-to equity ratio
- Debt-to equity ratio
- Net debt-to-equity ratio
- Debt-to capital ratio
- Net debt-to net capital ratio

(For more detailed information look al pages 213)

Ratios of disaggregated data

So far we have discussed how to compute ratios using information in the financial statement. Analyst often probe these ratios further by using disaggregates financial and physical data.
Putting it all together: Assessing sustainable growth rate
Analysts often use the concept of sustainable growth as a way to evaluate a firm's ratio in a comprehensive manner. A firm's sustainable growth rate is defined as:

Sustainable growth rate – ROE x (1 - Dividends payout ratio)

$$\text{Dividends payout ratio} = \frac{\text{Cash dividends paid}}{\text{Net profit}}$$

Cash flow analysis

The analyst can get further insights into the firm's operating, investing, and financing policies by examining its cash flows. Cash flow analysis also provides an indication of the quality of the information in the firm's income statement and balance sheet.

Cash flow and funds flow statements.

All companies reporting in conformity with IFRSs are required to include a statement of cash flows in their financial statement. In the reporting cash flow statement firms classify their cash flows into three categories:

- Cash flow from operations
- Cash flow related to investments
- Cash flow related to financial activities

Firms use to cash flow formats:

- Direct cash flow format (operating cash receipts and disbursement are reported directly)
- Indirect cash flow format (firms derive their operating cash flows by making adjustments to net profit.)

Analysing cash flow information

Cash flow analysing can be used to address a variety of questions regarding a firm's cash flow dynamics.

Chapter 6:

Prospective Analysis: Forecasting

Structure/framework forecasting
Managers need forecasts to formulate business plans and provide performance targets, analysts need forecasts to help communicate their views of the firm`s prospects to investors, bankers and debt market participants need forecast to assess the likelihood of loan repayment. **Prospective analysis** includes two tasks: forecasting and valuation.

The best way to forecast future performance is to do it *comprehensively*, because it guards against unrealistic implicit assumptions. This approach involves many forecasts, but in most cases they are all linked to the behaviour of a few key drivers, such as sales forecasts and profit margin. In some contexts the manager is interested ultimately in a forecast of cash flows, even this forecasts tend to be grounded in practice on forecasts of accounting numbers, including sales, earnings, assets and liabilities.

The most practical approach to forecasting a company`s financial statements is to focus on projecting **Condensed financial statements** for the following reasons: this approach involves making a relatively small set of assumptions about the future of the firm, so the analyst will have more ability to think about each of the assumptions carefully. Further for most purposes condensed financial statements are all that are needed for analysis and decision making. Condensed income statement consist of the following elements: sales, NOPAT, net interest expense after tax, taxes and profit. The balance sheet consist of: net operating working capital, net non-current assets, net debt and equity. This approach starts with a balance sheet at the beginning of the forecasting period. Assumptions about how we use the beginning balance sheet and run the firm`s operations will lead to the income statement for the forecasting period; assumptions about inverstement in working capital and non-current assets, and how we finance these assets, results in a balance sheet at the end of the forecasting period.

To forecast the condensed balance sheet for the end of the period, the following additional assumptions need to be made:

1. The ratio of operating working capital to sales to estimate the level of working capital needed to support those sales.
2. The ratio of net operating non-current assets to the following year`s sales to calculate the expected level of net operating non-current assets.
3. The ratio of net debt to capital to estimate the levels of debt and equity needed to finance the estimated amount of assets in the balance sheet.

Starting point
Every forecasts has an initial ‘benchmark’ or point of departure, some notion of how a particular amount would be expected to behave in the absence of detailed information. Reasonable points of departure for forecasting of key accounting numbers van be based on the evidence summarizes below:

Sales growth behaviour
Sales growth rates tend to be **'mean-reverting'**: firms with above-average or below-average rates of sales growth tent to revert over time to a normal level within three to ten years. One explanation for this pattern of sales growth is that as industries and companies are mature, their growth rate slows down due to demand saturation and intraindustry competition. How quickly a firm`s growth rate reverts to the average depends on the characteristics of its industry and its own competitive position within an industry.

Earnings behaviour
Earnings have been shown on average to follow a process that can be approximated by a **random walk** or **random walk with drift**. The prior year`s earnings figure is a good starting point in considering future earnings potential. The average number level of earnings over several prior years is not useful.

Returns on equity behaviour
The prior ROE does not serve as a useful benchmark for the future ROE. First, even though the average firm tends to sustain the current earnings level, this is not true of firms with unusual levels of ROE. Firms with abnormally high (low) ROE tend to experience earnings declines (increases). Second, firms with higher ROEs tent to expand their investments bases more quickly than others, which causes the denominator of the ROE to increase. The resulting behaviour of ROE is characterizes as **mean-reverting**. Despite the general tendencies, there are some firms whose ROEs may remain above or below normal levels for long periods of time. In some cases the phenomenon reflects the strength of a sustainable competitive advantage, but in other cases it is purely an artefact of conservative accounting methods (for example the pharmaceutical firms, whose intangible value of research and development is not recorded on the balance sheet).

The behaviour of components of ROE
ROE= (NOPAT margin * operating asset turnover) + (spread * net financial leverage)

1. Operating asset turnover tends to be rather stable, because it is so much a function of the technology of the industry.
2. Net financial leverage also tends to be stable, because management policies on capital structure aren`t often changed.
3. NOPAT margin and sprea are the most variable components of ROE.

It is important to keep in mind that a knowledge of average behaviour will not fit all firms well. The arts of financial statements analysis requires not only knowing what the 'normal' patterns are but also having expertise in identifying those firms that will not follow the norm.

Relationship of forecasting to the other analyses
In general, the mean-reverting behaviour of sales growth and ROE that is demonstrated by the broader market should hold true. The starting point for any forecast should therefore be the time-series behaviour of the various measures of firm performance. However, the three levels of analyses that precede prospective analysis; strategy, accounting and financial performance, can also lead to informed decisions by an analyst about expected performance. For an extensive example read the textbook p.281-287.

Making forecasts
In the case of the analysis of Loewe`s performance ten year forecasting period is chosen, because it is believed that the firm should reach such a steady state of performance by the end of the period that a few simplifying assumptions about its subsequent performance are sufficient to estimate firm value.

The overall one year ahead forecast
The actual balance sheet for the beginning of (for example) 2009 is given, so there is no need to forecast this. Making a short-term income statement forecast, such as a one year ahead forecast, is usually a straightforward extrapolation of recent performance. This is a particularly valid approach for an established company for the following reasons: 1. The company is unlikely to effect major changes to its operating and financing policies in the short-term unless it is in the middle of a restructuring program. 2. The beginning of the year balance sheet for any given year will put constraint on operating activities during that fiscal year. The next two items to forecast are net operating working capital to sales and net operating non-current assets to sales. These items had already been determined by the balance sheet position at dec. 2008. Therefore, the start is a given level of assets to work with . An assumption can be made about sales growth rate and check the implied ratio of beginning net assets to sales for reasonableness. Also some assumptions have to be made to forecaste the after-tax costs of debt. The company`s beginning level of debt and its beginning debt to capital ratio for 2008 are determined but its actual balance sheet at the start of the fiscal year. It is reasonable to assume that the firm`s relative cost of debt will be similar to its cost of borrowing in prior years as reflected in the net interest expense to net debt ratio. All these assumptions and forecast leads to a projected net income in fiscal year 2009.

Overall forecasts for years two to ten
In making longer-term forecasts, int this instance for years two to ten, there can be relied on the analysis of the firm and its prospects as well as the time-series behaviour of various performance ratios. Assumptions have to be made and these will be different for different companies.

