

The Valuation of Construction Companies

by

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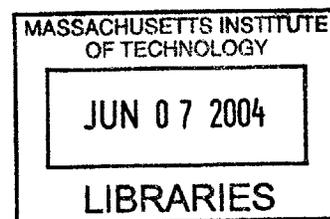
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ABSTRACT

The main objective of this thesis is to study the valuation of construction companies in mergers and acquisitions. The thesis is divided into three main parts; Mergers and Acquisitions, Valuation, and a Case Study.

Mergers and acquisitions are at the forefront of discussions in the industry. This is in large part because of the way in which they characterize and contribute to the new economy; for the pressures that they impart on global competition and for their role in promoting globalization through the diminishing importance of traditional geographic boundaries. The number of studies in mergers and acquisitions in the construction industry are minimal when compared to other industries such as banking and telecommunications. Consequently, this first part identifies the general different types and reasons for mergers and acquisitions while attempting to tailor them to the needs of a construction company.

The second part elaborates on the concept of valuation and on the different methodologies used by valuers when estimating the value of a construction company. The valuation approaches presented here can apply to all sizes and types of construction companies. Moreover, it is of fundamental importance that the valuator be familiar with the construction industry specifically as contractors typically retain the majority of their value in intangible assets.

The theoretical concepts discussed in the first two parts of the thesis are then applied to a case study. The case study that will be discussed is the merger of HOCHTIEF AG with Turner Corporation. The M&A activity and diversification of businesses at HOCHTIEF AG is discussed, in addition to the computation of an estimate value of the Turner Corporation.

Finally this thesis proposes the use of the asset-based or earnings-based approach as the most appropriate methodology in quantifying the value of a construction company. It also recommends that the use of three different approaches to valuation be applied so as to derive a value for the company after an assessment and appraisal of the value of the company has been completed. However, it must be noted that this valuation process can only begin to be accurate and complete if the valuator has a great deal of familiarity with the construction industry.

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*Edmond Sassine
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CHAPTER ONE

1. Introduction

1.1. History of Mergers and Acquisitions

The role of mergers and acquisitions has, inevitably, played a large role in developing our economy as large players and investors seek to control a greater and greater market share within a specific industry. The history of the role of mergers and acquisitions within our economy is fairly recent, dating back to the late 19th century and continuing in fluctuating waves throughout the subsequent ones (Stephens, 1968). The earliest period of acquisitions, between 1895 and 1904, saw an era of horizontal growth within a specific market sector or industry. The growth of corporate desire to dominate within a particular industry, through acquisition, forced government intervention within the market through the introduction of such regulatory measures such as the Sherman Act¹. A second wave of mergers and acquisitions, between 1925 and 1931, saw the development of horizontal growth within a sector but also the introduction of vertical growth, through the purchasing of suppliers and distributors, amongst others, into a single, integrated, corporation. Another feature of this wave of growth was the formation of utility holding companies which, in turn, led to further governmental involvement through the passing of the Public Utility Holding Company Act². The third wave, which began at the end of WWII and lasts to the present day, involved the development of vertical expansion techniques and saw

¹ The Sherman Act (antitrust) established in 1890, was intended to protect consumers from potential monopolistic tendencies of corporations or individuals.

² The Public Utility Holding Company Act of 1935, is a law that prevents utility holding companies from subsidizing unregulated business activities from the profits obtained through their regulated business. This law was passed to ensure that utility company holding owners did not capitalize on their position to the detriment of their customers or other individuals.

the beginning of the conglomerate-type corporation (Stephens, 1968). This final phase reflects a corporate desire to keep up with current trends of economic expansion and also to take advantage of Federal tax and financial structures. In fact, increasing the market share of a corporation, through the acquisition of another, is a relatively efficient way of increasing economic growth and of maintaining a competitive edge in the market place.

1.2. Preemptive Considerations Of The Buyer/Seller

Inevitably, a successful game plan is imperative to the successful effectuation of a merger or acquisition. A well organized division of labor is essential and prime responsibility should be assigned to an individual or a specific department. It is important that long and short-term objectives are spelt out and that the various strengths and weaknesses of the company are highlighted. Not only is it important to consider the immediate situation of the company but it is also necessary to forecast the future, through potential consumer demands and the results of research and development in the long run (Stephens, 1968). Another, often overlooked, consideration are the measures that need to be taken to ensure employee and, especially, management loyalty within the company after leadership has changed. It is important to remember that the decision to undertake acquisition proceedings is, in and of itself, a means to an end. It is easy, within our modern corporate culture, to assume that *what* is being purchased is more important than *why* a company should be acquired (Green, 1993).

Understandably, the objectives of both the buyers and the sellers within a merger or acquisition process vary considerably. Most commonly, the objectives for acquiring a company reflect a corporate desire to penetrate a new geographical market; the addition of new or similar products to their range, which would save considerable amounts on research and development; the

benefits of diversification (if the product line is extended) which provides a large degree of economic protection; an acquisition provides additional technical and managerial expertise; there is considerable improvement of the corporate image through financial growth and corporate expansion and also the possibility of diminishing any liabilities in the company through the benefits of acquiring another (Stephens, 1968). On the other hand, a willing buyer is not all that is necessary in this operation. Certainly there must also be companies that play the role of the willing seller and this position differs in its objectives from that of the buyer. A seller's objectives include; taking into consideration the needs of stockholders who wish to retire or who wish to diversify their invested capital; a need for further capital in order to finance expansive policies in order to promote economic growth; the possibility of improving marketing and technology operations whilst also diversifying their product range and discontinuing inefficient or non-profitable products or practices or, indeed, if there is internal dissent within the managerial ranks that only a corporate takeover could rectify (Stephens, 1968).

However, identifying the various objectives of the buyer and seller are not enough. Compatibility of these objectives is also an additional consideration and without this, the outcome of a merger/acquisition can be both problematic and costly. It is important that the weaknesses of the company be offset by the acquisition of another, in other words that the acquisition be directly beneficial to the company by diminishing its current liabilities and weaknesses. Determining whether or not the objectives of both the buyer and seller, as mentioned above, fit-in with one another and are compatible is as important a process as valuating the individual companies themselves (Green, 1993).

After having determined what objectives you are looking to fulfill, a buyer must start looking for potential companies to acquire. Amongst other places, if a direct ranked competitor is not

evident, it is possible to find potential candidates through trade publications, networking or other sources. In almost all cases, a great degree of negotiating competence will be required to ensure, primarily, a credible bid if not a successful transaction.

1.3. Valuation

The valuation process is, inevitably, one of the most complex parts of the merger/acquisition process. This is because a price must be established that is lucrative to the seller and yet still competitive to the buyer. It is common, however, for the buyer to pay more than the company is worth if the acquired company supposes future benefits that can be accrued through the long-term strategy of the buyer (Green, 1993). The process of valuation is so complex and integral to the endeavor that independent business valuers have been established to take the place that was commonly held by chartered accountants for private businesses and by investment bankers for public companies (Nurse, 2003). However, as will be discussed later, the valuing process is slowly but surely beginning to integrate the actual managers and owners of the company. The process is further complicated by the fact that the valuation of every business is a unique venture that requires considerable analysis. The role of the valuator, if external, is to accumulate the financial information and convey it in a comprehensible manner to all the parties involved. This role requires not only an understanding of the technical aspect but also the capacity to analyze things in such a way so as to fully comprehend the dynamics of the situation from a comprehensive and unbiased perspective.

While any valuation process has to be largely based on factual analysis, a certain amount of subjective analysis is both necessary and required. It has become increasingly hard to analyze the less tangible assets of a company and this has been partially resolved by the development of

the valuation of goodwill in mergers and acquisitions. This is the difference between the market value of a company and its purchase price which includes the intangible assets that take into consideration the future earnings and potential increase in success and growth. The valuation of intangible assets has been further developed and it is now common practice (if not mandatory) for intangible assets to be listed specifically within the financial statements of a corporation.

In valuing a company, it is useful, though not determining, to refer to the book value (which does not take into consideration either the economic or potential value of the company), if only to determine the lower limit of the range of the company. From the buyers' perspective, the full range of its offered price will be based on how much the purchase of the company is worth and is beneficial to the buyer. However, the market value of a company is generally used as a benchmark figure, especially when a company is listed publicly on a national securities exchange or if they are actively traded. The next phase of the valuing process involves an analysis of historical earnings that can be revised to reflect the anticipated returns or losses that were mentioned, within the preemptive objectives of both the buyer and the seller, such as, the role of new management, product diversification, market growth etc. Only after both parties have agreed upon the role of potential earnings can a selling/buying price be agreed upon.

The valuation process is not simpler but possibly clearer with large mergers and acquisitions cases, which are covered in great detail in the press and where considerable care is taken to ensure the veracity and completeness of the financial reports. However, the majority of mergers and acquisitions (60%) involve medium-sized private companies whose stock prices are unknown and where minimal public information is published (Evans, 2002). From this

perspective, it is a lot less clear if the objectives of the buyer and seller are being met and if the valuation process is being tackled from the right angle. For medium sized firms, it is not necessarily important to know only the fair-market value (the current value of the company to the present owners), it is also important to know its strategic value, or what the company could be worth to a strategic buyer who envisions the future trajectory of the company differently, and perhaps, from this perspective, greater returns can be anticipated.

1.4. The Tools of Valuation

Today, many managers within corporations prefer to learn the financial skills necessary to value their companies themselves, in order to be able to actively participate in the technicalities of a mergers and acquisitions deal and also to be able to be in greater control of the process and consequently minimize any potential losses and errors. As a consequence of this increase in participation of managers in the process, a variety of approaches to valuation have been seen. Some of these processes are less formal than others and are more dependant on instinctive rules of thumb and implicit understandings of the company (Luehrman, 1997). However, more formal methodologies, involving theories and fixed models have emerged and have set a distinct precedent over the past 25 years. In the 1970's, a formal method of valuation known as discounted cash flow analysis (DCF) became the norm and, in particular, one method of DCF, known as the weighted-average cost of capital (WACC) became a standard fixture of the valuation process. The WACC-based standard, which is now becoming increasingly obsolete due to improvements in computing and software and not for the methodology itself, indicates that that the value of a business is equal to its expected future cash flows discounted to present values. The DCF approach will be discussed in detail in chapter 3 of this thesis.

As the cost of computing drops, companies are now much more involved in the process of analysis and managers, and other financial service providers, are now much more aware of the various valuation tools available. These tools can be individually tailored to deal with specific contextual problems and this less generic approach should allow for minimal errors within the complex task of effectuating any mergers or acquisitions. Three main valuation problems have been identified, dealing respectively with operations, opportunities and ownership claims. Whilst in the past, these problems were dealt with as a whole, today, this is no longer necessary and each problem area, whilst still a function of the three fundamental factors of money, timing and risk, can be dealt with effectively and individually, through modern technology. In the long run, it can be hoped that individual tools dealing with these three specific problem areas, will eventually completely eliminate the need for WACC-based methodology to be applied (Luehrman, 1997).

1.5. Structuring and Completing the Deal

The process, from beginning to end of a merger or acquisition is neither easy nor foolproof. A detailed, and at times complicated, analysis is required both preemptively and during the valuation process so as to ensure that no party involved is wrongly valued and therefore possibly seeking to gain unfairly from the operation. It has been noted that different tools are available either for managers within the company or for specialized financial service providers to help gauge more accurately whether or not the analysis of the company is being handled correctly. Once all of this analysis is complete, the owners are finally ready to embark on the final stage of the whole process, that of structuring and completing the deal. A letter of intent, while not

binding, has to be sent in order to begin final purchase and sale transactions. Once this process has begun, experts are brought in to conduct due diligence, a process of verifying the accuracy of the financial reports and the analysis of the companies assets in order to ensure that both parties have a complete and accurate picture of the standing of the other. During the process of due diligence, either party can choose to cease negotiations at any point. Both parties should endeavor to facilitate the transaction further by insuring that complete and accurate information is provided to all employees and that public statements are made to the press, customers and shareholders (Green, 1993). After this constant process of checks and balances, and if no party should choose to retract from negotiations, then a deal can be finalized and a merger or acquisition effectuated.

