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BUSINESS VALUATION AND PRICING IN MERGER AND ACQUISITION CONTEXT

Case study: Intel - Altera

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ABSTRACT

Merger and acquisition play an important role in business landscape, and are often considered as mechanisms of a market economy to become more efficient and effective. A typical merger or acquisition deal is, however, a very time-consuming, complicated process with many phases, involving many parties and built on a very complex structure. Proper valuation is one of the crucial keys to the success of every merger or acquisition deal.

This thesis discusses merger and acquisition and introduces the method and framework to effectively value and price a company in merger and acquisition context. In order to understand the logic underlying valuation methods, background knowledge on merger and acquisition will be provided. Later various factors which affect the valuation and price of the target company in M&A will be discussed, on which a financial model will be introduced to value the company within the context of M&A. The financial model is built on a sample transaction – Intel to acquire Altera, with most of the underlying assumptions are drawn from comprehensive analysis of both companies.

The financial model largely employs the discounted cash flow method, based on 5 year forecasted financial data of both companies. All historical data is collected from the companies' annual reports 10K SEC filings during the period 2010-2014. Data for the period 2015-2019 will be projected and presented in the model. In the end, the model shows the stand-alone value of the target company as of \$13855 million, with the suggested offer price range from \$13855 million to \$21643 million.

This study employs the deductive approach and quantitative research method. The thesis also uses various type of sources, from published books, journals and articles to many other miscellaneous internet sources, in order to provide background knowledge and explain the subject comprehensively.

Key words: merger and acquisition, valuation, discounted cash flow, financial model

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GLOSSARY

DCF	Discounted cash flow
FCF	Free cash flow
FCFF	Free cash flow to the firm
GAAP	Generally Accepted Accounting Principles
M&A	Merger and Acquisition
PV	Present value
WACC	Weighted average cost of capital

1 INTRODUCTION

1.1 Research background

A merger or an acquisition is a combination of two or more companies or similar entities through the act of purchasing, selling, dividing and combining companies or similar entities (McClure 2009). In corporate finance, the term merger and acquisition (M&A) is widely used for all the purchase, sale, and combination of companies and their parts or subsidiaries (Rosenbaum and Pearl 2013, 6).

Moeller (2014) said that mergers and acquisitions are an integral part of global strategic and financial business landscape, involving not only the acquiring company and the target company, but also many other intermediate parties, including investment bankers, accountants, lawyers, investors and regulator (Moeller & Brady 2014, 1). In corporate finance, mergers and acquisitions are often seen as aspects of strategic management, with the purpose of growing the company, either in its origin field or location or in a new sector or location. Thus, M&A can be said to be another form of corporate restructuring, in which a reorganization occurs in order to provide growth and create positive value. (McClure 2009.) M&A can also open the way for companies to evolve and re-focus correspondingly to ever-changing market conditions, shareholder demands and industry trends (Rosenbaum & Pearl 2013, 25). And this is a highly attractive way for shareholders and management to capitalize on the value created in a company (Sherman & Hart 2006, 1). Therefore M&A has become an integral part of the long-term business strategy of most corporate enterprises. M&A is also thought to be an important mean of allocating resources to correct places and of removing underperforming managers (Depamphilis 2011, 12). In the economy, M&A plays a critical role in a way that it enables strong companies to grow faster while ensures that weaker companies are vulnerable to be swallowed or be excluded (Sherman & Hart 2006, 1).

M&A activities have enjoyed an impressive level of growth throughout history, especially in the recent decade. M&A activities growth seems unaffected even by economic downturns or financial crises. For example, M&A transaction volume

reached a new record level worldwide in 2007. The financial crisis event of 2007-2008 caused the global credit market to collapse, which in turn reduced global M&A activities by more than one-third from the previous high. (Depamphilis 2011, 1.) However, for at least 6 years since the aftermath of the crisis, the level of M&A activity has remained about \$2 trillion annually, the amount regarded to be enormous when compared to a couple of years earlier (Moeller & Brady 2014, 2). In general, during strong economic times, M&A activities tend to rise positively as buyers, with excessive amount of cash and financial capacity, look to new opportunities in order to enhance competitive advantage; while sellers seek to liquidate their holding or transfer to new strategic business (Rosenbaum & Pearl 2013, 1). Figure 1 will present some key statistics of M&A activities level from 2008 to the present.

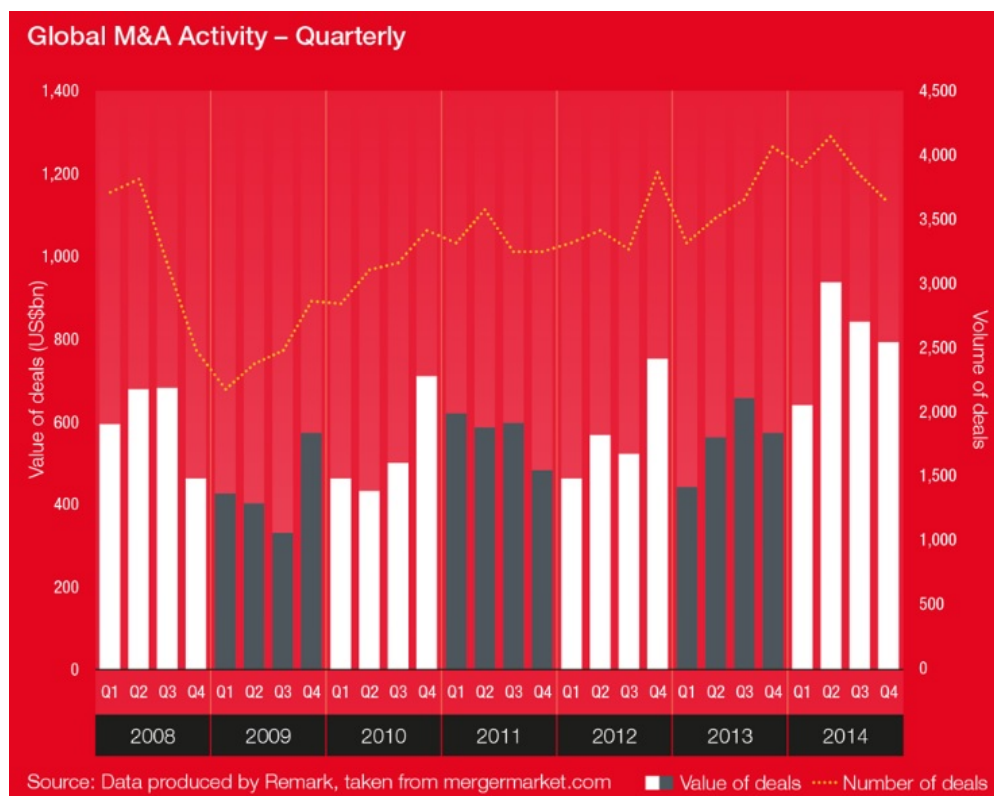


FIGURE 1. Global M&A Activity (\$ Billion) (Source: mergemarket.com)

M&A affects almost every industry, from technology firms and banking, to industrial manufacturers and healthcare organizations. Almost every executive of every major industry faces a buy or sell decision at some point during his term in the company, and it is said that they spend as much as one third of their time considering merger and acquisition opportunities and other corporate restructuring decisions. (Sherman & Hart 2006, 2.)