Cash flow forecasts
Once the income statements and the balance sheets are forecasted, the cash flows for the upcoming 10 years can be compute. Cash flow to capital is equal to NOPAT minus increases in net working capital and net non-current assets. Cash flow to equity is cash flow to capital minut net interest after tax plus increase in net debt.

Sensitivity analysis
It is wise to also generate projections based on a variety of assumptions to determine the sensitivity of the forecasts to the assumptions. There is no limit to the number of possible scenarios that can be considered , one systematic approach to sensitivity analysis is to start with the key assumptions underlying a set of forecasts and then examine the sensitivity to the assumptions with greatest uncertainty in a given situation.

Seasonality and interim forecasts

Thus far only annual forecasts are concerned, but forecasting is also a very quarterly exercise. The following questions are important: How important is seasonality? What is a useful point of departure for **interim forecasts**? How should quarterly data be used in producing an annual forecast? Etc. Seasonality is a more important phenomenon in sales and earnings behaviour than we think. Analysis of the time-series behaviour of earnings for US firms suggest that at least some seasonality is present in nearly every major industry. The implication for forecasting is that one cannot focus only on performance of the most recent quarter as a point of departure. It is nearly always evaluated relative to the performance of the comparable quarter of the prior year, not the most recent quarter. One model of earnings process that fits well across a variety of industries is the Foster model:

$E(Qt) = Q_{t-4} + \delta + \phi (Q_{t-1} - Q_{t-5})$

Qt =earning for quarter t

E =expected value

The form of the Foster model confirms the importance of seasonality, because it shows that the starting point for a forecast for quarter t is the earnings four quarters ago. It states that, when constrained to using only prior earnings data, a reasonable forecast of earnings for quarter t includes the following elements:

- The earnings of the comparable quarter of the prior year (Q_{t-4})
- a long-run trend in year-to-year quarterly earnings increased (δ)
- a fraction (ϕ) of the year-to-year increase in quarterly earnings experienced most recently ($Q_{t-1} - Q_{t-5}$).

For most firms the parameter tends to be in the range of 0,25 to 0,5, indicating that 25 to 50 percent of an increase in quarterly earnings tends to persist in the form of another increase in the subsequent quarter. The parameter reflects in part the average year-to-year change in quarterly earnings over past years, and it varies considerably from firm to firm.

Chapter 7:

Prospective Analysis: Valuation Theory and Concepts

This chapter focuses on valuation theory and concepts. **Valuation** is the process of converting a forecast into an estimate of the value of the firm's assets or equity. Investment bankers commonly use five to ten different methods of valuation: discounted dividends; discounted cash flow analysis (DCF); Discounted abnormal earnings, discounted abonormal earnings growth; valuation based on price multiples. In this chapter valuation is illustrated using an all-equity firm to simplify the discussion.

Defining value for shareholders

Shareholders receive cash payoffs from a company in the form of dividends, the value of their equity is the present value of future dividends

$$\text{Equity value} = \text{PV of expected future dividends}$$

$$\text{Equity value} = \frac{DIV_1}{(1 + r_e)} + \frac{DIV_2}{(1 + r_e)^2} + \frac{DIV_3}{(1 + r_e)^3} + \ldots$$

r_e = cost of equity capital

If a firm had a constant dividend growth rate (g^{div}) indefinitely, its value would simplify to the following formula:

$$\text{Equity value} = \frac{DIV_1}{r_e - g^d}$$

The above valuation formula is called the dividend discount model. The dividend discount model is not a very useful valuation model in practice. This is because equity value is created primarily through the investment and operating activities of a firm. Within a period of five to ten years, which tends to be the focus of most prospective analyses, dividends may therefore reveal very little about the firm's equity value.

The discounted cash flow model

The value of an asset or investment is the present value of the net cash payoffs that the asset generates. This model is the sum of the free cash flows to debt and equity holders discounted at the weighted average cost of debt and equity (WACC).

Asset value = PV of free cash flows to debt and equity claim holders =
OCF_1 - $Investment_1$ / (1+WACC) + OCF_2 - $Investment_2$ / $(1+WACC)^2$ + ...
OCF=PV of cash flows generated by the assets

The cash flows that are available to equity holders are the cash flows generated by the firm's net assets minus capital outlays, adjusted for cash flows from and to debt holders, such as interest payments, debt repayments and debt issues. Capital outlays are capital expenditures less asset sales. Finally, net cash flows from debt owners are issues of new debt less retirements less the after-tax cost of interest.
Free cash flows to equity = Net profit - ΔBVA + ΔBVND

ΔBVA = change in bookvalue of operating net assets = changes in working capital plus capital expenditures less depreciation expense. ΔBVND = change in book value of net debt = interest-bearing debt less excess cash.
Using the discounted cash flow model, equity value is thus estimated as follows: Equity value = PV of free cash flows to equityclaim holders = Net profit$_1$ - ΔBVA$_1$ + ΔBVND$_1$ / (1+r$_e$) + Net profit$_2$ - ΔBVA$_2$ + ΔBVND$_2$ / (1+r$_e$)
Valuation under this method therefore involves the following three steps:
1. Forecast free cash flows available over a finite forecast horizon (5-10y)
2. Forecast free cash flows beyond the terminal year based on some simplying assumption
3. Discount free cash flows to equity holders at the cost of equity

The change in the book value of net assets minus the change in the book value of net debt is equal to the change in the book value of equity (ΔBVE). The free cash flows to equity can therefore be written as: Free cash flows to equity = Net profit - ΔBVA + ΔBVND = Net profit - ΔBVE = Dividends, which illustrates the relationship between free cash flows to equity and dividends.

The discounted abnormal earnings valuation method
the expected book value of equity for existing shareholders at the end of year one (*BVE*1) is simply
the book value at the beginning of the year (BVE_0) plus expected net income (NI_1) less expected dividends (DIV_1). This relation can be rewritten as follows:

$$DIV_1 = NI_1 + BVE_0 - BVE_1$$

the discounted abnormal earnings valuation formula is:

$$\text{Equity value} = BVE_0 + \frac{NI_1 - r_e \cdot BVE_0}{(1 + r_e)} + \frac{NI_2 - r_e \cdot BVE_1}{(1 + r_e)^2} + \frac{NI_3 - r_e \cdot BVE_2}{(1 + r_e)^3} + \ldots$$

Investors should pay more or less than book value if earnings are above or below this normal level. Thus, the deviation of a firm's market value from book value depends on its ability to generate "abnormal earnings". The formulation also implies that a firm's equity value reflects the cost of its existing net assets plus the net present value of future growth options.

Accounting Methods and Discounted Abnormal Earnings
Accounting effects have no influence on their value estimates. There are two reasons for this. First, accounting choices that affect a firm's current earninigs also affect its book value and therefore they affect the capital charges used to estimate future abnormal earnings. Second, double entry bookkeeping is by nature self-correcting. Inflated earnings for one period have to be ultimately reversed in subsequent periods. Provided the analyst is aware of biases in accounting data as a result of the use of aggressive or conservative accounting choices by management, abnormal earnings-based valuations are unaffected by the variation in accounting decisions. The strategic and accounting analysis tools help the analyst to identify whether abnormal earnings arise from sustainable competitive advantage or from unsustainable accounting manipulations.

The discounted abnormal earnings growth valuation method

Abnormal earnings are the amount of earnings that a firm generates in excess of the opportunity cost for equity funds used.

Abnormal earnings growth = change in abnormal earnings = (Net profit$_2$ - r_e * BVE$_1$) - (Net profit$_1$ - r_e * BVE$_0$) = (Net profit$_2$ - r_e * [BVE$_0$ + Net profit$_1$ -Dividend$_1$]) - (Net profit$_1$ - r_e * BVE$_0$) = Net profit$_2$ + r_e * Dividend$_1$ - (1+r_e) * Net profit$_1$ = ΔNet profit$_2$ - r_e * (Net profit$_1$ - Dividend$_1$).