CHAPTER TWO

2. Mergers and Acquisitions

2.1. Methods of Growth

There are two basic methods to business growth in the construction industry. The first is the traditional method of growing internally or organic growth. This type of growth begins by opening offices in new markets or by offering new additional services. The second method of growth is through strategic acquisitions.

Organic Growth

Pursuing an internal growth strategy is relatively simple. The process requires identification of opportunities, conduction of an extensive market research study on a new geographic market area, the development of a strategic action plan and then, finally, its execution (Brahinsky, n.d.).

Organic growth has several advantages:

- The growth is targeted to specific markets, customers, or services.
- The pace of growth can be managed as required.
- Costs can be controlled and the investment closely monitored.
- Personnel, management styles, and culture are known.

The disadvantages of organic growth include:

- Growth is slow and requires significant management attention and patience.
- Personnel must be either transferred from other areas or recruited for the task.

- Additional burdens are added to existing administrative functions.
- Existing competitors in the market or segment you are attempting to penetrate will seek to protect their position by lowering margins, and possibly also influencing suppliers or subcontractors.

Growth via Strategic Acquisition

Growth by strategic acquisition is usually employed by organizations that want to grow at a faster rate than is possible using the organic growth approach. In general, these companies do not have the human resources or expertise to expand. The process begins by identifying opportunities to exploit. The focus in this method of growth is on finding a company in the particular niche or geographic area that you are seeking and then acquiring it.

Growth via strategic acquisition has the following advantages:

- Significant growth can be achieved in a short amount of time.
- Personnel, expertise, and reputation are acquired.
- Existing relationships with owners, suppliers, subcontractors, and regulatory agencies are instantly established and transferred.
- Opportunities exist to share the best practices between entities.
- Career opportunities increase for the employees of both firms.

Disadvantages of growth through strategic acquisition include:

- A higher risk is taken with more up-front capital employed.
- The fit may not be perfect with particular regard to the size, services, location, or culture.
- Integration and cultural risks are significant.

2.2. Mergers vs. Acquisitions

Mergers and Acquisitions have long played an important role in the growth of firms. Growth is generally viewed as vital to the well-being of a firm.

Merger. A merger takes place when two or more firms combine to form a single enterprise, owned by a single set of stockholders and run by a single management staff. Mergers are classified according to how the merger takes place, the management's attitude towards the merger and relationships between the merging parties. The two major means by which firms merge are the sales of assets or the sale of exchange stock. An example is Bilfinger + Berger, the German construction company which resulted from a merger between Grün-Bilfinger and Julius Berger-Bauboag.

Acquisitions. An acquisition is the purchase by one company of a substantial part of the assets or securities/stocks, normally for the purpose of restructuring the operations of the acquired entity. The purchase may be a division of the target firm or a substantial part of the target's voting shares. Examples are the acquisition of Beacon Construction by Skanska, the world's largest contractor, and the acquisition of the Turner Construction by another German contractor, Hochtief.

The valuation procedure for either a merger or an acquisition is the same (Mastracchio, 2002). In a merger, the different parties decide over how relative value will translate into the percentage of ownership each one of them will have in the new company. However, in an acquisition, the parties negotiate over how the relative value contributed by the target (potential acquisition/seller) company to the acquiring company (buyer) will translate into the purchase price.

2.2.1. Mergers

Although a merger involves a combination of two or more companies, they are rarely equal participants. Sometimes a merger is an acquisition financed by common stock. Mergers are in general more expensive than acquisitions.

There are several ways to structure a merger. In a forward merger, the target merges into the acquirer's company, and the selling shareholders receive the acquirer's stock. In a reverse merger, the acquirer merges into the target company and takes-over the company's stock. A private firm may adopt a reverse merger with a public one as a way to go public at a lesser cost and with less cost dilution than through an initial public offering (IPO) (Mastracchio, 2002). In a subsidiary merger, an acquirer incorporates an acquisition subsidiary and merges it with the target company. In a triangular merger, the target's company's assets are conveyed to the acquirer's company in exchange for the acquirer's stock.

There are many reasons for parties to choose to merge instead of acquiring. Some of the more frequently encountered reasons are:

- A merger does not require cash
- A merger may be accomplished tax-free for both parties
- A merger lets the target (seller) realize the appreciation potential of the merged entity, instead of being limited to sales proceeds.
- A merger allows the shareholders of smaller entities to own a piece of a larger pie, thus increasing their overall net worth.
- A merger of a privately-held company with a publicly-held one allows the target company's shareholders to receive a public company's stock.

- A merger allows the acquirer to avoid many of the costly and time-consuming aspects of assets purchases.
- Finally, upon obtaining the required number of votes from stockholders in support of a merger, the transaction becomes effective and dissenting shareholders are obliged to accept the decision.

2.2.2. Acquisitions

There are several forms of payment for an acquisition; stock offers involve the use of acquirer's stock, cash offers involve simple cash payment, or there could be a mixture of both stock and cash.

Stock Acquisitions. In a stock acquisition, the acquirer purchases all or a substantial part of the common stock of the target company for a specified price. The buyer replaces the selling stockholders as the owner of the target company (Mastracchio, 2002).

Advantages of a stock acquisition are:

- It is a faster and easier transaction than an asset purchase, where assignment of leases and contracts, and bulk-sales notices must be addressed.
- If the target company is publicly-traded, tender offers to stockholders can preempt time-consuming and costly negotiations.
- The acquirer does not experience the dilution of ownership that occurs in a merger.

The main disadvantage of a stock purchase is that the acquirer may assume actual and contingent liabilities that can cause significant unintended legal exposure. Another potential problem is that dissenting shareholders may prevent the buyer from gaining control of all the outstanding stock of the target company.

Asset Purchases. They are commonly used to protect the buyer from unforeseen liabilities. In an asset purchase, the buyer purchases specific assets and perhaps some liabilities that are explicitly detailed. In general, the acquirer performs due diligence on the specific assets and liabilities to be acquired. Only those assets and liabilities that are expected to be part of the transaction are subject to due diligence. If an asset or liability is not in the initial contract, it will stay with the seller.

Asset purchases can work for the parties when:

- The buyer explicitly doesn't want to acquire some of the assets of the target company, such as real estate or leases.
- The parties cannot agree on the value of the particular assets or liabilities and the seller is willing to keep them.
- The seller's objective for the overall proceeds can be met only by allowing it to retain certain assets that can be leased to the buyer or sold to a third party.
- The buyer cannot raise enough capital to purchase all the target company's assets.
- The buyer wants a stepped-up tax basis for the assets.
- The buyer does not want to chance the assumption of unknown liabilities.

2.3. Types of Mergers & Acquisitions

There are several types of acquisitions; they are classified as horizontal, vertical, or conglomerate acquisitions.

Horizontal Acquisitions. One firm acquires another firm operating in the same industry. The main purposes of such type of acquisition are consolidation within the industry and increase in market power.

Vertical Acquisitions. The acquired firm is usually either a supplier or a customer of the acquiring company.

Conglomerate. A conglomerate merger is characterized by the combination of firms whose economic activities are fairly unrelated. Such mergers often appear to have diversification of risk and financial synergies as motivators, rather than the achievement of economies of scale. Because of the cyclical nature of the construction industry, firms sometimes merge with or acquire companies in different sectors with the objective of reducing their dependence on a volatile source of revenue.

Consolidation. The corporate combination of merging firms which results in the formation of an entirely new company is known as consolidation. As a consequence, both of the combining firms lose their separate corporate identities as opposed to an acquisition where only one firm loses its corporate existence. Firms in the building materials industry are consolidating into larger companies in order to achieve economies of scale and share the best management practices.

Sell-offs. They are considered the opposite of mergers and acquisitions. The two major types of sell-offs are spin-offs and divestitures. In a spin-off, a separate new legal entity is formed with its shares distributed to existing shareholders of the parent company in the same proportions as in the parent company. In contrast, divestitures involve the sale of a portion of the firm to an outside party with cash or equivalent consideration received by the divesting firm.

2.4. Reasons for Mergers and Acquisitions

Acquisitions in the construction industry are a fairly recent phenomenon. Until the mid-1970s, the conventional wisdom was that no one would ever actually buy a construction company and if you wanted to expand into a specific market you simply opened a new office (Rice, n.d.)

Every transaction is unique and has its own specific reasons, but there are some common objectives and motivations that guide the strategic plan such as growth, diversification, geographic expansion, market penetration and some few others.

Growth. Most construction companies have growth as a key objective and an acquisition provides the fastest means to achieve this growth. It allows the buyer to obtain the needed resources or utilize the existing resources in an efficient way.

Diversification. Since survival is ultimately the key objective of a business, and knowing the tormented cyclic aspect of the construction industry, making sure that the company has market opportunities in more than one segment or sector of the industry is a wise strategy to pursue.

Organizational Development. One of the key challenges to any business is to attract and retain managers who can continue it profitably. As a result, an acquisition can be a way of securing talented management from the acquired company. Also, sometimes a company is in the fortunate position of having more key managers than there are positions for those managers. Sometimes an acquisition can create an opportunity for key executives to take over and manage a business unit.

Work Force Enhancement. One of the major obstacles to entering a new market is the availability of a qualified work force and labor. One way to secure that work force is to purchase a company already operating in the target market. If the market is controlled by a few key players with key local relationships, then acquisition becomes the only practical solution for entering that particular segment.

Customer Demand. One of the basic rules in business is to keep the customer happy. As a result, if customers want you to follow them into a new market, you may need additional skills to be able to serve them adequately. An acquisition then could be one of the ways to secure those resources. In other cases, your business strategy would be to offer new services to your existing

customer base; if you do not have the skills internally to be able to provide such services, then securing that capability through acquisition may be a viable strategy.

Geographical Expansion. This is one of the most common reasons for making an acquisition in the construction industry. Many companies are seeking geographic diversification to reduce the risk of a downturn in a given market. Although opening an office in that specific market is still a common strategy, but one way of having instant penetration is to purchase a local firm.

Asset Accumulation. In some cases, key assets needed for expansion are owned by another firm and the only way to secure those assets is to acquire that firm. An example of this would be a general contractor acquiring a ready mix site or an infrastructure contractor acquiring an asphalt plant.

Customer Base. If you are trying to break into a market segment, or want to work with a new type of customer, it might be more intelligent to make an acquisition of a firm that is already established there than try to steal customers via low pricing. In general, customers are very loyal to a particular firm; an acquisition becomes one of the ways to purchase that loyalty. Moreover, becoming pre-qualified can be accelerated by buying a firm that has a track record in the specific area you have targeted.

Competition Consolidation. If your company is working in a segment/market that is saturated and that has many competitors, then buying one of your competitors will not help the situation very much. However, if there are 2 or 3 competitors, then buying one of them can be a very successful strategy.

Vertical Integration. One form of vertical integration is buying a firm that supplies you with services or products. Acquiring a supplier can guarantee a source of supply of some product or service and eliminate the margin that the supplier has been earning. The other type of vertical

integration is purchasing a customer. Buying a customer can guarantee an outlet for your service or product, and enhance your profit by eliminating the margin charged by the customer.

Financial Synergies. A company with excess cash and not enough investment opportunities may want to take over a cash-strapped firm with profitable investment opportunities. The value of these synergies represents the value of projects that would otherwise have not been taken.