M&A transactions are also considered to be the most notable profile part of investment banking activities. The act of buying, selling or combining with another company is usually a transformational event for not only involving companies' key executives, but also other major stakeholders such as shareholders, employees, clients and regulators. Both of the party sides – the buyer and seller always enter the transaction with purpose of reaching optimal results in term of value, deal terms, timing, structure, stability and many other important considerations. The process demands wide-ranging analysis, planning, resources, expense, and expertise as well as requires the involvement of many intermediary parties such as investment banks, accountants, lawyers, advisors and even regulators. (Rosenbaum & Pearl 2013, 293.)

The success of any merger or acquisition depends on many factors, the most critical of which is appropriate and correct valuation (Moeller & Brady 2014, 243). Valuation is the core of investment banking, and the ability to properly value a business convincingly in a structured manner is said to be a must-have for any banker (Rosenbaum & Pearl 2013, 3). In a typical M&A transaction, valuation is often regarded as a key deal issue, along with financing, deal structuring, timing and tactics (Rosenbaum & Pearl 2013, 4).

For the buying side, improper valuation can result in overpaying for the target and vice versa, improper valuation can also cause the target to accept a price that is lower than one expected by shareholders. Both of the cases will make a bad impact, not only on shareholders, but also employees, clients and others related parties, whose interest is directly affected by loss of value generated from the deal's strategic objectives and synergy. (Moeller & Brady 2014, 244.)

However, valuation is a challenging process because each company is different and there is currently no single best way to value a company. Especially in the context of M&A, the valuation of a company might be subjected to many external factors, depending on the nature of each M&A deal. Proper valuation also comes with experience and involves perhaps in numerous assumptions, whose changes even in small quantity can result greatly on the valuation themselves. (Moeller & Brady 2014, 243.)

From the target's point of view, the value of the company on a standalone basis is believed to consist of the present value of its future earnings combined with its net current assets, both tangible and intangible. The present value is calculated taking into account the time value of money. (Moeller & Brady 2014, 244.) However for the bidder, the value of the target company would be different, as additional expenses, including the cost of the merger deal and post-deal integration, as well as synergies that the new combined company is expected to create will be taken into account. The value is considered to be deal-specific, as different buyers will have a unique plan for the target company thus they will have different valuation for the target company. Therefore the company valuation is not a question with one absolute answer, but rather dependent on the buyer, the target company, and the post-merger plan or integration. (Moeller & Brady 2014, 244.) Value may affect whether the seller or buyer can agree a price, at which the deal can be transacted (Moeller & Brady 2014, 244). For both parties, proper valuation analysis plays an important role in various steps, ranging from selecting the other deal partners (buyer or seller) from list, framing price expectation, setting guidelines for the range of acceptable bids, evaluating the offers and most importantly, to negotiating the final purchase price (Rosenbaum & Pearl 2013, 11).

With all of those being mentioned, the author attempts to value companies in a merger and acquisition context, with the purpose of establishing a frame on which further processes of a typical M&A deal such as deal structure and negotiation to the final price can be based. The study will research on the most popular valuation methods as well as the financial model upon on which the valuation can be calculated. Once the valuation for target company is calculated, the bidding price

will be limited in range, and thus buyer and seller can go further into the final price negotiation stage.

Throughout the study, a company that attempts to acquire or merger with another company is called an acquiring company, an acquirer or a bidder. A target company or a target refers to the firm being sold or merged into the acquiring company.

1.2 Objectives of the research

The purposes of this thesis are to provide a basic framework of how the valuation of the company should be carried out, and how the price of a company is determined in a merger and acquisition context. In order to achieve the objective, the thesis will research on valuation methodologies that are widely used in M&A, as well as introduce a financial model upon which the price of the target company is established in various processes, from the preliminary valuation to refining valuation during the negotiation process. It is noted that this framework is applicable in many scenarios of a merger or acquisition deal and for both sell-side and buy-side parties. The author also attempts to test and apply the financial model into a case sample transaction. The thesis also studies what factors affect the transition from the valuation in due diligence process to the final negotiated and transacted price.

The main research questions are:

- How can the value of a company in a merger and acquisition deal be calculated and how can the transacted price be determined?

To answer those, three sub questions are identified as:

1. What are the valuation methods widely used in valuing company and how can they be applied in practice?
2. What factors affect the valuation of the company and the final transacted price within M&A context?

3. How can such factors be incorporated into a financial model?

The research will answer these questions theoretically in each chapter, and will introduce a case study in which a financial model will be formulated.

1.3 Research methodology

There are currently two research method approaches: inductive and deductive. The deductive approach starts with a theory, then develops new hypothesis, leading to observation and finally to confirmation, which are illustrated in Figure 2 below. Meanwhile, the inductive methods concerns with the creation of new theory from the existing data. The inductive method generally starts with specific observation, moving to broader hypothesis and theory. (Dawson 2009.)

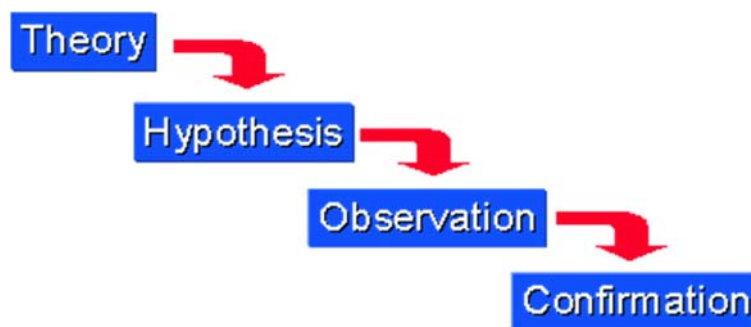


FIGURE 2. The deductive approach framework (Bryman & Bell 2011).

The thesis will employ deductive method, in which the theories and background knowledge based on previous established studies will be introduced, later followed by a hypothesis, then observation and confirmation.

According to Creswell (2013), there are three kinds of research methods: qualitative, quantitative and mixed method. Quantitative research aims to provide examination and conclusion from a statistical and numerical point of view. On the other hand, qualitative approach tends to build assumptions from other existing knowledge.

As such, the thesis also employs the quantitative approach as the priority, in which the input data will be largely numerical data, the analyzing process will also include many mathematical formula and the output will be in form of numerical values. However, qualitative research method is also employed in building the assumptions for the model in the empirical part of the thesis.

Later, information provided in this thesis will be acquired through primary and secondary sources. Although primary sources are different from secondary source in term of originality, sometimes a secondary source may also be a primary source depending on how it is used. (Stebbins 2005.) The author illustrates both of the theoretical and empirical part of the study using both type of sources.

1.4 Scope and limitations

The aim of the thesis is to provide both parties in a particular M&A deal a basic and comprehensive framework of valuing and pricing the target company. Throughout a lengthy M&A deal, both sell-side and buy-side team can benefit by employing the model, thus find out the accurate value and reasonable price for the deal, providing that all the necessary information are researched and collected.

The first limitation of the thesis is that it covers only the valuation part of M&A deals. M&A is a lengthy and stressful process for both parties involved, requires a great deal of effort from both especially in due diligence processes such as planning and deal structure to negotiation, involves a lot of complex term and sophisticated considerations. The thesis will cover only the valuation part, which the author believes to play one of the most important role in any M&A deal. Secondly the model built for valuing company in the thesis assumes that all relevant and required information of both the acquirer, the target company, the market and the industry are accurate and up-to-date. The thesis also assumes that both parties have done their due diligence part, have figured out and researched on every component of the deal-structuring process, and agreed to every term of the developed plan, including forms and means of acquisition, payment timing and composition, accounting and tax considerations, post-deal integration plan and options.