The dicounted dividend model can also be recast to generate a valuation model that defines equity value as the capitalized sum of (1) next-period earnings and (2) the discounted value of abnormal earnings growth beyond the next period. The discounted abnormal earnings growth valuation formula is: Equity value = **See page 322** in the text book.

This approach, under which valuation starts with capitalizing next-period earnings, has practical appeal because investment analysts spend much time and effort on estimating near-term earnings as the starting point of their analysis. Notice that this formula also views the firm as having an indefinite life. However, the formula can be easily used for the valuation of a finite-life investment by extending the investment's life by one year and setting earnings and dividends equal to zero in the last year.

Like the abnormal earnings method, the value estimate from the abnormal earnings growth model is not affected by the firm's accounting choices.

Valuation using price multiples

Multiple-based valuations do not require detailed multiple-year forecasts about a variety of parameters, including growth, profitability, and cost of capital. Valuation using multiples involves the following steps: Step 1: Select a measure of performance or value (e.g., earnings, sales, cash flows, book equity, book assets) as the basis for multiple calculations. Step 2: Estimate price multiples for comparable firms using the measure of performance or value. Step 3: Apply the comparable firm multiple to the performance or value measure of the firm being analyzed. Under this approach, the analyst relies on the market to undertake the difficult task of considering the short- and long-term prospects for growth and profitability and their implications for the values of the “comparable” firms.

Selecting Comparable Firms

Ideally, price multiples used in a comparable firm analysis are those for firms with similar operating and financial characteristics. One way of dealing with these issues is to average across all firms in the industry. Another approach is to focus on only those firms within the industry that are most similar.

A potential problem of choosing comparable firms from different countries is that a variety of factors that influence multiples may differ across countries, i.e. the cost of capital in different countries. The most obvious way to get around this problem is to choose comparable firms from one country, the alternative solution is to explicitly take into account the country factors that affect multiples.

Multiples for Firms with Poor Performance

Price multiples can be affected when the denominator variable is performing poorly. What are analysts' options for handling the problems for multiples created by transitory shocks to the denominator? One option is to simply exclude firms with large transitory effects from the set of comparable firms. If poor performance is due to one-time write down or special item, analysts can simply exclude that effect from their computation of the comparable multiple. Finally the analyst can reduce the effect on multiples of temporary problems in past performance by using a denominator that is a forecast of future performance rather than the past measure itself. multiples based on forecasts are termed leading multiples, whereas those based on historical data are called trailing multiples.

DETERMINANTS OF VALUE-TO-BOOK AND VALUE-EARNINGS MULTIPLES

$$\text{Equity value-to-book ratio} = 1 + \frac{ROE_1 - r_e}{(1 + r_e)} + \frac{(ROE_2 - r_e)(1 + gbve_1)}{(1 + r_e)^2} + \frac{(ROE_3 - r_e)(1 + gbve_1)(1 + gbve_2)}{(1 + r_e)^3} +$$

where $gbve_t$ = growth in book value (BVE) from year t-1 to year t or

$$\frac{BVE_t - BVE_{t-1}}{BVE_{t-1}}$$

A firm's value-to-book ratio is largely driven by the magnitude of its future abnormal ROEs, defined as ROE less the cost of equity capital (ROE - r_e). The magnitude of a firm's value-to-book multiple also depends on the amount of growth in book value. The valuation task can now be framed in terms of two key questions about the firm's "value drivers": Will the firm be able to generate ROEs that exceed its cost of equity capital? If so, for how long? and How quickly will the firm's investment base (book value) grow?

The equity value-to-book formulation can also be used to construct the equity value-earnings multiple as follows:

$$\text{Equity value-to-earnings multiple} = \text{Equity value-to-book multiple} \times \frac{\text{Book value of equity}}{\text{Earnings}}$$

$$= \frac{\text{Equity value-to-book multiple}}{\text{ROE}}$$

The same factors that drive a firm's equity value-to-book multiple also explain its equity value-earnings multiple. The key difference between the two multiples is that the value-earnings multiple is affected by the firm's current level of ROE performance, whereas the value-to-book multiple is not.

The effect of future growth in net profit on the price-earnings multiple can also be seen from the model that arises when we scale the abnormal earnings growth valuation formula by next-period net profit. The valuation formula then becomes: Leading equity value-to-earnings ratio = **see p. 330**.

In this formula, future earnings growth rates and dividend payouts are the basis for estimating price-earnings multiples.

SHORTCUT FORMS OF EARNINGS-BASED VALUATION

The discounted abnormal earnings valuation formula can be simplified by making assumptions about the relation between a firm's current and future abnormal earnings. Similarly, the equity value-to-book formula can be simplified by making assumptions about long-term ROEs and growth.

Abnormal earnings (growth) simplification

First, abnormal earnings are assumed to follow a random walk. The random walk model for abnormal earnings implies that an analyst's best guess about future expected abnormal earnings are current abnormal earnings. The model assumes that past shocks to abnormal earnings persist forever, but that future shocks are random or unpredictable. The random walk model can be written as follows:

$$\text{Forecasted } AE_1 = AE_0$$

Forecasted AE1 is the forecast of next year's abnormal earnings and AE0 is current period abnormal earnings. The best guess of abnormal earnings in any future year is just current abnormal earnings. The present value of future abnormal earnings can be calculated by valuing the current level of abnormal earnings as a perpetuity.

$$\text{Stock value} = BVE_0 + \frac{AE_0}{r_e}$$

The equity value is the book value of equity at the end of the year, plus current abnormal earnings divided by the cost of capital. When abnormal earnings growth in any future year is zero, the abnormal earnings growth valuation model can be rewritten as follows: Equity value= Net profit$_1$ / r$_e$.

Equity value is then set equal to the capitalized value of next-period net profit. The persistence of abnormal performance will therefore depend on strategic factors such as barriers to entry and switching costs. To reflect this, analysts frequently assume that current shocks to abnormal earnings decay over time. Under this assumption, abnormal earnings are said to follow an autoregressive model. Forecasted abnormal earninsg are then:

$$\text{Forecasted } AE_1 = \beta AE_0$$

β is a parameter that captures the speed with which abnormal earnings decay over time. Note that if the rate of decay in abnormal earnings, β, is constant, the perpetual growth rate in abnormal earnings equals β-1. The autoregressive model therefore implies that equity values can again be written as a function of current abnormal earnings and book values: Equity value = $BVE_0 + \beta AE_0 / (r_e - [\beta-1])$. This formulation implies that equity values are simply the sum of current book value plus current abnormal earnings weighted by the cost of equity capital and persistence in abnormal earnings. Under teh assumption that abnormal earnings follow an autoregressive model, abnormal earnings growth, or the change in abnormal earnings, in year 1 can be rewritten as $(\beta-1)AE_0$ and the abnormal earnings growth model simplifies to: **see page 332**.

An advantage of the abnormal earnings growth model over the abnormal earnings model is that the former model can be simplified by making assumptions about the change in abnormal earnings. This can be useful in situations where the analyst believes that a firm has a sustainable competitive advantage but expects that the growth in abnormal earnings will gradually decay over time, under the assumption that: Forecasted (AE_2 - AE_1) = β(AE_1 - AE_0) the abnormal earnings growth model simplifies to: Equity value = Net $profit_1$ / r_e + (1+r_e) / r_e * [β(AE_1 - AE_0) / r_e - (β-1)].