Tax Synergies. A company that is paying high taxes on its income may want to acquire another firm with accumulated tax losses in order to reduce its own taxes or vice-versa. The value of these synergies represents the present value of taxes saved due to the acquisition.

2.5. Reasons for Failure of Acquisitions

Several potential pitfalls may threaten an acquisition and be a reason for its failure; even the best-engineered acquisitions are not certain to be error-free (Tanner, 1991), 50 percent of acquisitions fail in all industries. Some of these fatal errors are discussed below:

The Wrong Target. This mistake goes to the heart of any strategic acquisition. It becomes increasingly visible as time passes after the acquisition, when the acquirer may realize that anticipated synergies just don't exist, the intended/expanded market just isn't there.

The first step to avoid such error is for the acquirer to determine the strategic goals and identify the mission. The product of this strategic review will result in the criteria of for the target company. The second step is to identify the right target and as a result carry-out an effective due diligence process. Good due diligence is critical to avoiding almost every mistake in an acquisition. Due diligence provides the opportunity to ascertain whether the target indeed has the identified set of qualities selected in the strategic review.

The Wrong Price. Paying too much will often lead to failure. For a patient acquirer with long-term objectives, overpaying may be less harmful than a financial acquirer looking for quick profits. Nevertheless, overpaying may divert needed acquirer resources and adversely affect the firm's borrowing capacity. Even if the acquirer can survive these problems, overpaying will reduce future operating flexibility. Companies overpay for a variety of reasons. A first reason is that acquirers are over optimistic in their valuation model. The model includes assumptions concerning industry trends and growth patterns developed in the strategic review. Assumptions such as rapid growth continuing indefinitely, a market rebounding from a cyclical slump or a company "turning around", can sometimes lead acquirers to overpay³. A second possible reason is an over-estimation of the synergies that the merged company will experience. A third and final reason is simply that the acquirer overbids; in the heat of the deal, the acquirer may find it all too easy to bid up the price beyond the limits of reasonable valuations. An example of this is the recent acquisition (Dec. 2003) of Lockwood Greene, a subsidiary of the bankrupt firm J.A. Jones, by CH2M Hill for \$95.5 million from an initial price of \$75 million.

The Wrong Structure. The structure of an acquisition incorporate the legal structure chosen for the entities, the geographic jurisdiction chosen for newly created entities, and the capitalization structure selected for the company after the acquisition. A wrong structure may lead to an inability to repatriate earnings or the ability to do so at a high tax cost, regulatory problems that delay or prevent realization of the anticipated benefits, inefficient pricing of debt and equity securities or a limited choice of exit strategies due to inflexibilities in the legal structure.

³ "A Note on Mergers and Acquisitions and Valuation", Ivey Business School Cases, Case# 95B023, Ivey Publishing, Richard Ivey School of Business.

The two principal aspects of the acquisition process that may prevent this problem are a comprehensive regulatory compliance review and tax and legal analysis. Regulatory aspects that must be considered include foreign ownership laws, import and export regulations, securities laws and listing requirements. The legal and tax analysis should help develop the most efficient acquisition structure. Complex tax models can assist in selecting a structure – both capital and geographic – that most efficiently provides the company enough flexibility to achieve its strategic goals. Legal analysis may lead to a choice of organizational jurisdiction, location of operations, and favorable organizational attributes. Without a comprehensive regulatory compliance review and legal and tax analysis, the acquirer may risk the financial viability of the entire transaction.

Management Difficulties. Lack of attention to management issues may lead to the failure of the acquisition. These problems can range from failure to provide management continuity or clear lines of authority after a merger to incentives that cause the management to head the company in the wrong direction. Problems also arise when hidden defects in the management team go undiscovered and become apparent at a later time when the solution may be substantially more expensive and troublesome.

The reasons and goals of the acquisition should be communicated both to the buyer's and seller's management teams. Communication alone is not enough to prevent problems. The management compensation structure must be designed to achieve these goals. The financial rewards must depend upon the financial and strategic success of the combined new entity.

The Operating Transition Crisis. The principal constraint on smooth implementation are usually human; poor interaction of personnel between the two preexisting management structures and resistance to new systems. Problems may also arise from the high attention to the new

strategic vision and low attention to the 'nuts and bolts' of continuing business operations. Another reason is that the combined entity may have an inflexible structure that cannot deal with a constantly changing environment. Finally, the acquirer discovers that the target's business has aspects not identified in the due diligence review that differ from reality.

A solution to avoid such problems is to form a transition team, focused on these issues, prior to the completion of the acquisition and continue as an active force thereafter as well.

2.6. Construction Company: Experienced Goods

A construction company is principally a group of people who know how to procure, perform and get paid for construction services⁴. Take a few top people out of most construction companies, and the company loses focus quickly. Key people can lose motivation, go to competitors, or even become new competitors by opening their own firm. As a result, the expression "Our people are our key assets" is true for construction companies. An acquisition in construction is more like a marriage than an investment. To have a better synergy between the acquiring and the acquired company it is recommended to have "on the same pillow the same language and same culture". There are no good hostile takeovers in contracting. Financial analysis is meaningless without cultural fit and consideration for compatibility and retention of the organization.

Acquiring a company often destroys some of its value (Phoenix, n.d.). An acquisition changes almost everything about a company unless there are no plans for integrating the companies. In general, acquisitions do not fail because a buyer pays 10 percent or even 20 percent too much; they fail because of people issues such as poor integration or poor cultural fit. Management problems often arise after a merger (Moavenzadeh, 1989). Cultural clashes are a major reason for

⁴ "Acquisition and Strategy – The Fundamentals for Contracting Firms", M&A Advisor – FMI, Spring 2002, Volume 4, Issue 2.

failure, caused by differences in management styles, compensation practices and organizational structures. Such differences are common even between firms that share the same business specialty.

As a result, a construction company should not become enamored by marketing strategies, operational efficiencies, and financial potential and make out of them their only focus. The construction business is fundamentally the people's ability to procure, perform and get paid for its services. Strategies without people to execute them will fail. The acquirer should consider and plan to make sure that the people are aligned behind the new strategy.

Furthermore, the acquirer should formulate an operating strategy to build people. This will support organic growth and provide leaders for the acquired firms in case any of the management decides to leave. It is important to develop leaders and not just managers. There is a difference between management and leadership. Managers implement plans and direct people, while leaders drive the firm and set direction for the business. A successful company needs both.

2.7. Accounting for M&A: Pooling vs. Purchase

- Under the pooling of assets, the balance sheets of the two companies are simply added up at their current book values.
- Under purchase accounting, the premium paid for the net tangible assets (invested capital) of the target company over and above their fair market value is shown as good will on the asset side of the balance sheet. The assets are also written-up from the perspective of their historical value to their current appraised value.

Financial theory would say that whether a company uses pooling or purchase accounting (holding all else constant) should have no effect on firm value since the choice of accounting method has no cash flow implications.

2.8. Tax Implications of Mergers and Acquisitions

Taxable Acquisitions

- The target stockholders are treated, for tax purposes, as having *sold* their shares and they must pay tax on any capital gains (or receive tax shields on losses).
- The assets of the target firm are revalued at the fair market value and form the tax basis for depreciation. The write-up of assets is treated as a taxable capital gain for the acquirer.

Tax-free Acquisitions

- The target shareholders are viewed as exchanging their old shares for new ones; no capital gains or losses are recognized.
- In a tax-free acquisition, the merged firm is taxed as if the two firms had always been one entity. There are no incremental depreciation tax shields nor are there any taxable capital gains or losses.

2.9. Valuing Mergers & Acquisitions

The following framework attempts to examine, conceptually, why the value of a company to the potential buyer (acquirer) may differ from the value of the firm to the seller (i.e., the value of the firm in its current form of operations).

V_T	=	Stand-alone value of the target.
V_A	=	Stand-alone value of the acquirer.
V	=	Value of the combined company.
P	=	Price paid for the target (purchase price)
ΔV	=	Value created by the acquisition.
V_S	=	Value of synergies from the acquisition.
V_C	=	Value from better managing (control premium)

Value created by the acquisition:

$$\Delta V = V - (V_A + V_T) \text{ (assumes } V \neq V_A + V_T)$$

$$\text{Maximum price for the target, } P = V_T + \Delta V$$

This assumes that all of the value created by the acquisition is accrued to the target shareholders.

$$\begin{aligned} \text{Value created for the buyer} &= \text{Maximum price for the target} - \text{Purchase price} \\ &= (V_T + \Delta V) - P \end{aligned}$$

The value created by the acquisition:

$$\Delta V = V_S + V_C$$

The model above is not meant to provide a precise valuation of M&A deals, but rather is meant to describe and incorporate many M&A theories described previously and to emphasize why an acquirer may be willing to pay a premium over the present value of the firm. It is interesting to mention that in most cases the value to the buyer will be greater than the value to the seller.

The next chapter will be covering the methods on how to compute the stand-alone value (V_T) of the company to be acquired.

CHAPTER THREE

3. Valuation of Construction Companies

3.1. Valuing a Business Acquisition Opportunity: The Target Company

The process of choosing a target company for acquisition is very involved and complex. In the USA there are search firms specialized in this kind of work in every industry. The engineering and architectural design industry has firms specializing in these searches.

When one proceeds with an acquisition the sellers will have to inform the buyers of all current law suits the company is facing. They have also to inform the buyers about all the potential law suits that they know the company may face in the future due to previous work activities. The buyer will have to factor the cost of these suits into his valuation of the firm. In addition to this, the buyers will perform what is called “Due Diligence” by means of which they make a technical and financial audit of the operations of the firm before they decide on what kind of offer to make to the sellers. It is the duty of the sellers to make all books and records available for review by representatives of the buyers. This due diligence process involves engineers, accountants and lawyers.

Sometimes the sellers and buyers will mutually agree to set aside in an “escrow account”; a certain portion of the acquisition price out of which the company will settle the cost of the potential law suits if they ever materialize. The sum of money remaining in the escrow account, if any, is released to the old owners after the expiry of an agreed period of time if there are no suits filed or pending against the company.

The valuation of a construction firm is carried out after the due diligence is completed. The true profitability of the firm for the past few years would have been established as a result of the due diligence. The current backlog of the firm is established as well as a projection of the sales the firm is expected to make for the coming three or five years. The projections would be made in light of the sales record of the company in the past few years. In making these projections the team will have to forecast the economic environment in which the company is expected to operate. As a result, determining the value of a construction company is a complex and, ultimately, subjective process that depends heavily on the experience, judgment, and expertise of the appraiser as well as on the reasons conducting the valuation.

3.2. Valuation Process

Business valuation is partly an art and partly a science. The term ‘judgment’ may be regarded as an ‘art’; the term ‘systematic’ may also be related to ‘science’ (Link, 1999). There are many dimensions of the art in business valuation that are listed as follows:

- Understanding the economically efficient life of productive assets.
- Understanding the economically relevant industry in which the business is valued.
- Understanding the appropriateness of one valuation method.
- Understanding the limitations of financial information from comparable businesses.
- Understanding the economic environment.

There are also many dimensions of the science in the business valuation, and they are as follows:

- General accounting principles and the financial data of the business.

- Facts associated with the historical growth of the business.
- Extrapolation of financial data into future time periods.
- Calculation of various valuation ratios and statistical formulae.

A business valuation is often dependent on the valuator’s knowledge of both the accounting concepts and of the economic concepts. Accounting is a systematic way of documenting the business’s financial activities, while economics is a systematic way of understanding the market environment in which the business’s financial activities take place. Accounting methods are relatively more static in nature than economic methods; there are more systematic practices and principles that guide the application of accounting methods. There is rarely a situation where all aspects of a valuation are accounting related or all aspects are economics related.