Thirdly, the thesis will present a case study about a presumably ongoing M&A transaction (Intel – Altera). The case study example is an M&A deal carried out in a friendly manner. Although the theoretical part of the study will cover all the popular valuation tools widely used in M&A, in various details and different scenarios, the case study example will be deal-specific and may only employ part of the theory appropriate to the situation.

Finally, as the same goes for any financial valuing model- building, the model in the thesis will be based on many assumptions, which were designed in the planning and deal structuring process during an M&A transaction.

1.5 Thesis structure

The thesis follows a classical structure in which theoretical studies will be presented, followed by the empirical part. This structure is logical and easy for readers to follow. Figure 3 below shows the thesis structure.

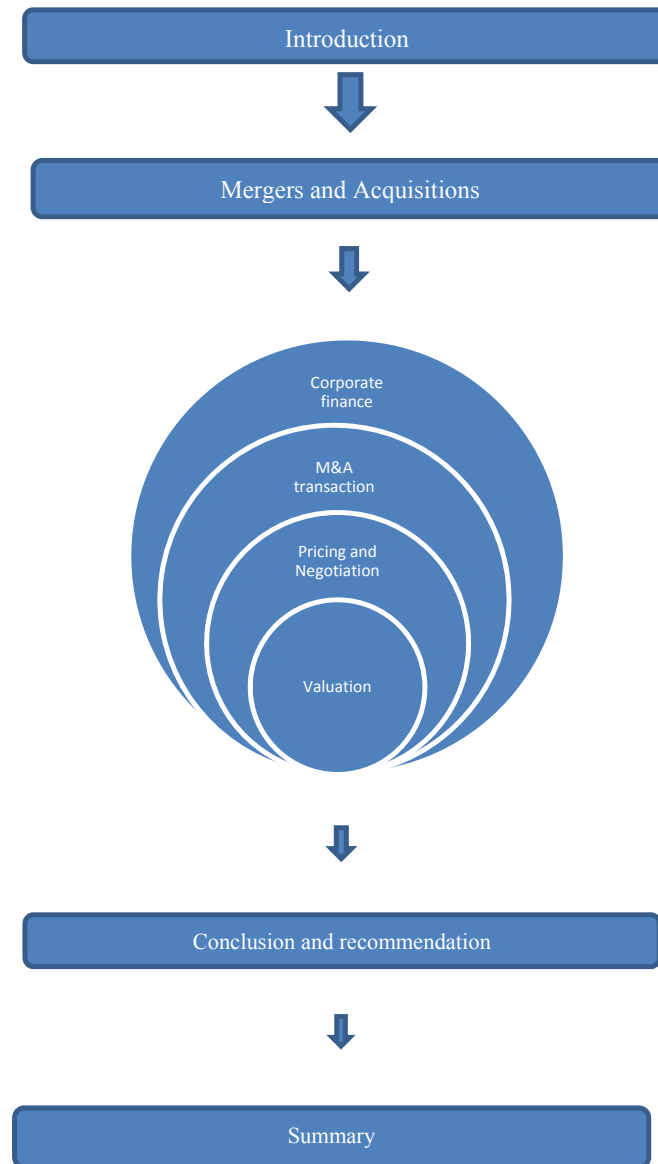


FIGURE 3. Thesis structure

The theoretical part includes chapter 2 and 3. Chapter 2 provides in brief the background knowledge of mergers and acquisitions by giving definition, the most common reasons why M&A happens and the role of M&A from different perspectives. After that, the chapter will structure an M&A process into smaller steps, in order to give the readers a roadmap of how a typical M&A is executed.

Chapter 3 will discuss valuation in M&A context – the main point of the thesis. The chapter starts with the importance of valuation in an M&A deal, how valuation is often carried out in practice, difference between value and price. Then the chapter explains the logical behind the value calculation, as well as presents the components of value and price, the factors influence them, in order to later introduce the financial model for calculating the value and estimating the price.

Chapter 4 will examine a case study of a presumably ongoing transaction (Intel Corp. to acquire Altera Corp.). The transaction will be briefly described, then the author will build a financial model for calculating the value and estimating the price. The financial model will be presented in 3 steps, in which different value calculation methods will be discussed. Such models are powerful tool during deal structuring, due diligence and especially negotiation process, in which both parties can employ the model to quickly evaluate the proposals.

Chapter 5 is the summary of this study, in which the main idea of the thesis will be concluded and an overview of the whole process will be presented. The author also includes the reliability and validity of the thesis in the end.

2 MERGERS AND ACQUISITIONS

2.1 Definition

Although the term *mergers and acquisitions* (M&A) is often used as a whole to refer the act of sale or purchase of companies, since both “merger” and “acquisition” often share various similar aspects, especially the economic outcome, the distinction between the two still exists. David L.Scott gave a technical definition of each of the two terms in “Wall Street Words: An A to Z Guide to Investment Terms for Today’s Investor” as following:

- Merger is a combination or consolidation of two or more companies or entities (often comparable in size) into one entity. The buying company acquires both assets and liabilities of the selling firm, and still retains its original identity after the merger, although usually it might become a different entity.
- Acquisition refers to the purchase of an asset, which could be a whole company, or just a plant, a business division. For example, Microsoft made a major acquisition in 2013 when it purchased Nokia mobile device business in a deal worth total \$7bn, in an attempt to extend its handheld business.

Depending on the type of transaction, whether it’s a merger or an acquisition, the strategic, financial, tax and cultural aspects of the deal may be very different (Sherman & Hart 2006, 11).

In “Corporate Restructuring: Merger, Acquisition and Other Forms”, Bhagaban Das and Debdas Raskhit distinguished “merger” and “acquisition” in a more clear and comprehensive way from the legal perspective. In a merger, either a new company may be created and have its own legal status, or one existing company remains its legal status and another existing company (often the smaller) is merged into it. In other words, there must be one company ceases to exist legally. On the other hand, in an acquisition, two or more companies may stay still as independent and separate legal entities. In this case, it is noted that the control of companies is changed, which is the result when the acquiring company purchases

the controlling interest in the share capital of the target company. (Das, Raskhit & Debasish 2009, 84.) In most acquisition, the acquired firm continues to exist as a legally owned subsidiary (DePamphilis 2014, 17).

However, M&A is often defined as a form of corporate restructuring with the objective of increasing size and volume of business and creating positive value (Das, Raskhit & Debasish 2009, 66). Corporate restructuring is defined as a structural change in many corporate aspects, such as operation, investment, financing and governance. It is a comprehensive process, in which a company splits up or consolidates its businesses, thus transforms itself into a higher value enterprise to its shareholders. (Das, Raskhit & Debasish 2009, 5.) Besides merger and acquisition, corporates can make decision on many other forms of corporate restructuring, such as divestiture, spin-off or equity carve-out. Figure 4 below presents a summary of various forms of corporate restructuring.