ROE and Growth Simplifications

Firms' long-term ROEs are affected by such factors as barriers to entry in their industries, change in
production or delivery technologies, and quality of management. Forecasted ROE in one period's time then takes the following form:

$$\text{Forecasted } ROE_1 = ROE_0 + \beta(ROE_0 - \overline{ROE})$$

$\overline{ROE}$ is the steady state ROE (either the firm's cost of capital or the long-term industry ROE) and is a "speed of adjustment factor" that reflects how quickly it takes the!ROE to revert to its steady state. Growth rates are affected by several factors. First, the size of the firm is important. Second, firms with high rates of growth are likely to attract competitors. For a firm in teady state, that is, expected to have a stable ROE and book equity growth rate (gbve), the value-to-book multiple formula simplifies to the following:

$$\text{Equity value-to-book multiple} = 1 + \frac{ROE_0 - r_e}{r_e - gbve}$$

COMPARING VALUATION METHODS

Focus on Different Issues

The earnings-based approaches frame the issues in terms of accounting data such as earnings and book values. Analysts spend considerable time analyzing historical income statements and balance sheets. Defining values in terms of ROEs has the added advantage that it focuses analysts' attention on ROE, the same key measure of performance that is decomposed in a standard financial analysis. Further, because ROEs control for firm scale it is likely to be easier for analysts to evaluate the reasonableness of their forecasts by benchmarking them with ROEs of other firms in the industry and the economy.

Differences in Required Structure

The discounted abnormal earnings and ROE methods require analysts to construct both proforma income statements and balance sheets to forecast future earnings and book values. In contrast, the discounted cash flow method requires analysts to forecast income statements and changes in working capital and long-term assets to generate free cash flows. Finally, the discounted dividend method requires analysts to forecast dividends.

Differences in Terminal Value Implications

Terminal value estimates for the abnormal earnings and ROE methods tend to represent a much smaller fraction of total value than under the discounted cash flow or dividend methods. The abnormal earnings valuation does not eliminate the discounted cash flow terminal value problem, but it does reframe it. Discounted cash flow terminal values include the present value of all expected cash flows beyond the forecast horizon. The essential difference between the two approaches is that abnormal earnings valuation recognizes that the accrual process may already have performed a portion of the valuation task, whereas the discounted cash flow approach ultimately moves back to the primitive cash flows underlying the accruals. If desired, the analyst can alter the accounting approach used by the firm in his/her own projections. "Better" accounting would be viewed as that which reflects a larger fraction of the firm's value in book values and earnings over the forecast horizon.14 This same view underlies analysts' attempts to "normalize" earnings; the adjusted numbers are intended to provide better indications of value, even though they reflect performance only over a short horizon. Research has focused on the performance of earnings-based valuation relative to discounted cash flow and discounted dividend methods. The findings indicate that over relatively short forecast horizons, ten years or less, valuation estimates using the abnormal earnings approach generate more precise estimates of value than either the discounted dividend or discounted cash flow models.

Summary

Valuation is the process by which forecasts of performance are converted into estimates of price. The discounted dividend method attempts to forecast dividends directly.

The abnormal earnings approach expresses the value of a firm's equity as book value plus discounted expectations of future abnormal earnings. Finally, the discounted cash flow method represents a firm's stock value by expected future free cash flows discounted at the cost of capital. In practice they focus the analyst's attention on different issues and require different levels of structure in developing forecasts of the underlying primitive, future dividends.

Price multiple valuation methods were also discussed. Under these approaches, analysts estimate ratios of current price to historical or forecasted measures of performance for comparable firms.

Chapter 8:

Prospective Analysis: Valuation Implementation

To value the company, we have to deal with two key issues: we have to estimate the cost of capital to discount our forecasts, and we have to make forecasts of financial performance stated in terms of abnormal earnings and book values, or free cash flows. The forecasting task can be divided into:

- Detailed forecasts over a finite number of years
- A forecast of terminal value, which represents a summary forecast of performance beyond the period of detailed forecasts.

Computing a discount rate

Estimating the cost of equity

To value a company's equity, the analyst discounts abnormal earnings, abnormal ROE, or cash flows available to equity holders. The cost of equity is a proper discount rate.

One common approach to estimating the cost of equity is to use the capital asset pricing model (CAPM). The main idea is that investors care about the risk that an asset contributes to the portfolio they hold. This is called beta of systematic risk and is created by the correlation between the asset's return and the returns of other investments in the portfolio. The cost of equity is the sum of a required return on riskless assets (rf) plus a premium for beta risk.

$$R_e = R_f + \beta \left(E(R_m) - R_f\right)$$

To estimate rf, the rate on intermediate-term government bonds are often used. (E(rm) – rf) can be determined by using an intermediate- or long-term riskless rate that presumably reflects expected inflation. B reflects the sensitivity of its cash flows and earnings (and hence stock price) to economy-wide market movements. Firms whose performance is highly sensitive to economy-wide changes, will have beta risks that exceed one. The market risk premium is the amount that investors demand as additional return for bearing risk.

An important factor is the size effect: smaller firms tend to generate higher returns in subsequent periods. It could mean that smaller firms are riskier than indicated by the CAPM or that they are underpriced at the point their market capitalization is measured. The resulting cost of capital is:

$$R_e = R_f + \beta \left(E(R_m) - R_f\right) + R_{size}$$

The beta risk changes as a function of its leverage. As the leverage increases, the sensitivity of the firm's equity performance to economy-wide changes also increases.

$$ROE = Operating\ ROA + (Operating\ ROA - effective\ interext\ rate\ after\ tax) * \frac{Net\ debt}{Equity}$$

The equity beta of a firm does not only reflect the sensitivity of its assets' performance to economy-wide movements (asset beta) but also the net financial leverage effect in its equity performance.

$$\beta(\text{assets}) = \frac{(1 - tax\ rate) * Net\ debt}{(1 - tax\ rate) * Net\ debt + equity} * \beta\ (\text{debt}) + \frac{Equity}{(1 - tax\ rate) * Net\ debt + equity} * \beta\ (\text{equity})$$

A firm's equity beta can be estimated directly using its stock returns and the CAPM. Its debt beta can be inferred from the CAPM if we have information on its current interest rate and the risk-free rate, using the CAPM formula.
When the firm's capital structure changes, its equity and debt betas will change, but its asset beta remains the same. We can use this fact in estimating the expected equity beta for the new capital structure. To calculate the leverage-adjusted betas, many analysts assume that the debt beta equals zero. Under this assumption, the equity and asset betas have to following relationship:

$$\beta(\text{equity}) = \left(1 + (1 - tax\ rate) * \frac{Net\ debt}{Equity}\right) * \beta(\text{asset})$$

Estimating the weighted average cost of capital

To value a company's assets, the analyst discounts abnormal NOPAT, abnormal operating ROA, or cash flows available for both debt and equity holders. The proper discount rate to use is the WACC.

$$WACC = \frac{Net\ debt}{Net\ debt + Equity} * (1 - tax\ rate) * Cost\ of\ debt + \frac{Equity}{Net\ debt + Equity} * Cost\ of\ equity$$

The cost of debt is the interest rate on debt. If the assumed capital structure in future periode is the same as the historical structure, then the current interest rate on debt will be a good proxy for this. However, if the analyst assumes a change in capital structure, then it is important to estimate the expected interest rate given the new level of debt ratio.
The cost of debt will change over time if market interest rates are expected to change. This can arise when investors expects changes in inflation. If interest rates are projected to rise 3 percent as a results of expected inflation, the cost of debt for the firm should also increase by 3 percent.