3.3. Valuation Methods and Techniques

Understanding the mechanisms of company valuation is an indispensable requisite. In addition to its importance in mergers and acquisitions, valuation is useful in identifying sources of economic value creation and destruction within a company.

The methods for valuing a company can be classified in six groups (Fernandez, 2001a):

MAIN VALUATION METHODS					
Balance Sheet/ Assets-Based	Earnings- Based/ Market- Based	Mixed/ Goodwill	DCF	Value Creation	Options
Book Value	P/E	Classic	Free Cash Flow	EVA	Black and Scholes
Adjusted Book Value	P/EBIT	Accounting Experts	Equity Cash Flow	Economic Profit	Investment Option
Liquidation Value	P/EBITDA	Abbreviated Income	Capital Cash Flow	Cash Value Added	Expand the Project
Replacement Value	P/Revenues		Dividends	CFROI	Delay the Investment
			APV		Alternative Uses

Table 3.1 The main valuation methods

Valuation of a construction company includes both general and industry specific considerations (Hamm, n.d.). In general, Valuation practitioners in the construction industry use three basic types of approaches to derive value.

The first valuation method, the asset-based approach, is based on the basis that the value of a business is no more than the cumulative market value of the assets it owns minus its liabilities. For a company to create a “goodwill value” above net asset value requires that people, systems, and procedures be in place to generate continuous sales growth and profits. Examples of factors that add to goodwill include continuing customer relationships, depth of management and delegation of duties, low employee turnover, special techniques, and processes and procedures that are company-specific and which are difficult for competitors to copy.

The second type is a market-based approach. This is based on the premise that prices for comparable publicly traded or private company sales indicate the value of the firm being valued. Common financial ratios used for comparison, after adjusting for size and other differences, include, among others, price per sales, price per earnings (P/E or PER), price per equity, and price per cash flow.

The third valuation approach, discounting cash flow (DCF) approach, assumes that assets are no more than tolls used to generate an earnings stream and that an investor will pay the present value of that earnings stream (Funsten, n.d.), after adjusting those earnings for risk; the higher the risk, the lower the present value.

There is a controversy in the construction industry about the right approach to use since these approaches fail to recognize the intangible value of a construction firm, which derives much of its wealth-generating power from human knowledge, skills, reputation and experienced goods⁵.

⁵ “Finance for Managers”, Harvard Business Essentials, Harvard Business School Press.

3.4. Asset-Based Valuation

One approach of valuing a company is to look at the underlying worth of the assets of the business. Asset valuation is a measure of the investor's exposure to risk. In some instances, an increase in the value of the assets of a company may represent a major portion of the investor's anticipated return.

Typically, a construction company's assets can be grouped into four different categories: financial assets, real properties, tangible properties, and intangible and intellectual assets. As a result, this method requires two steps. In the first step, the appraiser estimates the cost to replicate or reproduce the financial assets, real properties, and tangible properties of the company. In the second step the valuator adjusts for intangibles. This approach is typically applied to the total assets of the firm and thus produces a valuation number for the combined debt and equity holders. The valuation for the firm's equity can then be estimated by subtracting the market value of the debt.

Depending on the nature of the assets and the purpose for valuation, the following common variations for the asset-based approach can be used in step one: book value, adjusted book value, and liquidation value.

1. Book value is the net worth of a firm as defined by GAAP (Generally Accepted Accounting Principles). It is the value of a firm's assets minus its liabilities, as stated in a balance sheet. It is the most obvious asset value that a prospective buyer can examine, but it is only a starting point. This approach should be used if the book values are close to market values (i.e. recently purchased or formed company).
2. Adjusted book value is the value of the firm's assets and liabilities regardless of GAAP standards. A modification of the stated book value is to adjust for large differences

between the stated book value and the actual market value of tangible assets, such as buildings and equipment which have been depreciated far below their market value, or land which has substantially appreciated above its book value, which stands at the original cost. Other common balance-sheet adjustments include those for uncollectible receivables, miscellaneous inventory that has been expensed to jobs and pending claims and litigations. This approach should be used if book values are significantly different from market values and market values are ascertainable.

Financial assets, current assets in accounting terminology, include cash, accounts and notes receivable, prepaid expenses, inventory and retainage (Reilly, 1990).

- In general, the value of the company's current cash value is already stated at market value.
- Adjusted book value of accounts and notes receivables is the present value of anticipated collections.
- Prepaid expenses, typically, include prepaid rent, prepaid insurance, and prepaid utilities. The cost of these assets is an indicative of their market value.
- Materials and supplies in inventory should be valued at current replacement cost.
- Retainage is usually 10% of the contract amount. It is held by the owner and given-back to the contractor a year after the substantial completion of the project. Consequently, retainage is valued at the present value of the anticipated future payment. The discount rate used should reflect both the time value of money and the risk of nonpayment (or partial payment).

The real and tangible properties of most construction companies include land, buildings and improvements, office furniture, machinery and equipment.

- Undeveloped land is valued using the market data comparison approach. This approach compares the subject land to recent sales of similar properties. Moreover, some adjustments in value for factors such as size, topography, location, and zoning should apply.
- The approach of valuing improved land consists of two steps. The first step is to value the land as if it were undeveloped. The second step is to appraise the improvement separately. The estimate of improvements is done using current cost estimation manuals. Finally the values we get from the two steps are summed to give us the market value of the improved land.
- Office furniture and fixtures, machinery and equipment should all be valued at current replacement/substitution costs. Furthermore, all forms of obsolescence (i.e., loss in the utility of an asset due to the development of improved or superior equipment, but not due to physical deterioration) should be quantified and subtracted from the replacement cost.

The final product of this approach is a financial statement (fair market value basis) that is very comparative to a traditional balance sheet (historical cost basis).

3. Liquidation value assumes the firm will be liquidated and captures typical liquidation costs. These include slow payment of receivables, ongoing overhead as projects wind down, bonuses to maintain current staff on projects, preparation of fixed assets for sale, and taxes. As a very broad rule of thumb, the liquidation value of a contracting firm is 20% to 50% less than its adjusted book value.

The liquidation value, it should be noted, is only an indication of what might be realized if the firm was liquidated immediately. One would assume, therefore, that the liquidation

value would represent some kind of a floor below which the seller would be unwilling to sell because he should be able to liquidate the company himself. This approach should be used if the purpose is to assess the collateral value of the assets that could be affected by bankruptcy.

As is usually the case, the liquidation value is the lowest, the adjusted book value is the highest, and the book value is somewhere in-between.

The asset-based approach to valuation, outlined above, does not include the value of a company's intangible assets. Consequently, step two is to add or subtract the value of intangibles. Most companies have some intangible values that stem from brand-name recognition, relationships with clients and customers, reputation, uniqueness of experience and specialty, along with a variety of other values that are not captured in accounting numbers. Some companies with pending legal problems or unfavorable long-term contracts could have negative intangibles. If the company was recently sold, the accounting or book value may include intangibles in a goodwill account. Although the valuation of intangibles is subjective at best, it is a necessary part of all asset-based approaches.

3.4.1. Valuation of Intangible and intellectual Assets

Even though this section falls under the Asset-based approach, but the concepts discussed can be applied to any of the three valuation approaches when quantifying intangible and intellectual assets of a construction company.

Typically, a construction company has the following intangible assets: contracts in progress, outstanding contract proposals, a trade/brand name, a trained and assembled work force, management employment contracts, and favorable supplier contracts (Reilly, 1990).

- Contracts in progress represent the remaining portion of each construction job in progress. The contract duration can be for a year or less and up to 30 years in the case of a concession. Consequently, the market value of these contracts is the present value of the remaining income to be earned by completing the contract. The discounted present value should reflect the time value of money in addition to the risk associated with the probability of not completing the project.
- The market value of outstanding contract proposals is calculated in a similar manner as contracts in progress. However, in the case of outstanding contract proposals, the construction company has not yet been awarded the contract. As a result the market value becomes the present value of the income associated with the contract award reflecting the time value of money, the risk of not being awarded the contract, and the risk of not completing the project if awarded.
- A recognizable trade/brand name is a key intangible asset for a construction firm. The relevant population/consumer that is interested in a contractor's trade name is the real estate executives, institutional and corporate executives, governmental agencies, etc. While a subcontractor's trade name is of interest only to the population of general contractors. Therefore, the market value of the construction company's trade name is the present value of the costs associated with recreating the current level of consumer awareness and recognition. These costs are represented by the reproduction costs of historical promotional, advertising, and public relations expenditures.

- The most valuable intangible asset of a construction company is its trained and assembled work force (i.e. intellectual assets). The work force includes salaried personnel on the contractor's payroll such as administrative staff and engineers. In general, the labor is not included unless it's a specialty labor or in-house trained labor whose skills and capabilities are irreplaceable. A common method of valuing assets falling under this category is to quantify the cost to recruit, hire, and train a replacement work force of similar quality and experience. These costs will typically include employment ads, employment agency fees, human resources department's staff salaries and expenses. For some managerial and technical employees, the cost could also include headhunter fees, employee signing bonuses, and employee relocation expenses. Moreover, a training, orientation, and adjustment period of 6 months to a year should be quantified as additional costs. During this period the company is considered to be investing in the employee.
- A construction company may have employment contracts with executives, marketing managers, cost estimation managers, and consultants. The market value of these intangible assets is simply the value of the capitalized cost savings associated with not having to recruit, hire, and train substitute employees during the contract period.
- Some construction companies enjoy special relationships with their suppliers and sub-contractors. These favorable relations or special treatments result in price discounts on construction materials, more favorable credit terms, lower profit margins, or any other types of economic benefits not enjoyed by their competitors. The market value of these favorable relations is the present value of the projected economic benefits (decrease in material costs, labor costs, operating or overhead costs associated with supplier). Each

relationship should be analyzed individually over the legal life of the supply contract or over the anticipated term of the supplier relationship.

3.5. Earnings-Based Valuation

The earnings-based approach or market-based approach has, as its premise, two variables: (1) some level of annualized earnings that is presumed to be sustainable in the future and (2) a multiple of those earnings, which is usually expressed as a price/earnings ratio (P/E). The approach involves multiplying the earnings figures by the price to earnings ratio.

Earnings used in this approach should be:

- *Recurring.* Recurring earnings are expected to continue in the future from ongoing operations; they reflect the company's future performance. For example, earnings from discontinued operations or extraordinarily profitable joint ventures shouldn't be considered ongoing. Moreover, in small, closely-held firms, particular attention should be given to the salaries of the owner-managers and members of their families. If these salaries have been unreasonably high or low in light of the nature/size/performance of the business and the duties performed, some adjustment of the earnings is required. Further, the depreciation rates used should also be assessed in order to determine their validity and to estimate the need for any earnings adjustments for the future. The amount of federal and state income taxes paid in the past may influence future earnings because of carryover and carry-back provisions in the tax laws. Expenses should be reviewed to determine that they are normal and do not contain extraordinary expenses.

- *Operating.* Operating earnings should only be considered to the extent that they result directly from operations. For example, unusually high interest and dividend income or gain/loss on the disposal of assets (for a contractor that is fixed-asset intensive) are typically adjusted. The earnings stream must result directly from construction operations.

- *Sustainable.* Sustainable earnings should cover a period of time that experienced conditions that are likely to recur in the future. Projecting future earnings is extraordinarily difficult in the construction industry, so prior period results are most often used as a predictor. Typically, earnings averaged over an entire economic cycle are considered most relevant.