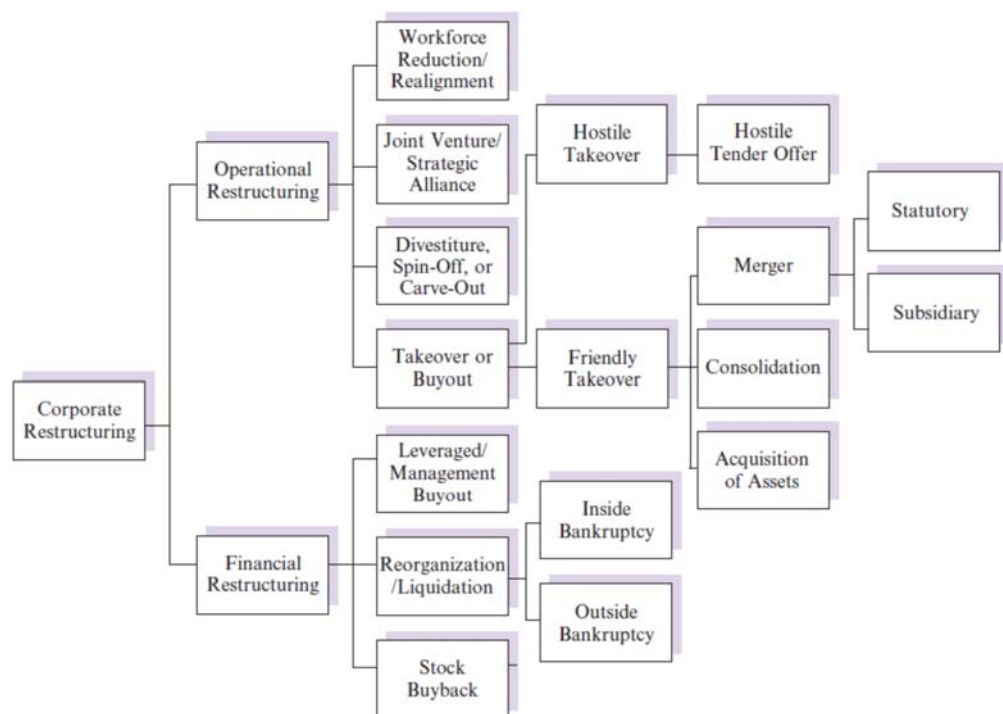


FIGURE 4. The corporate restructuring process (DePamphilis 2014, 18).

In a case when there is widespread of M&A activity within a particular industry or sector, it is said that the consolidation of the industry occurs. This phenomenon is very trendy in any advanced capitalist country and market economy. Meanwhile, in many developing economy, M&A is no longer considered as a threat which representing the dark part and backdoor entries of the corporate world. M&A offers major corporate firms the opportunity to refocus on their core competence, enhance market share and global competitiveness by acquiring other firms in businesses they understand well. In summary, Merger and Acquisition – the popular method of corporate restructuring, has belonged to the long-term business strategy of corporate enterprises. (Das, Raskhit & Debasish 2009, 66.)

2.2 Reasons for merger and acquisition

As mentioned earlier, M&A is a very prominent activity which happens in many market economies and even in a global scale, so why M&A occurs? There are numerous reasons to explain this phenomenon, and depending on time and economic situation, the key factors leading to the rise in M&A activity can be different.

2.2.1 Synergy

Once the management believes that the combined business will create positive value from realizing the incremental cash flow generated, an M&A deal is likely to occur. The expected extra cash flow will drive the market value of combined business higher than the sum of two currently independent businesses. The difference sum is called the implied value of synergy. For example, if the market values of two businesses are \$200 million and \$100 million respectively, and their combined market value is \$350 million, then the implied value of synergy is \$50 million. There are two basic types of synergy: operating synergy and financial synergy

Operating synergy in merger and acquisition comes from economies of scale and economies of scope (DePamphilis 2014, 6). Economies of scale occur when the combined firm has the same or higher production output, but the same or less total

fixed cost which doesn't change with the output levels, than that of the two independent firms. The fixed costs normally include depreciation of plants or equipment and amortization of intangible assets, normal maintenance expense, and other expenses such as interest expense, lease payments and taxes. Unlike variable costs which vary accordingly with the output quantity, fixed costs aren't affected by change in production level and do not fluctuate in the short run. Hence, after a merger or acquisition, the combined firm's output and sales increase, lowering the fixed expenses per unit of output or per dollar of revenue and resulting in reduction in average total costs. (DePamphilis 2014, 6.)

Economies of scope are similar to economies of scales in a way that both of them refer to the reduction in average total costs, i.e. the overall cost per unit. However, unlike economies of scale, economies of scope may also refer to decreasing average fixed costs. For example, fixed cost such as administration expense can be decreased in a combined firm by maintaining only a single management team instead of two for each of the independent firms. Saving in variable costs can also be regarded as economies of scope. Typical example is a case in which the combined firm's sales force sell multiple related products instead of a single product. (DePamphilis 2014, 6.)

Extra cash flows of the combined firm can be created through financial synergy. Financial synergy can exist in a case, for example, when the two independent firms have highly uncorrelated cash flow. Therefore, the cash flows of the combined firm will be more constant and predictable, thus reducing the declining cost of capital. Moreover, securities' issuance and transactions costs can also be lowered. With all of those factors being included, the combined firm can bring positive value after merging. (Weston & C.Weaver 2001, 92.)

2.2.2 Diversification

Merger and Acquisition can occur due to diversification. Such case happens when the acquiring company wants to further its growth by entering new markets or offering new products. The company then chooses to buy firms that already

occupy the market share or own the production lines that it wants to have. This diversification strategy is illustrated in table 1 below.

TABLE 1. The Product-Market Matrix (DePamphilis 2014, 8)

		Markets	
		Current	New
Products	Current	Lower Growth/Lower Risk	Higher Growth/Higher Risk (Related Diversification)
	New	Higher Growth/Higher Risk (Related Diversification)	Highest Growth/Highest Risk (Unrelated Diversification)

With its new market or product lines, the buying company has the opportunity to accelerate its growth by offering its current core product lines to a new target market, or vice versa, shifting its new product lines to the current market. (DePamphilis 2014, 8.)

2.2.3 Adaption to external environment

External environment factors that can influence firms' prospect of growth include regulatory changes and technological advances. Government's strict policies and regulations, although ensure sustainable economy and stimulate competition, on the other hand, can hinder firms' further growth. Technological innovations nowadays not only set up new products and industries but also effectively eliminate old and obsolete ones in a short term. Mergers and acquisitions, in those circumstances, emerge as an attractive solution for firms to secure their competitive edge in the changing environment and open new opportunity with prospects in the future. (DePamphilis 2014, 9.)

2.2.4 Managerialism (Agency Problems)

When the firm management's interest differs from that of the firm's shareholders, agency problems can occur. In some circumstances, a merger or acquisition can happen due to management's intention. As the firm grows larger by making acquisitions, managers will secure their job positions, improve their influence and prestige as well as increase their compensation. Therefore managers can benefit

from merger and acquisition, and they can act as a driving force for the deals to happen without concerning about shareholders' interest. (Ehrhardt & Brigham 2009, 830.)

2.3 Merger and Acquisition process

Most of the merger or acquisition deals start with the acquiring company deciding to purchase another company, however, occasionally the acquired firm (sell-side) will initiate the action. Once the acquiring company made the decision, it identifies a possible target from a list of companies based on numerous considerations made during the due diligence process (will be discussed later). After that, it must figure out a suitable price or range of prices for the target, as well as decide on the terms of payment, i.e. how much portion of the price will be cash, common stock or bonds. Next step is the approach, in which the acquiring firm's manager (often CEO) contacts the target's top management, proposes a merger and they together arrange the terms and key issues of the merger, especially short-term integration plan, long-term strategy and key management positions. If an agreement is reached, the two management teams will announce their approval of a merger to their stockholders, often in formal statements. (Miller 2008, 25.) The payment is often carried out through a third party financial institution. After the transfer of ownership from the target to the acquiring firm, the merger is said to be completed. The merger will be referred as a friendly merger. (Ehrhardt & Brigham 2009, 832.)