The economic value of the liabilities is disclosed in the financial statements. If interest rates have not changes, book value can be used. If the economic value is not disclosed and the interest rates have changed, the value of debt can be estimated by discounting the future payouts at current market rates of interest applicable to the firm.
Both short-term and long-term debt should be considered as part of capital when computing the WACC, because abnormal NOPAT and free cash flows are the earnings and cash flows before servicing short- term and long term debt. Servicing of other liabilities, such as trade payables or accruals, should already have been considered as we computed abnormal NOPAT or free cash flows. Thus internal consistency requires that operating liabilities not be considered as part of capital when computing the WACC.
An analyst can assign a market value to equity is to insert target ratios of debt to capital and equity to capital.

An increase in leverage has two effects: it increases the weight on the cost of debt, and it increases the levered equity beta, thereby increasing the cost of equity capital. Because future interest payments on debt create a valuable tax shield, increases in leverage do have a (moderately) reducing effect on the WACC. As a consequence, if the forecasts imply that economic leverage changes over time but the cost of equity and WACC estimates are based on beginning economic leverage, the indirect estimate of equity value, being the estimated value of the company's assets minus the value of debt, will not be equal to the direct estimate of equity value. If the direct equity value estimates exceeds the indirect estimate, this suggests that the predicted change in economic leverage exceeds the change that is implicit in the cost of equity and WACC estimates.

Detailed forecasts of performance

The horizon over which detailed forecasts are to be made is itself a choice variable. The next step is to consider the set of assumptions regarding a firm's performance that are needed to arrive at the forecasts. The key to sound forecast is that the underlying assumptions are grounded in a company's business reality.

Making performance forecasts for valuing loewe

The forecasts required to convert the financial forecasts into estimates of value differ depending on whether we wish to value a firm's equity or its assets. To value equity, the essential inputs are:

- Abnormal earnings: net profit less shareholders' equity at the beginning of the year times cost of equity;
- Abnormal ROE: the difference between ROE and the cost of equity;
- Abnormal earnings growth: the change in net profit less the cost of equity times prior period's change in equity (or the change in abnormal earnings);
- Free cash flow to equity: net income less the increase in operating working capital less the increase in net non-current assets plus the increase in debt.

To value a company's assets, the significant performance forecast will be:

- Abnormal NOPAT: NOPAT less total net capital at the beginning of the year times the WACC;
- Abnormal operating ROA: the difference between operating ROA and the WACC.
- Abnormal NOPAT growth: the change in NOPAT less the WACC times prior period's change in net operating assets (or the change in abnormal NOPAT);
- Free cash flow to capital: NOPAT less the increase in operating capital less the increase in net non-current assets.

Terminal values

The final year of the forecast period (5-10 years) of the various elements of a firm's performance is labelled the terminal year. Terminal value is then the present value of either abnormal earnings or free cash flows occurring beyond the terminal year. We must consider how much longer the rate of growth in industry sales can outstrip overall economic growth, and how long a firm's competitive advantages can be sustained.

Terminal values with the competitive equilibrium assumption

In fact, under plausible economic assumptions, there is no practical need to consider sales growth beyond the terminal year. Such growth may be irrelevant, so far as the firm's current value is concerned. This is because one impact of competition is that it tends to constrain a firm's ability to identify, on a consistent basis, growth opportunities that generate supernormal profits. The other dimension that competition tends to impact is a firm's margins. We expect high profits to attract enough competition to drive down a firm's margins, and therefore its returns, to a normal level. At this point, a firm will earn its cost of capital, with no abnormal return or terminal value.

A firm may at a point in time maintain a competitive advantage that permits it to achieve returns in excess of the cost of capital. This advantage can be maintained for many years when it is protected (patents, strong brand name).

With a few exceptions, it is reasonable to assume that the terminal value of the firm will be zero under the competitive equilibrium assumption, obviating the need to make assumptions about long-term growth rates.

Competitive equilibrium assumption only on incremental sales

If we invoke the competitive equilibrium assumption on incremental sales for years beyond the terminal year, then it does not matter what sales growth rate we use beyond that year, and we may as well simplify our arithmetic by treating sales as if they will be constant at the terminal year level. Operating ROA, ROE, NOPAT, net profit, free cash flow to debt and equity, free cash flow to equity will all remain constant at the terminal year level.

Terminal value with persistent abnormal performance and growth

If the analyst believes supernormal profitability can be extended to larger markets for many years, it can be accommodated within the context of valuation analysis. One possibility is to project earnings and cash flows over a longer horizon, i.e., until the competitive equilibrium assumption can reasonably be invoked. Another possibility is to project growth in abnormal earnings or cash flows at some constant rate. This is simply because we held all other performance rations constant in this period. As a result, abnormal operating ROA end abnormal ROE remain constant at the same level as in the terminal year.

This approach is more aggressive, but it may be more realistic. The approach, however, still relies to some extent on the competitive equilibrium assumption. The assumption is now invoked to suggest that supernormal profitability can be extended only to an investment base that remains constant in real terms.

When we assume that the abnormal performance persists at the same level as in the terminal year, projecting abnormal earnings (growth) and free cash flows is a simple matter of growing them at the assumes sales growth rate. The present value of the flow stream is the flow at the end of the first year (after the terminal year) divided by the difference between the discount rate and steady-state growth rate, provided that the discount rate exceeds the growth rate. The question is not whether the arithmetic is available but rather how realistic it is.

Terminal value based on price multiple

Under the assumption of no sales growth, abnormal earnings or cash flows beyond the terminal year remain constant. Capitalizing these cash flows in perpetuity by dividing the cost of capital is equivalent to multiplying them by the inverse of the cost of capital.

The mistake to avoid here is to capitalize future abnormal earnings or cash flows using a multiple that is too high. Multiples in the range of 7 to 12 – close to the reciprocal of cost of equity and WACC- should be used here. Higher multiples are justifiable only when the terminal year is closer and there are still abnormally profitable growth opportunities beyond that point.

Selecting the terminal year

When the competitive equilibrium assumption is used, the answer is whatever time is required for the firm's returns on incremental investments projects to reach that equilibrium – an issue that turns on the sustainability of the firm's competitive advantage. A five- to ten-year forecast horizon should be more than sufficient for most firms.

Computing estimated values

Value estimates versus market values

Valuation involves a substantial number of assumptions by analysts. The only way to ensure that one's estimates are reliable is to make sure that the assumptions are grounded in the economics of the business being valued. It is also useful to check the assumptions against the time-series trends for performance ratios.

When an estimated value differs substantially from a company's market value, it is useful to understand why such differences arise. A way to do this is to redo the valuation exercise and figure out what valuation assumptions are needed to arrive at the observed stock price.

Sensitivity analysis

Changes in equity value in different scenarios are driven primarily by changes in sales growth and margins, performance measures that are most strongly affected by the forces of competition.

Some practical issues in valuation

Dealing with accounting distortions

An analyst who encounters biased accounting had two choices – either to adjust current earnings and book values to eliminate managers' accounting biases, or to recognize these biases and adjust future forecasts accordingly. The choice will have an important impact on what fraction of the firm's value is captured within the forecast horizon, and what remains in the terminal value.

Dealing with negative book values

The first approach to deal with this is to value a firm's assets rather than equity. Then, based on an estimate of the value of the firm's debt, one can estimate the equity value. Another alternative is to 'undo' accountant's conservatism by capitalizing the investment expenditures written off. This is possible if the analyst is able to establish that these expenditures are value creating. A third alternative, feasible for publicly traded firms, is to start from the observed share price and work backwards.

It is important to note that the value of firms with negative book equity often consists of a significant option value. One can use the options theory framework to estimate the value of these 'real options'.

Dealing with excess cash and excess cash flow

It is assumed that cash beyond the level required to finance a company's operations will be paid out to the firm's shareholders. Excess cash flows are assumed to be paid out to shareholders in the form of either dividends or share repurchases. These cash flows are already incorporated into the valuation process when they are earned, so there is no need to take them into account when they are paid out.