The following factors are assessed when considering the relative merit of an asset-based valuation versus an earnings-based valuation:

- *Earnings Quality.* Earnings quality is a key determinant in the selection of a P/E ratio. Buyers typically focus on the following factors in determining an appropriate P/E ratio (Funsten, n.d.):
 1. Degree of self-performance, with more self-performance translating into a higher relative multiple (More self-performance suggests control over scarce resource of labor, the ability to develop specific competencies, the capability to perform work internally, more flexibility from a pricing standpoint, and the ability to influence schedule and quality).

2. Historic volatility and trends of earnings, with volatile earnings implying significant relative risk. A steady, predictable earnings stream is an important value driver in the construction industry. Earnings stability indicates a sound market environment, competent management, and sound projections of estimated costs to complete work in progress. Second, declining margin trends imply an eroding marketplace, unproductive workforce, and inadequate cost control, while growing margins clearly indicate the opposite.
3. Participation in attractive markets, growing, and unique niches. Contractors with unusual capabilities and skills have a higher value because of fewer competitors and a perceived value in the eyes of the customers.
4. Earnings from repeat customers – customer retention and repeat business imply a solid project management effort and a predictable source of recurring business.
5. Revenues generated from a variety of owners – dependency on a select few customers is a risky proposition that creates undue exposure to the whims of an individual owner.
6. Consistency of project budgets to actual results. Estimates must estimate must demonstrate foresight regarding material and labor prices, production rates, schedule, and scope of work for projects that may last several years. The consistency with which actual costs approximate with project budgets adds value to the business.
7. Consistency of bid results, in terms of both “hit rates” (ratio of jobs won versus jobs bid), is an indication of a stable market or at least a marketplace that is in equilibrium. In addition, it implies a sound understanding of direct costs and a

consistent application of overhead. Erratic hit rates may be a sign of a firm that is chasing the market.

8. Litigation experience, including liquidated damages and claims; poor risk control decreases the value of a contractor in a magnitude that surpasses the actual expenses related to litigation and liquidated damages. A prevalence of liquidated damages, for example, may be an indication of poor scheduling, project selection, field coordination, and estimating. In addition, many claims indicate poor relationships with owners and subcontractors.
9. Management quality and depth – the presence of a talented leader adds value to any organization. However, developing a competent successor is critically important. If a company is overly reliant on a dynamic leader from whom there is no replacement, the company may find itself in an unwanted position if that leader should become incapacitated. On the other hand, highly competent functional or divisional managers further enhance value.

These factors are a major determinant of the selection of an appropriate P/E and are of significant interest to potential buyers. A higher P/E multiple translates into a higher earnings-based valuation, making the asset-based one less attractive.

- *Excess Assets.* Excess assets are those owned by the corporate entity but are in addition to the firm's core business. Examples often seen in construction firms are real estate and equity in other unrelated businesses (with the exception of construction joint ventures).

The first step, in determining the price-to earnings (P/E) ratio to be used, is to establish a proper P/E ratio of similar public construction companies (a set of public companies that provides the best comparison) on the date closest to valuation. Sometimes no public firms approximate the private firm to be valued in the industry segment. In this case, a representative sample of many different public construction companies would be used as a base. Another difficulty is that public construction companies have other divisions and subsidiaries which are in industries unrelated to construction. This circumstance may cause their P/E to be inappropriate bases of comparison (Funsten, n.d.).

The criteria used in comparison are return on assets, return on equity, the beta coefficient, and coefficient of variation. These criteria are in general more relevant and more accurate than size, number of employees, geographic location, etc (Reilly, 1990). In the construction industry, it is rare for a truly direct comparison to be made between a publicly-traded company and a privately-held firm. In most cases, public companies have much larger sales volumes and broader geographic breadth of operations, and they may be involved in other ancillary businesses. Other prime differences are the financial resources commonly available to public companies and the professional management personnel who are responsible to the Board of Directors and outside stockholders. As a result, some adjustments should be applied to arrive at the final value of the company. These adjustments include, among others, premiums for majority control, discounts for minority interests, discounts for lack of marketability, discounts for lack of liquidity, premiums for diversification and discounts for the lack of it, and discounts for dependency on a key person.

A common mistake when applying a P/E ratio is the use of the multiple of a specific valuation date to the weighted-average earnings and cash flow. In general, current P/E ratios should be applied to current data, and weighted-average ratios should be applied to weighted-average data. However, the price-to-earnings ratios of publicly-held construction firms are useful to the valuation of a closely-held firm. The P/E ratios of public companies, adjusted to reflect existing differences between the public and private firms, provide a basis for developing a proper comparative P/E for the company being valued. Transactions involving privately-held contractors, most of whom are profitable, occur at P/E ratios ranging from 5/1 to 8/1. Another rule of thumb is that privately-held contractors are typically acquired for 80% to 120% of book value (Funsten, n.d.).

The market data comparable is another approach that could be used in determining the appropriate multiple to be applied. This approach requires the identification and analysis of actual acquisition transactions of construction companies that are comparable to the target company. The criteria used in comparison are usually the same as the ones mentioned previously. However, in this case the more traditional criteria - size of the company, number of employees, and location – become appropriate to use. The purpose of this approach is to determine a unit measure between the actual selling prices of the companies analyzed (plants, divisions, subsidiaries, equipments) and such data as annual revenues, annual profits, margins, total assets, etc.

In the case of the market comparable approach few discounts and adjustments will be applied. The reason is that this technique analyses actual completed sales transactions of companies. One final thing to keep in mind when selecting the comparable transactions is motives for selling for the seller and the motives for buying for the buyer. Since, sometimes, an unfair premium could

be paid by the buyer just to avoid the acquisition of the target company by a competitor or a bankrupt seller selling a healthy subsidiary at a discount price.

3.6. Asset-Based Valuation vs. Earnings-Based Valuation

The industry sector often has a major impact on the relative value of a construction firm. Many heavy/highway contractors, for example, have a significant amount of fully depreciated equipment on their balance sheets. The market value of this equipment is typically well in excess of its book value. In addition, due to the asset-intensive nature of the business, heavy/highway firms typically maintain a high level of net worth. As a result, most heavy/highway contractor valuations are asset-based.

In contrast, general contractors have a few fixed assets and are highly leveraged, relying on the 'credit' provided by subcontractors and customers. As a result, most general contractor valuations are earnings-based.

If a contractor has an earnings profile that is less than industry norms, an asset-based conclusion is often more relevant. A contractor with relatively poor earnings typically has a return on assets and equity below industry norms, making the assets more valuable than the earnings derived from them. This situation is often a reflection of poor market conditions, ineffective management, and/or unnecessarily high level of operating assets suggesting that the company may be worth more "dead than alive".

Mergers & acquisitions is a very broad topic to discuss. It is a well established fact that the number of failed M&A is much larger than the number of successful ones. This is not surprising since each company has a culture which is unique and is different from the culture of other companies and at the same time it is extremely difficult to change. Buyers make the mistake of

assuming that they can change the culture of the acquired firm very easily to conform to the culture of their organization and this is the most common source of failure of acquisitions. In short, an acquisition must be undertaken in light of a known and very well defined strategy by the buying firm. In addition there must be a real “strategic fit” between the buying firm and the acquisition target.

3.7. Discounted Cash Flow

The discounted net cash flow approach requires the quantification of the future net economic benefits associated with the company’s acquisition for a discrete period, usually between 5 and 20 years. This projection of cash flows includes the following analyses (Reilly, 1990):

- A forecast of revenues based upon an analysis of the economics of the construction industry, the company’s share of the market, the marginal price elasticity of the company’s services, the firm’s backlog, and the quality and quantity of outstanding bids.
- A forecast of the cost based upon an analysis of fixed versus variable costs, recurring and non-recurring costs, and cash versus non-cash costs.
- A forecast of capital investment based upon an analysis of required future investments in working capital accounts and in equipments.
- A forecast of cost of capital based upon an analysis of the contractor’s marginal costs of capital, the capital structure of the firm, the tax attributes, and the different risks associated with company ownership.

The forecast of future cash flows should also take into account; expected overhead reductions, severance payments, shut-downs costs, economies of scale and synergies, changes in business strategy, and proceeds from divestitures.

Under this approach, the value of a construction company is the present discounted value of all the cash flows the firm is expected to generate in the future. Basic finance tells us that the value of any asset is equal to the present value of the cash flows the asset is expected to generate:

$$Value = V_o = \frac{CF_1}{(1+K)} + \frac{CF_2}{(1+K)^2} + \frac{CF_3}{(1+K)^3} + \dots + \frac{CF_T}{(1+K)^T} = \sum_{t=0}^T \frac{CF_t}{(1+K)^t},$$

where,

- V_o = the present value as of today (time 0)
- CF_1 = the cash flow in year 1
- K = the appropriate discount rate (cost of capital)
- T = the final year of cash flows (can be infinite)

This formula could be directly applied to company valuation – viewing the company as a portfolio of assets - except for the complication that unlike any single asset, a company is normally expected to grow or at least renew itself, through ongoing reinvestment. The cash flows expected from this growth are valuable. A company, in other words, is valued both for its assets in place and for its expected growth. To value a business, we need estimates of cash flows, discount rates, and growth.

This thesis provides an introduction to the three most used cash flow valuation methods. The three methods differ in their measure of cash flows and the discount rate applied to those cash flows. The names for the three methods correspond to the type of cash flow that is used in the valuation: Capital Cash Flow (CCF), Equity Cash Flow (ECF), and Free Cash Flow (FCF). The three methods provide consistent valuations when applied correctly⁶.

Capital Cash Flows measure the cash flow available to both equity and debt holders. The benefits of tax deductible interest payments are included in the Capital Cash Flow. The appropriate discount rate for the Capital Cash Flows is the pre-tax rate corresponds to the riskiness of the assets of the firm.

Equity Cash Flows measure the cash flow available to stockholders after payments to debt holders are deducted from operating cash flows. The payments to debt holders, sometimes called Debt Cash Flows, include interest and principle payments. Equity Cash Flows equal Capital Cash Flows minus debt cash flow. Because debt cash flows are paid out of operating cash flows before Equity Cash Flows, debt cash flows are safer than Equity Cash Flows. That means that Equity Cash Flows are riskier than cash flow measures that combine debt cash flows and Equity Cash Flows. And riskier cash flows have higher discount rates.

The Free Cash Flow method, like the Capital Cash Flow method, values the whole company. The difference between Capital Cash Flow and Free Cash Flow is the treatment of the tax benefits of deductible interest payments. The Capital Cash Flow measure includes these benefits as cash flows; the more the tax advantages, the higher the Capital Cash Flow. The Free Cash Flow method includes the tax benefits of deductible interest payments in the discount rate; the more

⁶ “An Introduction to Cash Flow Valuation Methods”, Harvard Business School Cases, Case# 9-295-155, Harvard Business School Publishing.

the tax advantages, the lower the discount rate. Because the tax advantages of debt are included in the discount rate in the FCF method, the cash flows do not include the tax benefits of debt. Free Cash Flows are the cash flows that would be available to the firm if the interest payments were not deductible.

Figure 1 illustrates the calculation procedure of the CCFs, ECFs, and FCFs. The three approaches start with Earnings Before Interests and Taxes (EBIT). Then some adjustments are applied to transform the accounting recognition of receivables and expenses into cash flow definitions. These adjustments include adding depreciation and amortization, adding/subtracting for changes in net operating accounts [*(Current Assets – Excess Cash) – (Current Liabilities – Short Term Debt – Current Maturities of Long Term Debt)*], and subtracting for capital expenditures. After the application of the different cash flow adjustments, EBIT becomes known as the Cash Flow from Operations.