In a friendly merger, a standstill agreement has to be made during the negotiation process, in which the target company's stock will not be available for sales to the acquirer for a specific period. The purpose of this agreement is to impede any aggressive tactics that the acquirer might use during the negotiation, or during the period covered by the agreement, which could put the target company's management in a disadvantage negotiating position. (DePamphilis 2014, 82.)

In contrast, in numerous merger situations, the target company's management will turn down the merger offer. In this case the merger offer is considered to be hostile rather than friendly. The acquirer will be left with a number of options and

aggressive tactics, namely “the bear hug”, “the proxy contest” and “the tender offer”. (DePamphilis 2014, 83.)

- The Bear Hug: In this approach, the acquiring company will offer to buy the target’s shares at a substantial premium to its current market share price. The acquiring company will resort to public announcement and other financial institutions to put pressure on the board. Successfully purchasing the majority of target’s shares will make way for the acquirer’s merger offer to be accepted.
- Proxy contest: The objective of proxy contests is to enable the acquiring company to gain control of the target without owning more than 50% of the voting stock. In most cases, the acquiring company (the bidder), which is also a shareholder, attempts to initiate a proxy fight to remove management and to replace board members with those supporting their positions.
- The tender offer: In this tactic, the acquiring company will bypass the target’s board and top management and directly offer the target’s shareholders to purchase their shares. The plan is to acquire a majority of the target’s voting stock, later completing the combination through a merger.

In response, the target company also has a number of options for takeover defenses, such as share buyback, recapitalizations and other forms of corporate restructuring. (Depamphilis 2011, 76.)

2.4 Sell-side

In many merger or acquisition situations, it is not uncommon for the selling company to initiate the action. When the management makes a decision of selling its company, division or business to others, it has to go through an intensive, complicated and time-consuming process with high stakes. The selling company’s management wants to not only achieve key objectives and favorable results from the sale for its shareholders but also comprehensively acknowledge various

strategic alternative options. Typically, the seller hires a third-party financial institution as its advisor to secure its goal. (Rosenbaum and Pearl 2013, 251.)

The sell-side M&A tasks start with identifying possible interested parties. Depending on the priority of deal-specific considerations that the seller has indicated, the advisors may suggest the possibility of running a broad auction or a targeted auction, in order to increase the competitive dynamics as well as the chance of finding a prospective buyer with the best value offer. A broad auction brings the seller's offer to as many potential interested buyers as possible, although it may extend for a considerable amount of time and result in potential business disruption for the selling company. A targeted auction, in which the sell-side team only approach a group of chosen potential buyers, is an appropriate choice when the seller's priorities are speed, confidentiality and other specific transaction-related considerations. Moreover, the deal team can also conduct a negotiated sale with a single party, especially when the resources are limited. (Rosenbaum and Pearl 2013, 253.)

After that, the deal team has to conduct numerous financial analysis, most notably a comprehensive valuation of the target company, in order to evaluate the potential purchase price that buyers may be willing to pay for the acquisition. The sell-side assignments also include framing the seller's price expectation, setting guidelines for the range of acceptable offers and leading negotiations to the final appropriate purchase price. In summary, an effective sell-side team will successfully push the buyers towards the maximum point of the implied valuation range for the target by correctly position the business prospective and tailoring the sale process accordingly. (Rosenbaum and Pearl 2013, 253.)

2.4.1 Sell-side auction process

As mentioned earlier, the sell-side team can market the target company to many potential interested parties by running an auction. Successfully designed auction will have great significance to target's value and purchase price received by the seller as a result of increasingly competitive environment. The competitive nature of an auction often boosts the bidders' willingness to commit quick action and to

put forth their best offer on both price and terms, thus enables the seller to reach their objectives. (Rosenbaum and Pearl 2013, 255.)

There are multiple stages in the auction process and each stage has its own distinct milestone as well as timing span. Table 2 illustrates the entire auction process.

TABLE 2. Stages of an Auction Process (Rosenbaum and Pearl 2013, 256).

Stages of an Auction Process				
Organization and Preparation	First round	Second round	Negotiations	Closing
<ul style="list-style-type: none"> Identify seller objectives and determine appropriate sale process Perform sell-side advisor due diligence and preliminary valuation analysis Select buyer universe Prepare marketing materials and confidentiality agreement 	<ul style="list-style-type: none"> Contact prospective buyers Negotiate and execute confidentiality agreements with interested parties Distribute CIM and initial bid procedures letter Prepare management presentation, data room and stapled financing package Receive initial bids and select buyers to proceed to second round 	<ul style="list-style-type: none"> Conduct management presentations Facilitate site visits Provide data room access Distribute final bid procedures letter and draft definitive agreement Receive final bids 	<ul style="list-style-type: none"> Evaluate final bids Negotiate with preferred buyer(s) Select winning bidder Render fairness opinion (if required) Receive board approval and execute definitive agreement ("signing") 	<ul style="list-style-type: none"> Obtain necessary approvals (from regulator) Financing and closing
2-4 weeks	4-6 weeks	6-8 weeks	2-4 weeks	4-8 weeks

The sell-side advisory team acquires an extensive understanding of the seller's priorities so that it can tailor the process accordingly. Major decisions required to be acknowledged include seller's objectives, how many prospective buyers to approach, appropriate sale process and process roadmap. After that, the team begins the sale process with comprehensive due diligence and preliminary valuation analysis. (Rosenbaum and Pearl 2013, 255.)

The aim of due diligence process is to properly position the target company business. During the due diligence process, the advisory team conducts various in-depth sessions with target management and creates an overall picture of the target, covering issues that potential buyers concern such as profit margin trends, growth sustainability, market share, customer relation and contingent liabilities. One of the key issues that the sell-side diligence must cover is building the assumptions that lay the foundations for the target's financial model. Correct understanding of the target plays an important role in later successful valuation work. It is also suggested that the sell-side advisor must build the target's financial projections from a buyer's perspective. The advisor can also perform the valuation work in advance using methodologies that buyers will employ in their analysis in order to establish a valuation range benchmark for the target company. (Rosenbaum and Pearl 2013, 255.)

After completing due diligence task, the advisor evaluates each buyer in the list on a wide range of criteria, including M&A track records, relative and pro forma market relation, existing customer and supplier relationships, the financial capacity to acquire the target at an appropriate value, potential synergies created after the acquisition and cultural fit (Rosenbaum and Pearl 2013, 256). Next, a number of prospective buyers will be selected and contacted, and marketing material such as teaser, confidential information memorandum (CIM) and confidentiality agreement will be distributed (Rosenbaum and Pearl 2013, 259). From this point, a series of dialogues and interactions will occur between the sell-side team and buy-side team, with the sell-side often providing additional necessary materials depending on situation. The buyers' deal team will express their interests and submit their bids to the sell-side team. (Rosenbaum and Pearl 2013, 260.) In a typical auction process, the sell-side team often arranges more

than one round of bidding for selection purpose. After identifying preferred buyers with appropriate bids, the sell-side team will engage in negotiation with the bidders, addressing key issues and any remaining diligence items and terms. If the auction is successful, a winning bidder will be selected, a definitive agreement will be made by the buyer and the seller. An announcement of the transaction may be made to public depending on the situation. The remaining task for the deal team is to obtain approval from board of directors and later other regulatory approvals. Finally, when all the agreement conditions are met and the financing for the acquisition is completed, the deal is closed. (Rosenbaum and Pearl 2013, 273.)