It is important to recognize that both the accounting-based valuations and the discounted cash flow valuation assume a dividend payout that can potentially vary from period to period. This assumption is required as long as one wishes to assume a constant level of financial leverage, a constant cost of equity, and a constant level of weighted average cost of capital used in the valuation calculations.

A firm's dividend policy can affect its value if managers are likely to use excess cash to undertake value-destroying acquisitions, then our approach overestimates the firm's value. One approach is to first estimate the firm according to the approach described earlier and then adjust the estimated value for whatever agency costs the firm's managers may impose on its investors. One approach to evaluating whether or not a firm suffers from severe agency costs is to examine how effective its corporate governance processes are.

Chapter 9:

Equity Security Analysis

Equity security analysis is the evaluation of a firm and its prospects from the perspective of a current or potential investor in the firm's shares. Security analysis is one component of a larger investment process that involves:

1. *Establishing the objectives of the investor or fund.*
2. *Forming expectations about the future returns and risks of individual securities.*
3. *Combining individual securities into portfolios to maximize progress toward the investment objective.*

A security analysis can be undertaken by individual investors, analysts at brokerage houses (sell-side) and by analysts for institutions, e.g. a collective investment fund (buy-side). Analysts with a comparative advantage are able to identify a mispricing in securities at the lowest costs and the analysts who do not have this advantage can focus on how the security would affect the risk of their portfolio.
According to the efficient markets hypothesis a security price reflects all available information and in a world of efficient markets, the expected return on any equity security is just enough to compensate investors for the unavoidable risk in the security involves. But in reality the efficient markets hypothesis does not work because mispricing would not be corrected then. In equilibrium there must be just enough mispricing to provide incentives for the investment of resources in security analysis.
In efficient markets, the value of information differs. First, the information would be useful to only the analysts who receive newly announced financial data, interpret it quickly and trade it within minutes. Second, but more important, the information would be useful for gaining an understanding of the firm, so as to place the analysts in a better position to interpret other news as it arrives.
Although for years it has been assumed that markets are very efficient, recent years have witnessed a re-examination of this accepted theory:

- *The initial speed of share price response to news tends to be incomplete.*
- *Some studies point to trading strategies that could have been used to outperform market averages.*
- *Even though market prices reflect some relatively sophisticated analyses, prices still do not reflect all information that could be collected from all publicly available financial statements.*

Evidence shows that security markets do not reflect publicly available information only, but they react on it before it is released. Further, the degree of mispricing is relatively small for the large firms.

Managing funds and analyzing securities can be done in different approaches:
Active portfolio management: Relies heavily on security analysis to identify mispriced securities.

Passive portfolio management: Seeks to hold a portfolio designed to match some overall market index or sector performance.

Combined approaches are also possible.

Quantitative analysis: Analysis which attempts to predict share price movements on the basis of market indicators. (Prior share price movements, volume, etc.)

Fundamental analysis: Analysis which evaluates the current market price relative to projections of the firm's future earnings and cash flow generating potential. (Involves business strategy analysis, accounting analysis, financial analysis and prospective analysis)

Steps of a security analysis:

1. Selection of candidates for analysis on the basis of risk, return or style characteristics, industry membership or mispriced indicators.
   Key analysis questions:
   - What is the risk profile of the firm? How volatile is its earnings stream and share price? What are the key possible bad outcomes in the future?
   - Does the firm possess the characteristics of a growth share? What is the expected pattern of sales and earnings growth for the coming years?
   - Does the firm match the characteristics desired by "income funds"?
   - Is the firm a candidate for a "value fund"?
2. Inferring market expectations about the firm's future profitability and growth from the current security price. (Calculate different earnings growth scenario's)
   Key analysis questions:
   - What are the market's assumptions about long-term ROE and growth?
   - How do changes in the cost of capital affect the market's assessment of the firm's future performance?
3. Developing expectations about the firm's profitability and growth using the four steps of business analysis.
   Key analysis questions:
   - How profitable is the firm?
   - What are the opportunities for growth for this firm?
   - How risky is this firm? How vulnerable are operations to general economic downturns?
   - How do answers to the above questions compare to the expectations embedded in the observed share price?

4. Making an investment decision after comparing own expectations with those of the market.

Performance of security analysts:
Share prices tend to respond positively to upward revisions in analysts' earnings forecasts and recommendations, and negatively to downward revisions. Research shows that analysts' forecasts tend to be biased. This is because the analysts at brokerage houses are typically compensated on the basis of the trading volume that their reports generate. Further because analysts that work for investment banks are rewarded for promoting public issues by current clients and for attracting new banking clients, creating incentives for optimistic forecasts and recommendations.

Performance of fund managers:
Managers tend to have "herding" behavior. Mainly because managers have access to common information, they are affected by similar cognitive biases and have incentives to follow the crowd. This is why they often buy or sell shares at the same time, which causes they will not be (or less) rewarded for detecting misvaluations, but neither blamed for poor investment decisions.

Chapter: 10

Credit Analysis and Distress Prediction

Credit analysis is the evaluation of a firm from the perspective of a holder or potential holder of its debt, including trade payables, loans, and public debt securities. A key element of credit analysis is the prediction of the likelihood a firm will face financial distress.

Why do firms use debt financing?

Two reasons why debt financing is attractive:

- Corporate interest tax shields; debt is tax deductible.
- Management incentives for value creation; firms with high leverage face pressures to generate cash flows to meet payments of interest and principal. This will reduce the resources available to fund unjustifiable investments and expenses.

Negative consequences of debt financing:

- Legal costs of financial distress;
- Costs of forgone investment opportunities; firms in distress are often unable to finance new investments even though they might be profitable.
- Costs of conflicts between shareholders and creditors; when faced with financial distress, creditors focus on the firm's ability to service its debt while shareholders worry that their equity will revert to the creditors if the firm defaults.

The market for credit/Suppliers of debt financing

Commercial banks

Banks have intimate knowledge of the client and its operations, therefore they have a comparative advantage in extending credit in settings where (1) knowledge gained through close contact with management reduces the riskiness of credit and (2) credit risk can be contained through careful monitoring of the firm. This is even more where commercial banks also provide investment banking services to their clients. Combination of commercial banking and investment banking, called universal banking, therefore not only help banks to become better informed about their clients' operations but also make banks more influential over their clients through the equity stake s that they control.

Non-bank financial institutions

Banks also compete with non-bank financial institutions for a variety of lending activities. Such institutions are finance companies, insurance companies, government agencies etc.

Public debt markets

Some firms have the size, strength and credibility to seek financing directly from investors, either through sales of commercial paper or though bonds. Such debt issues facilitated by the assignment of a **public debt rating,** which measures the underlying credit strength of the firm and determines the yield that must be offered to investors.

Sellers who provide financing

Manufactures and suppliers tend to finance their clients' purchases on an unsecured basis for periods of 30 to 60 days. On occasion, they will also agree to provide extended financing, usually with support of a secured note.

Country differences in debt financing

The extent to which national bankruptcy laws protect credit providers differs among countries. A classification of bankruptcy laws involves two groups: laws that provide extensive creditor protection in case of default versus laws that are oriented toward keeping the company in default a going concern and shielding the company from the influence of creditors.

Countries with borrower-friendly, creditor unfriendly bankruptcy laws:

- Creditors extend more short-term debt because this allows them to frequently review the borrower's financial position and adjust the term of the loan when necessary.
- Companies make greater use of supplier.
- Companies make greater use of off-balance sheet financing such as factoring of customer receivables.
- Public debt markets tend to be more developed.

The credit analysis process in private debt markets

Comprehensive series of steps that is used by commercial lenders in credit analysis.