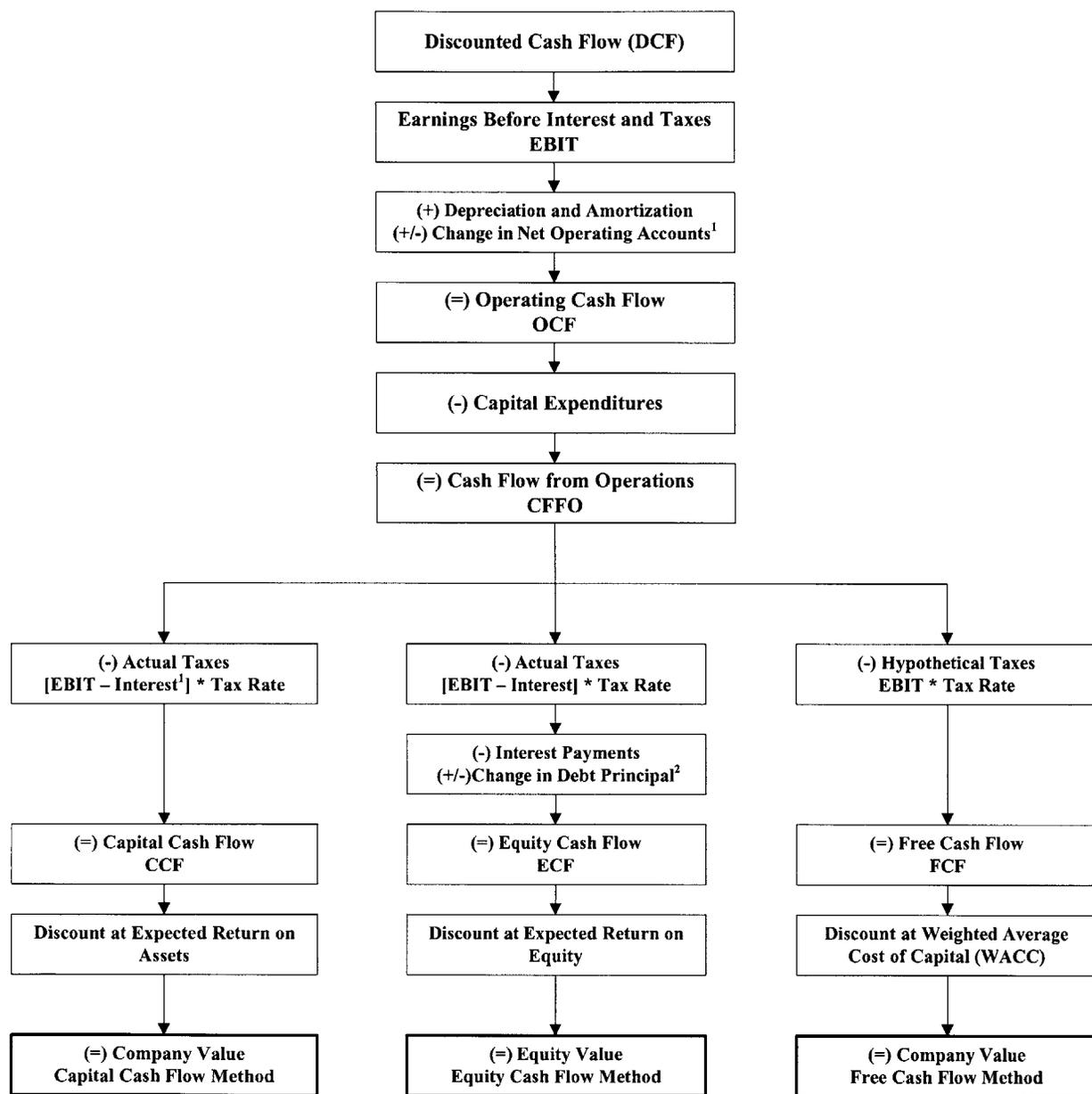


Figure 3.1 Summary of DCF methods

3.7.1. Capital Cash Flow Valuation

Operating Cash Flow minus taxes equals Capital Cash Flow. Capital Cash Flows therefore are the after-tax cash flows that are available to all holders of capital including debt and equity. Therefore, the risk of the CCFs is the riskiness of the assets of the firm. The Capital Asset

Pricing Model (CAPM) is used to calculate the appropriate discount rate. One such discount rate is the Expected Asset Return (K_A):

$$K_A = R_F + \beta_A R_P,$$

where,

R_F = the risk-free rate

β_A = the asset beta

R_P = the risk premium

The beta of the assets is a weighted average of the debt and equity beta:

$$\beta_A = \left(\frac{D}{V}\right)\beta_D + \left(\frac{E}{V}\right)\beta_E,$$

where,

D/V = the debt-to-value ratio

β_D = the debt beta

E/V = the equity-to-value ratio

β_E = the equity beta

Finally, the value of the Capital Cash Flows is calculated by discounting the CCFs by the expected asset return:

$$Value = V_o = \sum_{t=0}^T \frac{CF_t}{(1 + K_A)^t},$$

This value is the total company value.

3.7.2. Equity Cash Flow Valuation

Equity Cash Flows are computed by subtracting taxes, interest, and debt repayments from Operating Cash Flow and adding/subtracting for changes in the debt principal (includes short and long term interest bearing obligations - may be increasing, a cash inflow, if the debt capacity of the firm is increasing).

Alternatively, Equity Cash Flows can be calculated as Capital Cash Flows less Debt Cash Flows:

$$[Equity\ Cash\ Flows] = [Capital\ Cash\ Flows] - [Debt\ Cash\ Flows],$$

Like the Expected Asset Return that is used to value Capital Cash Flows, the Expected Equity Return (K_E) can be estimated using CAPM:

$$K_E = R_F + \beta_E R_P,$$

Finally, the ECF is valued as a perpetuity using the Expected Equity Return:

$$Value = V_o = \sum_{t=0}^T \frac{CF_t}{(1 + K_E)^t},$$

The ECF valuation with growth is valued the using the same approach as if there were no growth:

$$[ECF \text{ value}] = [ECF / (\text{Expected Equity Return} - \text{Growth Rate})]$$

3.7.3. Free Cash Flow Valuation

Free Cash Flow valuation is comparable to Capital Cash Flow valuation in that both methods value the whole company and not just its debt or equity. The Free Cash Flow and Capital Cash Flow approaches differ in their treatment of the interest tax shield. The Capital Cash Flow method deals with all types of taxes – including interest tax shields – in the cash flows by subtracting taxes from the Operating Cash Flow. In contrast, the Free Cash Flow method does not include the benefits of interest tax shields in the cash flows. Instead, the benefits of the interest tax shields are incorporated by reducing the discount rate.

The discount rate for the Free Cash Flow is the Weighted Average Cost of Capital (WACC):

$$WACC = \left(\frac{D}{V}\right)(1 - tax)K_D + \left(\frac{E}{V}\right)K_E,$$

We compute the present value of the firm's Free Cash Flows as the sum of the present values of the free cash flows for a "planning period" plus the present value of the cash flows beyond the planning horizon or the residual value:

$$[Value] = [PV(Planning\ Period)] + [PV(Residual\ Value)],$$

The present value, PV, of the free cash flows (FCF_t) for the planning period (year one through year T) is computed as follows:

$$PV(Planning\ Period) = \sum_{t=0}^T \frac{CF_t}{(1+WACC)^t},$$

The value of residual cash flows in year (T), which begin in year (T+1) can be calculated as follows:

$$RV_T = \frac{CF_{T+1}}{(WACC - g)},$$

where,

g = the growth rate

We then find the present value of the residual value as follows:

$$RV_0 = \frac{RV_T}{(1+WACC)^T},$$

Finally, the present value of the combined planning period free cash flows and the residual cash flows (i.e., the value of the company), can be expressed as follows:

$$Value = V_o = \sum_{t=0}^T \frac{CF_t}{(1+WACC)^t} + \frac{RV_T}{(1+WACC)^T}$$

3.7.4. Disadvantages of DCF

Construction is a cyclical business; market opportunities come in waves. Five years is an eternity for planning in the contracting business (Phoenix, n.d.). A contractor cannot rely on the work it does today to grow consistently. The construction market sectors experiences radical changes constantly and it is difficult to forecast when the market is going to turn. Furthermore, construction has very low entry barriers, so when the market is at its peak the number of competitors increases tremendously and as a result the margins have to decrease to remaining in the competition.

Contractors do not do very well in downturns. In general, during downturns a lot of developers and contractors go bankrupt. Contractors do not do well in downturns; they experience falling backlogs and as a result are forced to reduce their margins and lay-off important people that are needed during upturns.

Cash flow is king, but what matters more in contracting is a strong balance sheet. A contracting firm must be able to bond. Bad jobs or damaging experiences occur, even for the best contractors. History tells us that banks and bonding companies are not very forgiving when times get tough; in the recessions of the 1980s and 1990s, it was the contractors with strong balance sheets that were able to emerge unhurt (Phoenix, n.d.). The reliance of cash flow on people issues, the uncertainty of the length of the construction economic waves and the potentially

destructive impact of the very act of the acquisition makes of a construction company a very cyclical business characterized by significant fluctuations in earnings. Consequently, this cyclicity tempers reliability of the discounted cash flow method for valuation.

3.8. Common Mistakes in Construction Company Valuation

Sometimes a valuator unfamiliar with the construction industry may make mistakes that may lead to over-valued or under-valued results in the computation of the final value of the construction company (Funsten, n.d.).

The most common mistakes when valuing a construction company are described below:

- *Reliance on DCF methods:* A construction materials company can forecast market share, profits, and cash flow with a fair degree of certainty. Whereas, contractors have highly volatile revenue streams. In general, it is very difficult for a contractor to predict the next 1 year or 2 years. As a result, the cash flows projections for contractors contain a huge amount of uncertainty and make out of the DCF technique an unreliable technique. At best, the DCF methods should be used for comparison purposes in conjunction with other valuation approaches.
- *Over-reliance on Public Company Comparisons:* Most valuers make adjustments for lack of access to capital markets, lack of management depth, etc., but sometimes ignore fundamental differences between publicly-held companies and their target firms. Examples of these differences are a large portion of publicly-held companies often are involved in unrelated businesses. Moreover, These companies have an international network of operations, in which case economics of the industry and trends become different.

- *Inappropriate Income Statement and Balance Sheet Adjustments:* Valuers that are unfamiliar with the construction industry often make wrong adjustments to earnings, assets, and liabilities. Some of the common adjustment mistakes include:
 - 1) The use of generic compensation comparisons instead of industry-specific compensation data.
 - 2) Inappropriate adjustments to work-in-progress result in incorrect percentage of completion accounting and consequently a mistake in adjusting project revenues.
 - 3) The failure to adjust-back earnings for claims, warranty expenses, and bad debts to the time they were actually incurred.
 - 4) The exclusion of projects with exceptionally large gains or losses from the earnings analysis.
- *Over-reliance on Earnings-Based Approach:* Sometimes the value of the assets of a contractor (especially heavy contractors) may be higher than the capitalization of their earnings. Therefore, an appropriate selection of the valuation approach to be adopted should take in consideration the type/scope of operations of the contractor.

3.9. The Future of Valuation

New and improved valuation techniques and methods are always being offered and applied. It is therefore important to acknowledge these improvements and to discuss the future of valuations in some detail. It can be expected that in the future companies will use more than one formal valuation methodology. This will not be done to derive a conclusive analysis from several methods but rather to tailor several methodologies to analyze one project. It is likely that in the future companies will start to routinely analyze the inherent opportunities in such operations as

R&D and marketing, amongst others, by using such tools derived from option pricing and simulation. The purpose of this evaluation would be to determine such questions as ‘should we invest in *this* operation or *that* operation?’ and not ‘should we invest or not?’ Finally, those who perform valuations are much more likely to be internal players rather than outside professional service providers. This is because the accuracy and efficacy of valuation analyses is dependant on a profound understanding of the business and not an understanding of the valuation process (Luehrman, 1997).