2.4.2 Negotiated sale

In some merger and acquisition situations, the sell-side team may choose to conduct a negotiated sale rather than to carry out an auction. Negotiated sales are preferable options when there is a natural strategic buyer with clear synergies and cultural fit, or the seller simply wants to remain confidentiality of its sales intention. The seller contacts the single prospective buyer, exchanges necessary information and evaluates the potential transaction. (Rosenbaum and Pearl 2013, 281.)

Similar to an auction process, negotiated sale process includes many key stages mirror those of an auction. However negotiated sale process often spans over a shorter timetable than an auction one as negotiated sale process is generally more flexible and customizable. The sell-side advisor has to conduct a comprehensive due diligence on the target, builds projection model, prepares necessary material and document. Throughout the process, the sell-side advisor is also in charge of all interactions and later negotiation with the potential buyer. (Rosenbaum and Pearl 2013, 281.)

Unlike an auction, negotiated sale does not give the seller negotiating leverage and it eliminates the nature competitiveness of an auction. It is also difficult for the seller to gauge whether or not the receiving bid package has the maximum value offer. On the other side, advantages of negotiated sales include high level of

confidentiality, less disruption to business, fast timing and flexibility in deal schedules. (Rosenbaum and Pearl 2013, 282.)

2.5 Buy-side

From the buy-side perspective, a decision to merge or acquire another company or business is often driven by the purpose of growing, developing and expanding the current business platform. The company management may consider an acquisition an attractive option because it is faster, cheaper and less risky to buy an existing business instead of building a business from scratch. Expanding into a new geographic location, setting up a new facility, building a new production line and distribution channel often involve huge amount of risk, increasing costs and heavy commitment of resources over a long period of time. Meanwhile, it is possible to buy a well-positioned company with good business model, stable customer base, established infrastructure and facility, then integrate the purchased business to the current one in an effective and efficient way without any disruption to the existing business. (Rosenbaum and Pearl 2013, 332.)

As the goal of an acquisition is to facilitate growth and improve profitability to create higher returns for shareholders, the acquisition should be built on the company's core competencies. Acquisitions within core competencies often give the acquiring company numerous value creation opportunities, in other words, synergies, such as cost savings and other growth initiatives. Examples of core competencies include, for instance, existing product lines, geographies, or an extension into new focus area. (Rosenbaum and Pearl 2013, 332.)

2.5.1 Planning

As mentioned above, M&A is often regarded as means of implementing business growth strategy for the acquiring company. In order to ensure that mergers and acquisitions meet the objectives of the acquiring company and satisfy expectations, a well-designed business strategy must be comprehended at the first place. A good business plan serves as a guideline for identifying ideal acquisition opportunities to accelerate future growth as well as sustainably maintain the

growth rate in the long-term. Typically the acquiring company starts the acquisition process with the planning stage, which consists of a business plan and a merger or acquisition plan. The plans will act as a basis upon which all of the following phases of the acquisition process are conducted. (DePamphilis 2014, 117.)

The first step in devising a business plan is to conduct external and internal analysis. The sell-side team must be able to clearly describe the external environment in which the acquiring company is operating, in other words, the industry or market in terms of size, growth rate, profitability, competitive dynamics, product offering, customers and suppliers. Internal analysis formulates the strengths and weaknesses of the company, especially in regard with its competitors. Data and knowledge accumulated from those analyses will be used in later process, particularly in developing the cost and revenue assumptions underlying the business' projected financial statements. (DePamphilis 2014, 120.)

The next step would be to specify the overall goal, the purpose of the corporation/company, to put it more exactly, what and where the company has chosen to operate, what it plans to accomplish and how it would like to be evaluated by other stakeholders. These items are often stated in the business mission or vision statement of the company. Furthermore, the objectives and goals should be quantified and be easy to measure or assess. (DePamphilis 2014, 120.)

On the basis of the goals and objectives set above, a business strategy is developed to clarify how those goals will be achieved within an acceptable period of time. Additionally, an implementation strategy and functional strategy will be created, indicating the path the firm adopted to implement its chosen business strategy. (DePamphilis 2014, 120.) For example, Microsoft, from a computer software company, decided to pursue its vision of unifying all other hardware devices such as phones, tablet, gaming consoles under one operating system. Having realized the short-timing window it had while being left behind by other well-positioned competitors, Microsoft decided to acquire Nokia handheld business in 2013, instead of trying to enter the hardware sector from scratch.

Having completed the business plan, the acquiring company is ready to develop its merger-acquisition plan if it decides to implement the business strategy through an acquisition. In the first place the plan objectives and motivation should be clarified, in other words, what is the specific purpose of the acquisition and how the acquisition would be beneficial in accordance with the business strategy. It should be noted that the acquisition plan's objectives be aligned with the company's overall strategic objectives indicated in the business plan. (DePamphilis 2014, 136.) Next step the company management should determine the time period in which the acquisition should be completed. Before start searching for favorable targets, the management also have to determine exactly the company's financial capacity for acquisitions, including internally generated cash flows as well as funds obtained from external markets. Management also plays an important role in the acquisition plan, being responsible for providing guidance to the deal team about multiple issues, such as target's evaluation criteria, acceptable sources of financing, or even the possibility of carrying out an unfriendly takeover. (DePamphilis 2014, 140.)

2.5.2 The search process

Once the acquisition plan is completed, the buy-side team can begin the search for acquisition candidates. Using criteria laid out in the acquisition plan, particularly criteria on the deal size or geographic location, the buyer can utilize various information databases such as Bloomberg, Thomson, CapitalIQ or EDGAR Online (in the United States) for its searching process. To further refine the search process, a number of selection criteria of the prospective targets can be quantified if possible, especially the market segment, market share, product line, profitability, leverage, and cultural similarity. (DePamphilis 2014, 155.)

2.5.3 The approach

After selecting a number of potential targets and developing a profile of each target, the acquirer can start the next part of the acquisition process, approaching the target and making the initial contact. Before the first contact, the acquiring team also has to prepare the outline for reasons of the acquisition or merger, in

order to increase the chance of attracting the target company's interest. For example, the need for capital, the desire to make profit and cash out may provide a reasonable justification for the proposed acquisition. (DePamphilis 2014, 153.)

The first contact could be made through an intermediary, especially in case the target is a public company. The intermediary may be an investment banker, accounting firm, lender, broker or even board member of the acquirer. In some cases in which the buyer does not have any direct contact with the target, first contact can be made through a letter of interest and the follow-up phone call. However, the best of all would be developing a relationship with the owner of the target, especially if the target is a private company. (DePamphilis 2014, 156.)

2.5.4 Negotiation and close

During the first round of interactions between buyer and seller, preliminary legal of transaction documents and audited historical data of the acquiring company and the target company are exchanged between two parties. If both parties reach an agreement to advance further talk, they are entering the negotiation phase. (DePamphilis 2014, 157.) Figure 5 illustrates the negotiation process in detail step by step.