Step 1: consider the nature and purpose of the loan

Understanding the purpose of a loan is important not only for deciding whether it should be granted but also for structuring the loan based on duration, purpose and size. The required amount of the loan must also be established. When bankruptcy laws provide a bank sufficient protection, it would typically prefer to be the sole financier of small and medium-sized companies. This is to maintain a superior interest in case of bankruptcy.

Step 2: consider the type of loan and available security

Type of loan is a function of not only its purpose but also the financial strength of the borrower. Some types of loans:

- **Open line of credit,** it permits the borrower to receive cash up to some specified maximum on an as-needed basis for a specified term. To maintain this option, the borrower pays a fee on the unused balance in addition to the interest on any used amount.
- **Revolving line of credit,** when a firm needs credit beyond the short run, financing might be provided in the form of a "revolver". Terms of a revolver is used to support working capital needs, require the borrower to make payments as the operating cycle proceeds and inventory and receivables are converted to cash.
- **Working capital loan,** is used to finance inventory and receivables and it is usually secured.

- **Term loan,** are used for long-term needs and are often secured with long-term assets such as PPE.
- **Mortgage loan,** support financing real states have long-terms and require periodic amortization of the loan balance.
- **Lease financing,** facilitate the acquisition of any asset but is most commonly used for equipment, including vehicles and buildings.

Step 3: conduct a financial analysis of the potential borrower

This step incorporates both an assessment of the potential borrower's financial status using ratio analysis and a forecast to determine future payments prospects.

Ratio analysis

As the key issue in the financial analysis is whether there will be sufficient cash flows to repay the loan, lenders focus on solvency ratios: the magnitude of various measures of profits and cash flows relative to debt service and other requirements. Therefore, ratio analysis from the perspective of a creditor differs from that of an owner.

The *funds flow coverage ratio* illustrates the creditor's perspective:

$$\frac{\text{EBIT + Depreciation}}{\text{Interest + (Debt repayment/(1-tax rate)) + (Preference dividends/(1-tax rate))}}$$

This ratio provides an indication of how comfortably the funds flow can cover unavoidable expenditures. It excludes payments such as dividend payments and capital expenditures. To the extent that the ratio exceeds 1, it indicates the 'margin of safety' the lender faces. Thus, only lend when this ratio exceeds 1.

Forecasting

Good credit analysis should also be supported by explicit forecasts. An essential element of this step is a sensitivity analysis to examine the ability of the borrower to service the debt under a variety of scenarios such as changes in the economy or in the firm's competitive position. Ideally, the firm should be strong enough to withstand the downside risks such as a drop in sales or a decrease in profit margins.

Step 4: Assemble the detailed loan structure, including loan covenants

Loan covenants specify mutual expectations of the borrower and lender by specifying actions the borrower will and will not take. Covenants fall into three categories:

- Those that require certain actions such as regular provision of financial statements.
- Those that preclude certain actions such as undertaking an acquisition without the permission of the lender.
- Those that require maintenance of certain financial ratios.

Loan covenants must strike a balance between protecting the interests of the lender and providing the flexibility management needs to run the business. They represent a mechanism for ensuring that the business will remain as strong as the two parties anticipated at the time the loan was granted.

Financial covenants should seek to address the significant risks identified in the financial analysis, or to at least provide early warning that such risks are surfacing. Some financial covenants:

- **Maintenance of minimum net worth,** assures that firm will maintain an "equity cushion" to protect the lender.
- **Minimum coverage ratio,** especially in the case of a long-term loan, the lender may want to supplement a net worth covenant with one based on coverage of interest or total debt service.
- **Maximum ratio of total liabilities to net worth,** constrains the risk of high leverage and prevents growth without either retaining earnings or infusing equity.
- **Minimum net working capital balance or current ratio,** forces firm to maintain its liquidity by using cash generated from operations to retire current liabilities.
- **Maximum ratio of capital expenditures to earnings before depreciation** prevents the firm from investing in growth, unless such growth can be financed internally.

Detailed discussion of loan pricing falls outside the scope of the course, but the essence of pricing is to assure that the yield on the loan is sufficient to cover:

- The lender's costs of borrowed fund.
- The lender's costs of administering and servicing the loan.
- A premium for exposure to default risk.
- At least a normal return on the equity capital necessary to support the lending operation.

The price is often stated in terms of a deviation from a bank's base rate, for instance, a loan might be granted at base rate plus 2 percent.

Financial statement analysis and public debt

A firm's debt rating influences the yield that must be offered to sell the debt instruments. For the table of the S&P debt rating please refer to **page 454** of the course book and for the table with all factors that drive debt ratings please refer to **page 456**.

Prediction of distress and turnaround

The key task in credit analysis is assessing the probability that a firm will face financial distress and fail to repay a loan. A related analysis, relevant once a firm begins to face distress, involves considering whether it van be turned around.

Several financial distress prediction models have been developed over the years. One of the models is the Altman Z-score model:

$Z = 1.2 (X1) + 1.4 (X2) + 3.3(X3) + 0.6(X4) + 1.0 (X5)$

X1= net working capital/total assets (measure of liquidity)
X2= retained earnings/total assets (measure of cumulative profitability)
X3= EBIT/total assets (measure of ROA)
X4= market value of equity/ book value of total liabilities (measure of market leverage)
X5= sales/ total assets (measure of sales generating potential of assets.

The model predicts bankruptcy when $Z < 1.81$. The range between 1.81 and 2.67 is labeled as the “grey area”.

Chapter 11:

Mergers and Acquisitions

Mergers and acquisitions have long been a popular form of corporate investment, particularly in countries with Anglo-American forms of capital markets. There is no question that these transactions provide a healthy return to target shareholders. However, their value to acquiring shareholders is less understood. Many skeptic points out that given the hefty premiums paid to target shareholder, acquisitions tend to be negative-valued investments for acquiring shareholders.

Merger or acquisition benefits:

1. **Taking advantage of economies of scale.**
2. **Improving target management.**
3. **Combining complementary resources:**
   Firms may decide that a merger will create value by combining complementary resources of the two partners. For example, a firm with a strong R&D unit could benefit from merging with a firm that has a strong distribution unit.
4. **Capturing tax benefits:**
   Companies may obtain several tax benefits from M&A. The major benefit is the acquisition of operating tax losses. The operating losses and loss carry forwards of the acquirer can be offset against the target's taxable profit. The second tax benefit often attributed to mergers is the tax shield that comes from increasing leverage for the target firm.
5. **Providing low-cost financing to a financially constrained target.**
6. **Creating value through restructuring and break-ups.**
7. **Increasing product-market rents:**
   By merging and becoming a dominant firm in the industry, two smaller firms can collude to restrict their output and raise prices, thereby increasing their profits.

While many of the motivations of acquisitions are likely to create new economic value for shareholders, some are not. Firms that are flush with cash but have few new profitable investment opportunities are particularly prone to using their surplus cash to make acquisitions. Another motivation for mergers that is valued by managers but not shareholders is diversification.

Acquisition pricing

A well thought out economic motivation for a merger or acquisition is a necessary but not sufficient condition for it to create value for acquiring shareholders. The acquirer must be careful to avoid overpaying for the target. Overpayment makes the transaction highly desirable and profitable for target shareholders, but it diminishes the value of the deal to acquiring shareholders. A financial analyst can use the following methods to assess whether the acquiring firm is overpaying for the target.