CHAPTER FOUR

4. Case Study: The Merger of the Turner Corporation with HOCHTIEF

In general, a valuator will need the target's business history, historical financial data, ownership records, information on products and services, sales and marketing data, and supplementary information on banking, legal and contractual relationships. In an acquisition, each company hires a valuator while in a merger one valuator may work for both companies (Mastracchio, 2002).

Before the valuator begins work, he should compile company data that include financial statements and tax returns for three to five years; an accounting of all outstanding receivables and payables; the actual value of inventories; identification of suppliers, key customers; equipment, including its age; industry, geographic and market locations; sales, backlog, and other projections; resumes of key personnel; and the percentage of revenues dependent on each type of service. In addition to the above, a valuator should also gather information from other sources, including industry and geographic comparisons, as well as survey of sales and revenues of other comparable companies.

After the gathering, verification and analysis of the compiled data, the valuator prepares a report and include the assumptions and methodology that underlie their results; the value of the company.

Once each side's valuation is completed, the negotiation process begins. The computed value, stand-alone value (V_T), will be the low end of the negotiating range or what we call in negotiation terms the 'BATNA' of the seller. The high end will be the acquirer's value; the stand-alone plus the expected increase in revenues, decrease in expenses and better use of the

assets of the new acquired company. As a result, “Textbook valuation may not have any relation to real-life demand” (Mastracchio, 2002).

For the purpose of elaborating on the valuation processes and approaches adopted in this thesis, the merger of the Turner Corporation with HOCHTIEF will be analyzed.

4.1. The Transaction

In August 1999, the Turner Corporation entered into a merger agreement with HOCHTIEFAG under which HOCHTIEF would acquire all of the outstanding common stock of Turner for \$28.625 per share. The value of the acquisition deal was determined to be \$394.758 million (Including \$159.9 million of cash and marketable securities and \$19 million long-term debt). HOCHTIEF completed its tender offer by accepting 91% of Turner Corporation’s Shares.

The cash tender offer consisted of acquiring all the outstanding shares of Common Stock (8,353,986 shares; 91%), including the associated rights of the Turner Corporation (NYSE: TUR) and all the outstanding shares of Turner’s Series C 8 ½% Convertible Preference Stock (9,000 shares; 100%) and Series D 8 ½% Convertible Preference Stock (6,000 shares; 100%), \$4,770.8333 per share of Series C Preference Stock and \$4,293.75 per share of Series D Preference Stock.

Pursuant to the merger agreement, all outstanding shares of Turner Common Stock not purchased in the tender offer would be acquired in a second-step merger at a price of \$28.625 per share, without interest.

The rules of the game in the construction industry have been changing; a global network has become necessary to be able to better leverage skills, clients and resources. To have a global network, a presence in the United States is critical. The US is the most attractive investment environment in the world. Compared to HOCHTIEF's major markets, the US is also projected to have higher growth prospects in the future. Consequently, as the preeminent builder organization in the US, the Turner Corporation would place HOCHTIEF in this highly attractive and critical market. Furthermore, HOCHTIEF's main competitors are already established or are in the process of establishing themselves in the world's largest construction market. For example, Skanska, HOCHTIEF's main competitor and the world's largest construction company has been growing in the US market at a fast rate through several acquisitions.

HOCHTIEF will benefit from acquiring Turner Corporation in a number of ways. The company will be able to have to access Turner's skills and specialties, reputation, clients (more than 60% of the contracts are from repeat customers), and resources. This will give HOCHTIEF a stronger base and business position. HOCHTIEF has also preserved the Turner name, it didn't alter the management structure and it will allow Turner to operate as in the past. This acquisition will also give Turner, from a strategic standpoint (1) broader international capabilities, (2) additional skills and experiences in certain construction areas, and (3) the benefits of a much larger and consolidated balance sheet. In summary, the merger is a win/win situation; it is a growth-driven transaction and not a cost-reduction deal. The deal will allow both firms to grow into one of the world's largest construction companies

4.2. Analyzing the Firms' Operations

The information discussed below comes from the data of the two companies before the merger agreement (i.e., before 1999).

4.2.1. HOCHTIEF AG

4.2.1.1. Overview of the Company

HOCHTIEF, Germany's largest construction company, has developed over the past years into one of the world's leading providers of construction services. The company designs, finances, builds, and operates large, technically demanding facilities worldwide. HOCHTIEF, which has combined its building and civil units to form HOCHTIEF Construction, has widened its global presence with major acquisitions in Canada, the Czech Republic, Australia and the US and is now one of the world's largest construction firms. North American operations account for about half of group sales. HOCHTIEF's airport management and consulting business holds stakes in airports in Australia, Germany, and Greece. The group conducts about 48% of its business outside of Germany. HOCHTIEF's shares are publicly traded on the Frankfurt exchange.

HOCHTIEF is increasingly involved not only in planning and building, but also in financing and operating complex infrastructure and other projects. As natural complements to its core business segment of building, HOCHTIEF is continuously expanding its range of services: airport management, project development, software, environmental technology and facility management are now featured more strongly in the framework of its business.

The firm builds a wide range of projects, including highways and tunnels, power plants, factories, apartment buildings, corporate towers, sewage and other waste facilities, tunnels (It has been involved in building the world's longest rail tunnel, the St. Gotthard Base Tunnel in Switzerland), bridges, dams and terminals. Clients include Sony, IBM, Siemens, German National Railway, General Motors/Opel, Ford, DaimlerChrysler, BMW, Deutsche Bank, Commerzbank, the City of Athens, The People's Republic of China, and the Republic of Greece (Athens International Airport). Recent construction awards include the Israeli embassy in Berlin (Germany), a headquarters facility for BankBoston in Sao Paulo (Brazil), and a large trade fair complex in Dresden (Germany).

HOCHTIEF's operations in North America have, in the past, been channeled via its participating interest in the Kitchell Corporation of Phoenix, Arizona. Kitchell primarily operates in the traditional construction and general contracting business in the Southwestern of the US.

4.2.1.2. Company's History

HOCHTIEF was established in 1875 and based in Essen, Germany. In 1924, Rheinisch-Westfälische Elektrizitätswerk (RWE), a German electric utility company, became the main shareholder in HOCHTIEF with a 31% stake.

Many of RWE's facilities were damaged during WWII, including its Essen headquarters. Consequently RWE staff used the HOCHTIEF offices' building until 1961. Post-war reconstruction kept the company active, including Germany's first nuclear reactor built by HOCHTIEF and commissioned in 1966. After the war, RWE began increasing its stake in HOCHTIEF until it became the majority shareholder (56%) in 1989.

As a division of the RWE Group, HOCHTIEF began acquiring former state-owned companies throughout Germany. By 1996 it had added financing and operation of major projects to its services. That year it led a consortium to build and operate an international airport in Athens. In 1997 it teamed with Ireland's Aer Rianta to build new terminals and manage the airport in Düsseldorf, Germany. The next year HOCHTIEF won a bid to build and operate Berlin's new airport, but a rival's allegations of bidding irregularities led to a raid by prosecutors on the HOCHTIEF's headquarters. Charges were dismissed, but the company was disqualified from the project.

The company sought to expand internationally with an agreement to take a 49% stake in the US holdings of its main rival, Philipp Holzmann (1997). But when these plans failed and HOCHTIEF was blocked by regulators from increasing its 20% stake in the competitor (held since 1981), it lost interest and relinquished its shares.

HOCHTIEF, like many of its competitors, expanded abroad in 1999 by helping engineer Canadian firm Armbro's takeover of rival BFC and then grabbing a 49% in the merged firm, now Aecon Group.

4.2.1.3. Company's Subsidiaries

HOCHTIEF Airport	
HOCHTIEF Airport GmbH, Germany	100.00%
Athens International Airport S.A., Greece	39.90%
Flughafen Dusseldorf GmbH, Germany	30.00%
Flughafen Hamburg GmbH, Germany	39.20%
Sydney Airports Corporation Limited, Australia	15.00%
Transport & Logistics Consultancy Ltd., UK	49.00%
HOCHTIEF Construction Services Asia Pacific	
Leighton Holdings Limited, Australia	50.28%
Leighton Contractors Pty Ltd., Australia	100.00%
Leighton Properties Pty Ltd., Australia	100.00%
Thiess Pty Ltd., Australia	100.00%
John Holland Group Pty Ltd., Australia	70.00%
Leighton Asia Ltd., Hong Kong	100.00%
Concor Ltd., South Africa	49.99%
HOCHTIEF Development	
HOCHTIEF Projektentwicklung GmbH, Germany	100.00%
HOCHTIEF Facility Management GmbH, Germany	100.00%
DEBAUSIE GmbH Real Estate Management, Germany	100.00%
HOCHTIEF Construction Services Americas	
The Turner Corporation, USA	100.00%
Kitchell Corporation, USA	32.41%
Aecon Group Inc., Canada	48.70%
HOCHTIEF do Brasil S.A., Brazil	91.42%
HOCHTIEF Argentina S.A., Argentina	100.00%
HOCHTIEF Construction Services Europe	
HOCHTIEF Construction AG, Germany	100.00%
HOCHTIEF (UK) Construction Ltd., UK	100.00%
HOCHTIEF LUX. S.A., Luxembourg	100.00%
Dipl.-Ing. Hugo Durst GmbH, Austria	100.00%
Streif Baulegistik GmbH, Germany	100.00%
HOCHTIEF Polska Sp.z.o.o, Poland	99.00%
HOCHTIEF VSB a.s., Czech Republic	94.66%
HOCHTIEF Russia, Russia	100%

Table 4.1 HOCHTIEF's subsidiaries

4.2.1.4. Financial Summary

Year	Sales (000\$)	Net Income (000\$)	Employees
1998	3,138,531	87,295	37,229
1997	3,145,351	80,523	38,862
1996	3,461,211	74,423	40,785
1995	3,063,255	69,884	40,324
1994	3,009,742	66,272	35,382
Growth Rate	1.36%	7.14%	

Table 4.2 Five-year financial summary

4.2.2. The Turner Corporation

4.2.2.3. Overview of the Company

The Turner Corporation is one of the world's leading general building and construction management firms⁷. It is also one of the largest commercial builders in the US, where it has offices nationwide. Some of the company's projects have included Madison Square Garden and the UN Secretariat in New York City. In addition to being recognized for the construction of large projects (such as airports, office towers, and stadiums), Turner also offers services for midsize and smaller projects and provides interior construction and renovation services. Subsidiary Turner International provides design/build, general contracting, and management services outside the US. Through its main subsidiary, Turner Construction, and other units, the group provides construction and project management services, primarily for commercial and residential buildings, airports, stadiums, and correctional, entertainment, and manufacturing facilities. Performing work on about 1,500 projects a year; Turner oversees some of the most high-profile construction projects in the US.

⁷ "The Turner Corporation", www.hoovers.com, [04/04/2004].

Projects include several "green" or sustainable, buildings, such as 'The Solaire' in Manhattan, which was the US's first green high-rise apartment building, and the world's largest "green" building, Pittsburgh's David L. Lawrence Convention Center.

The group's Turner International subsidiary operates primarily in Asia and the Middle East but also has projects in Europe and Latin America. It also provides professional building services. At home, the company's Turner Interiors division specializes in tenant fit-outs in new and existing buildings and operates in nine cities nationwide.