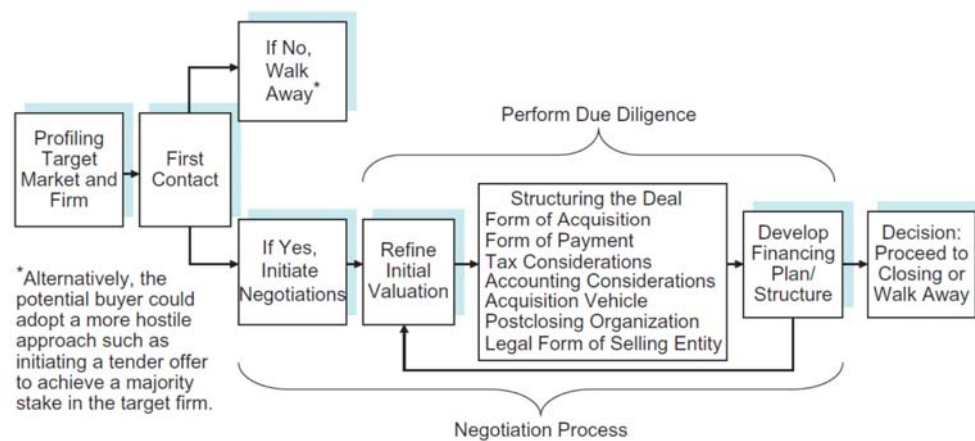


FIGURE 5. Negotiation Process. Source (DePamphilis 2014, 159)

Throughout the negotiation process, the buy-side team often performs due diligence of the target and repeatedly refines the preliminary valuation of the target as new data will be continuously revealed as a result of due diligence, structure the deal and address various terms and considerations. Finally, both parties verify the financing plan for the acquisition. If an agreement is reached, both parties proceed to the integration plan and close the deal. (DePamphilis 2014, 160.)

2.6 Deal structuring

Each party enters the negotiation process with its own objectives, priorities, terms and considerations for the acquisition. Disagreement may arise from issues including basic data, form of payment, accounting, tax and legal structures. The deal structuring task is to work out the solutions that meet as much of both parties' requirement as possible. (DePamphilis 2014, 160.)

The first component of the deal structuring is form of payment, to put it exactly, how much cash, common stock, bond or some combination of them make up the payment. The parties also have to decide on the acquisition vehicle and form of acquisition, namely, what legal structure used to acquire the target, and what is supposed to be acquired. Accounting considerations are also major components of the deal structure, covering issues arising from the changing value of acquired assets. Next, the organizational and legal framework of the new combined business are determined. Finally, decisions will be made on other attributes, including how the ownership is determined and how it is transfer between the acquirer and the seller, as well as how the ownership is protected and how risks are divided between parties. The type of documents and approvals required for closing the transaction must also be agreed upon on. (DePamphilis 2014, 161.)

The deal structure is very important for both the buyer and seller, as it plays a crucial role in later valuation and merger consequences analysis. For buyer, it can affect the ability to finance the acquisition, and for seller, it can impact on the profit after tax of the sale of the business. (Rosenbaum and Pearl 2013, 340.)

2.7 Due Diligence

Due diligence, a demanding and exhausting process which requires a considerable amount of managers' time and attention, is one of the most critical parts of a successful acquisition. Due diligence consists a series of review on data and records and typically occurs continuously throughout the negotiation phase. (DePamphilis 2014, 161.)

The first primary reviews of due diligence are the strategic and operational reviews, analyzing the target's management, business strategy, sales and overall operations. The financial review, usually conducted by financial and accounting personnel, inspects and scrutinizes the seller's financial statements. The legal review covers issues including corporate records, management and employment matters, other material contracts, obligations and liabilities of the seller. Such invaluable reviews enable the buyer to validate the accuracy of assumptions underlying their valuation model as well as discover new sources of value and risk. In practice, long and thorough due diligence often reveals items which the buyer takes as a reason to lower the purchase price. (DePamphilis 2014, 163.)

3 VALUATION METHODS

3.1 The nature of valuation process

Like many other phases in the M&A process, valuation can be regarded as a whole process which comprises a set of procedures used to estimate the equity value or enterprise value of a particular company. In an M&A situation, it requires a great deal of preparation and considerations, especially during the due diligence and deal structuring process, in order to get the business valuation done correctly. (Das, Raskhit & Debasish 2009, 167.)

Since there are always underlying assumptions on which business valuation is made, there is no universally correct way to estimate the value of a company. Different parties, different stakeholders will have their own views and perspectives, as such, their own underlying assumptions when it comes to appraise a particular business or company. A business chief executive or manager may think that the company's product portfolio and market share are worth a lot. In contrast, an investor may think that the business value is estimated based on its historic income. Moreover, changing economic conditions or regulatory environments not only influence the intrinsic value of the company, but also change other stakeholders' perceived value of it. For instance, during economic growth time, more companies are able to afford their strategic acquisitions due to more access to financial resources, leading to higher business selling prices due to increasing competition. (Das, Raskhit & Debasish 2009, 168.)

From the perspective of an acquirer, there are many factors determining the value of a firm, ranging from the target's product, technology advancement, market readiness, to its management and culture's commonality. Assuming that those factors are thoroughly examined in the due diligence process mentioned in previous chapter, the remaining tasks of building a valuation model are forecasting based on those analysis and applying those projected figures into a model using the valuation methods discussed in this chapter.

A comprehensive and well-adapted business valuation model should employ several methods under these three fundamental approaches, which are presented as follow:

- 1) Asset-based Approach.
- 2) Market-based Approach.
- 3) Income-based Approach.

3.2 Discounted cash flow method

Discounted cash flow method is considered an income-based approach because it requires the calculation of the present value of all of the future free cash flows which the company is expected to generate in order to estimate the intrinsic business value. The logic of the approach is that a company is thought to worth all of the cash flow that it could create for investors in the future. (Ehrhardt & Brigham 2009, 515.) The step-by-step of employing DCF valuation method are illustrated below.

3.2.1 Estimating required financial returns

1. Cost of Equity (k_e)

In financial theory, cost of equity (k_e) is the rate of return investors require for a company. According to the CAPM (capital asset pricing model) the required return on an asset (k_e) is equal to the sum of risk free rate of return (R_f) and a risk premium. (Ehrhardt & Brigham 2009, 346.)

A risk-free rate of return must be a stable, certain and the return must be free of default risk. For example, in the United States of America, the long-term U.S. Treasury securities are widely considered as assets free of default risk and used to represent the risk free rate. (DePamphilis 2014, 218.)

The capital asset pricing model formula for calculating cost of equity is stated as follow (DePamphilis 2014, 219):

$$\text{CAPM: } k_e = R_f + \beta(R_m - R_f)$$

In which:

R_f : Risk free rate of return

β = beta

R_m = expected rate of return on equities

$R_m - R_f$ market risk of premium, or equity premium

It is difficult to estimate exactly the market return. Analyst often has to use historical data and calculate the arithmetic or geometric averages to come up with the result (DePamphilis 2014, 219).

Beta (β) is a measure of non-diversifiable or systematic risk, which can be the result of an inflation or an economic crisis that has an impact on the market. Beta reflects the change in a company's financial return in relation with a change in the general stock market's return. (Ehrhardt and Brigham 2009, 513.) Therefore, beta is generally calculated by regressing the percentage change in the return on a specific company's stock with that of a broader stock market index. When $\beta = 1$ the stock is as risky as the sample market. When $\beta < 1$ the stock is less risky, and vice versa when $\beta > 1$ the stock is riskier than the sample market. A company's beta can be calculated using historical betas or beta of similar sample companies during a period of time. (DePamphilis 2014, 225.)