Analyzing premium offered to target shareholders

One popular way to assess whether the acquirer is overpaying for a target is to compare the premium offered to target shareholders to premium offered in similar transactions. If the acquirer offers a relatively high acquisition premium, the analyst is typically led to conclude that the transaction is less likely to create value for the acquiring shareholders. Hostile take-overs premiums tend to be 30% higher than friendly take-overs due to the fact that acquirers in a friendly take-over have more information on the target and can therefore offer a more precise premium. Comparing a target's premium to values for similar types of transactions is straight forward to compute, but has several practical problems:

1. **It is not obvious how to define a comparable transaction.**
   European takeover premiums differ on various dimensions and are therefore difficult to compare.
2. **Measured premiums can be misleading if an offer is anticipated by investors.**
   The share price run-up for the target will then tend to make estimates of the premium appear relatively low.
3. **It ignores the value of the target to the acquirer after the acquisition.**
   The acquirer expects to benefit from the merger by improving the target firm's operating performance.

Analyzing value of the target to the acquirer

The most popular methods of valuation used for mergers and acquisitions are earnings and discounted cash flows. Computing the value of the target as an independent firm first provides a way of checking whether the valuation assumptions are reasonable, because for publicly listed targets you can compare your estimate with premerger market prices.

Earnings multiples

To estimate the value of a target to an acquirer using earnings multiples, you have to forecast earnings for the target and decide on an appropriate earnings multiple, as follows:

1. **Forecasting earnings**
   Earnings forecasts are usually made by first forecasting next year's net profit for the target assuming no acquisition. Once you have forecasted the profit for the target prior to an acquisition, you can incorporate into the pro forma model any improvements in earnings and performance that you expect to result from the acquisition. Performance improvements can be modeled as:

   - Higher operating margins through economies of scale in purchasing, or increased market power
   - Reduction in expenses as result of consolidating R&D staff, sales force, and/or administration
   - Lower average tax rates from taking advantages of operating tax loss carry forwards

2. **Determining the price-earnings multiple**
   If the target firm is listed, it may be tempting to use the pre-acquisition price earnings multiple to value post-merger earnings. However, there are several limitations to this approach:

   - For many targets earnings growth expectations tend are likely to change after a merger, implying that there will be a difference between pre- and post-merger price-earnings multiples. Post-merger earnings should then be valued using a multiple for firms with comparable growth and risk characteristics.
   - Pre-merger price-earnings multiples are unavailable for unlisted targets
   - The price will increase in anticipation of the premium is paid to target shareholders when there is an announcement of acquisition.

Limitations to price-earnings valuation:

1. PE multiples assume that merger performance improvements come either from an immediate increase in earnings or from an increase in earnings growth.
2. PE models do not easily incorporate any spillover benefits from an acquisition for the acquirer because they focus on valuing the earnings of the target

<u>Discounted abnormal earnings, abnormal earnings growth, or cash flows</u>
You can also value a company using the discounted abnormal earnings, discounted abnormal earnings growth and discounted free cash flow methods. These require us to first forecast the abnormal earnings, abnormal earnings growth, or free cash flows for the firm and then discount them at the cost of capital.

1. **Forecast abnormal earnings (growth)/free cash flows**
   A pro forma model of expected future profits and cash flows for the firm provides the basis for forecasting. The abnormal earnings (growth) method requires that you forecast earnings or net operating profit after tax (NOPAT) for as long as the firm expects new investment projects to earn more than their cost of capital. Under the free cash flow approach, the pro forma model will forecast free cash flows to either the firm or to equity.
2. **Compute the discount rate**
   If you are valuing the target's post-acquisition NOPAT or cash flows to the firm, the appropriate discount rate is the WACC for the target, using its expected *post-acquisition* capital structure. Alternatively, if the target equity cash flows are being valued directly or if you are valuing abnormal earnings, the appropriate discount rate is the target's post-acquisition cost of equity rather than WACC.

3. **Analyze sensitivity**

   Once you have estimated the expected value of a target, you will want to examine the sensitivity to your estimate to changes in the model assumptions.

Acquisition financing and form of payment

Even if an acquisition is undertaken to create new economic value and is priced judiciously, it may still destroy shareholder value if it is inappropriately financed. To have a complete analysis of an acquisition, the implications of the financing arrangements for the acquirer should be examined.

Effect of form of financing on acquiring shareholders

For acquiring shareholders the costs and benefits if different financing options usually depend on how the offer affects their firm's capital structure and any information effects associated with different forms of financing.

Capital structure effects on form of financing

In acquisitions where debt financing or surplus cash are the primary form of consideration for target shares, the acquisition increases the net financial leverage of the acquirer. To assess whether an acquisition leads an acquirer to have too much leverage, financial analysts can assess the acquirer's financial risk by the following methods:

1. Assessing the pro forma financial risks for the acquirer under the proposed financing plan.
2. Examining whether there are important off-balance sheet liabilities for the target and/or acquirer that are not included in the pro forma ratio and cash flow analysis of postacquisition financial risk.
3. Determining whether the pro forma assets for the acquirer are largely intangible and therefore sensitive to financial distress.

Corporate control and the form of financing

When an acquisition is being financed with equity, part of the acquiring shareholders' voting power will transfer to the target shareholders after the acquisition. Acquiring firms that are controlled by one large shareholder may therefore choose cash or debt as the primary form of financing to avoid their major shareholder losing control.

Information problems and the form of financing

Information asymmetries between managers and external investors can make managers reluctant to raise equity to finance new projects. Acquirers are forced to use equity financing because of two information problems:

1. The information effects imply that firms forced to use equity financing are likely to face a share price decline when investors learn of the method of financing.
2. A second information problem arises if the acquiring management does not have good information about the target

Effect of form of financing on target shareholders

The key financing considerations for target shareholders are the tax and transaction cost implications of the acquirer's offer.

Tax effects of different forms of consideration

Target shareholders care about the after-tax value of any offer they receive for their shares. In many countries, whenever target shareholders receive cash for their shares, they are required to pay capital gains tax on the difference between the takeover offer price and their original purchase price.Tax laws that allow the deferral of capital gains taxes appear to cause target shareholders to prefer a share offer to a cash one.

Transaction costs and the form of financing

Transaction costs are incurred when target shareholders sell any shares received as consideration for their shares in the target.

Acquisition outcome

To evaluate the likelihood that an offer will be accepted , the financial analyst has to understand whether there are potential competing bidders who could pay an even higher premium to target shareholders than is currently offered. Furthermore, they have to consider whether target managers are entrenched and to protect their jobs.

Other potential acquirers

If there are any potential bidders for a target, there is strong possibility that the bidder in question will be unsuccessful. Target management and shareholders have an incentive to delay accepting the initial offer to give potential competitors time to also submit a bid.

Target management entrenchment

If target managers are entrenched and fearful for their jobs, it is likely that they will oppose a bidder's offer. Some firms have implemented "golden parachutes" (provide top managers of a target firm with attractive compensation rewards should the firm het taken over) for top managers to counteract their concerns about job security at the time of an offer.

In 2004, the European Commission issued a Takeover Directive, which applied to companies whose shares are traded on a public exchange. The most important rules in this Directive are:

- The equal-treatment rule and the mandatory-bid rule aim at protecting minority shareholders in takeovers. The mandatory bid-rule invites the investor to wait until the last moment before accepting the offer.
- Under the squeeze-out rule, the acquiring firm can force the remaining minority shareholders to sell their shared at the tender office price. Under the sell-out rule , the remaining shareholders can force the acquiring firm to buy their shares at a fair price.
- The board-neutrality rule requires that during takeover management will not take actions that may frustrate the takeover. This rule reduces management entrenchment with the result in reducing the probability that a target firm will oppose an acquisition.

There is another rule which is the breakthrough rule did not make it into the final Directive but can be opted out by individual countries. This rule mandates that a firm that has acquired a predefined percentage of shares can exercise votes on its shares as if all outstanding shares plus the firm's shares.

These rules can have an effect on the analysis of a takeover offer.