4.2.2.4. Company's Recent History

Henry Turner founded the Turner Construction Company in 1902. One of the company's early projects was building the stairways for New York's first subway stations. As Turner's reputation grew, it started building high-rises, hotels, and stadiums. During the depression that started in 1929, the company survived by building retail stores, churches, and public buildings, a strategy it would employ successfully in later recessions. As WWII raged, more than 80% of the company's work was defense-related. Projects included constructing a submarine base and managing the facilities in Oak Ridge, Tennessee, during the development of the atomic bomb. In the 1950s and 1960s the firm was building skyscrapers, futuristic airports, and landmarks such as Madison Square Garden and the United Nations Secretariat and Plaza in New York City. Turner went public in 1969. In the 1970s, the company extended its global presence, opening offices in more countries, including Iran, Pakistan, and the United Arab Emirates. The company also developed construction management services.

In 1984 The Turner Corporation was formed as a holding company for the construction company and the subsidiaries created or acquired as a result of diversification. Property development was one of these activities, but by 1987 Turner had begun to dispose of its real estate holdings. It did not move quickly enough, however, and when the real estate market crashed, Turner was caught with a large portfolio. As commercial projects slowed, Turner sought more public works and amusement projects (aquariums, arenas, hospitals, and universities). By 1994 these areas accounted for 70% of business. In 1993, as the building slump continued, Turner began a cost-cutting plan, which included laying-off workers and closing offices. In 1996 Turner won a contract to build a 10,000-seat arena in Salt Lake City to be used for the 2002 Winter Olympics. In 1997 Turner contracted to renovate 811 schools and build two campuses in California's San Fernando Valley, and in 1998 it was chosen to manage the construction of the Kansas City Motor Speedway.

Profits were recovering quickly. Nonetheless, in 1999 the company agreed to be acquired by German construction giant HOCHTIEF in a \$370 million deal that ended Turner's joint venture with Switzerland's Karl Steiner. The company also relocated its corporate headquarters to Dallas that year to take advantage of the construction boom in the US Southwest.

4.2.2.5. Company's Ownership⁸

1. Steiner, Peter K., 23.70%
2. Granite Capital, 8.00%
3. Turner Corporation Employee' Retirement Plan, 14.70%
4. Dimensional Fund Advisors Inc., 6.10%

⁸ "Turner Corporation", Thomson Research, Thomson Financial, [04/04/2004].

4.2.2.6. Company's Subsidiaries⁹

- Mideast Construction Services, Inc. (Delaware)
- Universal Construction Company Inc. (Delaware)
- Tdc of Texas, Inc. (Delaware)
- Turner Construction Co. (New York)
- Turner Construction Company of Texas (Texas)
- Lathrop Company, Inc. (Delaware)
- Service Products Buildings, Inc. (Ohio)
- Auburndale Company, Inc. (Ohio)
- Turner Caribe, Inc. (Delaware)
- Turner International (U.S.V.I.), Inc. (Delaware)
- Turner Development Corp. (Delaware)
- Tdc Corp. Of Florida (Delaware)
- Turner International Industries, Inc. (Delaware)
- Turner (East Asia) Pte. Ltd. (Singapore)
- Turner International (UK) Ltd. (United Kingdom)
- Turner International Ltd. (Bermuda)
- Rickenbacker Holdings, Inc. (Delaware)
- Rickenbacker Development Corp. (Delaware)

⁹ "Turner Corporation", Thomson Research, Thomson Financial, [04/04/2004].

4.2.2.7.Financial Summary

Table 4.3 is a five year (1994-1998) summary of Turner Corporation's sales, net earnings, and number of employees.

Year	Sales (000\$)	Net Income (000\$)	Employees
1998	3,698,994	19,633	3,200
1997	3,170,744	5,893	3,000
1996	2,838,052	-1,695	2,800
1995	2,727,001	1,274	2,600
1994	2,174,836	3,650	2,500
Growth Rate	14.10%	52.20%	

Table 2.3 Five-year financial summary

4.2.2.8.Products and Services

The principal activities of the company are general contracting and construction management which primarily relates to construction of commercial office building, healthcare, pharmaceutical, plants, R&D laboratories, educational facilities, correctional facilities, sports and distribution/warehouse sectors and also performs interior construction work and construction consulting services. Table 4.4 summarizes the company's sales per sector.

Product Segment Data	
	% of total
Commercial/retail/e-technologies	21%
Interiors/renovations	16%
Sports/entertainment	12%
Pharmaceutical/manufacturing	12%
Residential/hotel	11%
Education/science	11%
Health care	8%
Public/justice	6%
Aviation/other	3%
Total	100%

Table 4.4 Turner Corporation product segments

4.3. Valuation of the Turner Corporation

To determine the value of the Turner Corporation, the asset-based approach (book value) and the earnings-based approach were adopted. The Turner Corporation is represented by the balance sheet shown in Table 4.5. The book value of Total Assets is about \$1.13 billion, while the Net Worth \$88.77 million.

Balance Sheet	
ANNUAL ASSETS (000s)	
Fiscal Year Ending	12/31/1998
Cash	168,879
Marketable Securities	112,766
Accounts Receivables	546,650
Inventories	40,494
Other Current Assets	159,093
Total Current Assets	1,027,882
Fixed Assets (PPE)	22,298
Deferred Charges	67,066
Intangibles	NA
Deposits & Other Assets	11,817
Total Assets	1,129,063
ANNUAL LIABILITIES (000S)	
Fiscal Year Ending	12/31/1998
Accounts Payable	756,512
Other Current Liabilities	128,029
Total Current Liabilities	884,541
Deferred Charges/Inc	18,417
Long-Term Debt	18,891
Other Long-Term Liabilities	118,448
Total Liabilities	1,040,297
Preferred Stock	854
Common Stock	8,383
Capital Surplus	45,392
Retained Earnings	44,113
Treasury Stock	8,144
The Stockholder's Equities	-1,832
Total Stockholder's Equity	88,766
Total Liability & Net Worth	1,129,063

Table 4.5 Balance sheet of Turner Corporation as of December 31, 1998

After selecting a set of comparable companies, we determine an average P/E ratio (Table 4.5) to reflect an appropriate P/E ratio for the Turner Corporation. A series of subjective discounts and premiums (Table 4.7) is applied against the average P/E to factor the variances between the other construction companies and the Turner Corporation. The net discount of 15% when applied against the average P/E ratio will result in a P/E of 10.34 for the Turner Corporation.

Company	Types of Operations	P/E Ratio
Centex Corporation	Home building and general contracting	7.58
Fluor Corporation	Engineering, construction management, industrial, minerals	13.40
Foster Wheeler	Industrial, power, engineering, construction management, manufacturing	15.68
Granite Construction	Infrastructure, building materials	10.75
Jacobs Engineering	Engineering, construction management, design/build, power, industrial	16.75
Perini Corporation	Heavy, infrastructure, general contracting	3.24
Washington Group	Heavy, power, transportation, general contracting	13.04
Average		11.49

Table 4.6 Market comparable construction companies

Company-Specific Factors	Premium (+) Discount (-)	Comments (Relative to the Publicly-Traded Construction Companies)
Size	-5%	Smaller (Revenues, # of employees)
Diversification, Product	-10%	General contracting and construction management services only; Do not cover all construction sectors
Diversification, Geography	5%	Have projects in Europe, Asia, Middle East, and Latin America
Management Depth	10%	Have a new generation leadership in its senior ranks
Financial Condition	-15%	Liquidity (low) and debt ratios (high debt) comparable to the industry
Future Earnings Prospects	5%	Anticipated growth (Profits starting to recover)
Access to Capital Markets	5%	Already present in some major capital markets
Marketability	-10%	Lack of marketability compared to other publicly-held firms
Net Discount	-15%	
P/E from Comparable Firms	11.49	
Discounted at 15%	*0.85 or (1-0.15)	
P/E for Turner Corporation	9.77	

Table 4.7 Discounts and premiums applied to the average P/E ratio

After determining the appropriate P/E ratio, the company's five-year historical earnings are determined. A weighting factor of five is placed on the most recent earnings. The weighting factor is reduced by one for each preceding year. This weighted average approach has been adopted since the most recent earnings are a better indicator of future performances. Table 4.8 shows the weighted average of past earnings to be \$8.19 million. Applying the P/E ratio we get a company's value equal to \$84.685 million.

Year	Net Earnings (000\$)	Weight	Total (000\$)
1998	19,633	5	98,165
1997	5,893	4	23,572
1996	-1,695	3	-5,085
1995	1,274	2	2,548
1994	3,650	1	3,650
Total Weighting Factors		15	
Total Weighted Earnings			122,850
Average Weighted Earnings			8,190
P/E ratio			10.34
Market Value of the Company			84,685

Table 4.8 Five-year earnings summary

After computing the market value of the company, we need to add the cash and marketable securities amount and deduct the long-term debt to obtain the final value of the company. Table 9 compiles the calculated valuation amounts using each approach and contrasts them to the actual transaction results. We can also see that the actual price (negotiated) paid for the Turner Corporation includes a premium of \$140.04 million (i.e., 45% premium).

When using the assets-based approach we must take into consideration the value of the company's intangible assets which are, in general, the largest bulk in a construction firm's value. As a result the value of the company using the assets-based approach, in this case, will result in

much higher value than the one resulting when adopting the earnings-based approach. The low value resulting from adopting the earnings-based approach is a reflection of a period when Turner was losing.

If we use Turner's last year (1998) earnings as an indicator of future performance, the earnings-based approach will result in a \$203,005 million ($\$19,633 * 10.34$) value. This value is much higher than the one obtained if using the assets-based method. Moreover, this value is also close to the actual transaction costs.

	Market Value	Cash & Marketable Securities	Debt	Total Value
Assets-Based	88,766	168,879	18,891	276,536
Earnings-Based Approach	84,685	168,879	18,891	272,455
Actual Transaction	254,716	168,879	18,891	394,758

Table 4.9 Valuation summary (000\$)

The valuation process is complex and subjective. The analysis and the final value of the company depend greatly on the experience, judgment, expertise of the valuator. There are many ways to determine a company's value, and there is a huge possibility that each approach may lead to a different result.

CHAPTER FIVE

5. Conclusion

In the current economic conditions, the fastest way for a construction company to grow is through mergers and acquisitions. Return on equity is significantly higher for companies that merge and acquire than those that expand by internal growth. The most important and sensitive issue in any acquisition is the price paid for the target company. The true value of a company is different than the price paid for it in the M&A deal since most acquirers are paying premiums for their targets. Premiums are justified in case the company acquired achieves the forecasted/expected synergies. As a rule-of-thumb, always acquire targets that are complementary either product-wise or location-wise.

As for the true value of a construction firm, this thesis presents a review of existing valuation approaches that are commonly applied to the valuation of a company. These approaches can be categorized in three broad areas: asset-based, earnings-based, and discounted cash flow.

The asset-based method should be used when the company owns a significant amount of tangible assets (heavy contractor); creates little value from its operations; and its balance sheet includes most of its tangible assets.

The earnings-based or market approach should be adopted when there are an adequate number of companies that are similar to the target company, there are M&A transactions that involve targets that are reasonably similar, and there are enough data about companies used for comparison.

Finally the DCF method should be applied if the company derives significant value from its operations, generates a positive cash flow, possesses significant intangible value, the company's

risk can be accurately quantified through a rate of return, and most importantly, if the company's future performance can be accurately estimated. Since the construction industry is a highly uncertain and cyclical industry, it is difficult to satisfy the latter condition when valuing a construction business. The DCF approach should be used only in the case when the construction company being analyzed has constant growing earnings over a long period of time (more than 5 years). This shows that the company is well-diversified and handles well economic downturns in the industry.

To conclude, the best valuation estimates for construction companies are a combination of methodologies, which include adjusted book value and capitalized earnings.

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