2. Pretax Cost of Debt

The cost of debt estimation must reflect the current market interest rates and default risk. The default risk indicates the probability that the company fails to pay interest and principal in time, and probably goes into bankruptcy. (Ehrhardt and Brigham 2009, 340.) In practice, the cost of debt is calculated by computing a weighted average yield to maturity (YTM) on each of the company's outstanding bond issues. Yield to maturity is the internal rate of return that investors can gain if a bond is held to maturity, providing that payment of interest and principal are made within schedule. To calculate the yield to maturity, the market price of the bond, its coupon value and face value must be known. (DePamphilis 2014, 221.)

3. Cost of Preferred Stock

Preferred stock is a firm's security that pays out dividends in a schedule. Similar to those of bonds, preferred stocks' dividends are constant and are paid in a timely schedule. In the case of liquidation, preferred stockholders are paid after debt holders but before common shareholders. Therefore, preferred stock is evaluated as riskier than debt but less risky than common stock.

As preferred dividends are paid in perpetuity, the cost of preferred stock is calculated as follows (DePamphilis 2014, 223):

$$k_{pr} = \frac{d_{pr}}{PR}$$

In which:

k_{pr} : cost of preferred stock

d_{pr} : dividends

PR: market value of preferred stock

4. Cost of Capital

The weighted average cost of capital (WACC) represents the general cost of equity, debt and preferred stock in which each category is proportionately weighted.

The WACC is calculated as follow (DePamphilis 2014, 223):

$$WACC = k_e \frac{E}{D + E + PR} + i(1 - t) \frac{D}{D + E + PR} + k_{pr} \frac{PR}{D + E + PR}$$

In which:

E = the market value of common equity

D = the market value of debt

PR = the market value of preferred stock

t = the firm's marginal tax rate

3.2.2 Calculating free cash flows

Enterprise cash flow or free cash flow to the firm (FCFF) is widely used in the DCF valuation method. It expresses the total of cash available for distribution among all investors holding claims against the firm's resources. Investors can include common stockholders, bondholders and preferred stockholders. Enterprise

cash flow is not affected by the firm's capital structure, because its calculation process doesn't require the determination of financial sources. (Ehrhardt and Brigham 2009, 425.) Table 3 below illustrates the FCFF calculation process.

TABLE 3. FCFF calculation

Earnings Before Interest and Taxes
Less: Taxes
Earnings Before Interest After Taxes
Plus: Depreciation & Amortization
Less: Capital Expenditures
Less: Increase / (Decrease) in Net Working Capital
Free Cash Flow (FCFF)

Net working capital is calculated by subtracting current operating liabilities from current operating assets. As a result, FCFF only comprises of cash flows from operating and investment activities, but not from financing activities. (DePamphilis 2014, 229.)

3.2.3 Apply discounted cash flow methods

Discounted cash flow (DCF) methods are widely used by many financial institutions and professionals in valuation of capital projects, financial assets, firms and businesses, especially in merger or acquisition situations.

i. Enterprise Value

The market value of the company (the enterprise value) is equal to the future free cash flows available to the company's investors from operations and investment activities discounted at the weighted average cost of capital (WACC). It is noted that the enterprise value of the company takes into account all of the company's securities – bonds, preferred and common stocks that generated cash flows on which investors claim against. (Ehrhardt and Brigham 2009, 514.)

The advantage of using enterprise valuation method is that it can give an accurate intrinsic value of the company's equity without having adequate information

about the company's debt repayment schedules or interest expense in the future (DePamphilis 2014, 232).

There are 3 valuation models which can be used to calculate the enterprise value of a company. The first one is the zero-growth valuation model. As its name implies, the model assumes that there is no growth or increase in the periodic free cash flow the company will generate in the future. The free cash flow is expected to be constant in perpetuity. Despite of its simplicity and its being regarded as unrealistic in practice, there is little evidence proving that valuation estimates provided from this method are less accurate and reliable than those provided by more complex methods, because more complex methods require more inputs and assumptions. (DePamphilis 2014, 233.)

According to the zero-growth valuation model, the value of the company is calculated as follows:

$$P_{0,FCFF} = FCFF_0 / WACC$$

In which:

$P_{0,FCFF}$: Present value of the company

$FCFF_0$: free cash flow to the company at the current moment

WACC: the cost of capital

Unlike the zero-growth model, the constant-growth model assumes that the company maintain a predictable rate of growth on its free cash flow in the future. The constant growth rate, g , is expected to be less than the required return, k_e , so that the model mathematical formula is constructed correctly. (DePamphilis 2014, 234.)

The market value of the company is calculated as follows:

$$P_{0,FCFF} = FCFF_0 (1 + g) / (WACC - g)$$

For some companies which are enjoying rapid growth for the current periods, but are also expected to slow down at some point in the future, the valuation model in

use is the non-constant or the variable growth model. The logic of the model is to calculate the company's present value at the end of high growth period (terminal value), then add the present value of the discounted cash flows generated during the high growth period. The sum of discounted cash flows during the slow or stable growth period is called the terminal, sustainable or horizon value. (DePamphilis 2014, 235.)

Alternatively, the variable/non-constant growth model can be applied into calculating the value of any business, provided that the forecasted financial statements of the business in a definite period of time are available. The forecasted period is treated the same as the high growth period mentioned above.

On the other hand, the terminal value can be calculated using the constant-growth model, given that the cost of capital and the expected cash flow growth rate in the forecasted period are known. The terminal value at year n , P_n , and the present value of the company at the current moment, $P_{0,FCFF}$, can be calculated as follow:

$$P_{0,FCFF} = \sum_{t=1}^n \frac{FCFF_0(1 + g_t)^t}{(1 + WACC)^t} + \frac{P_n}{(1 + WACC)^n}$$

$$P_n = \frac{FCFF_n(1 + g_m)}{WACC_m - g_m}$$

$FCFF_0$ =FCFF in year 0

WACC =weighted average cost of capital through year n

$WACC_m$ =cost of capital assumed beyond year n (Note: $WACC > WACC_m$)

P_n =value of the firm at the end of year n (terminal value)

g_t =growth rate through year n

g_m =stabilized or long-term growth rate beyond year n (Note: $g_t > g_m$)

The stable growth rate g_m is usually estimated to be less than or equal to the overall industry growth rate. The cost of capital is generally expected to be the same. However, in a merger or acquisition situation, the weighted cost of capital

for newly combined firm is often estimated to be that of either the acquirer or the target company, especially if the two companies are equally risky, operating in the same industry and based in the same country. (DePamphilis 2014, 237.)

ii. Equity Value

It should be noted that the enterprise value of the company calculated above is also equal to the market value of the company's common equity plus long-term debt and preferred stock less cash and cash equivalents. Vice versa, the equity value of the company can be calculated by deducting the market value of long-term debt and other securities generating cash-flow from the calculated enterprise value. (DePamphilis 2014, 239.)

3.3 Relative valuation methods

Relative valuation methods are also regarded as market-based approaches, as they use data from the real market place to determine the company's value.

Specifically, in relative valuation methods, a company's market value is estimated using a value indicator for comparable companies, precedent transactions or comparable industry averages. A value indicator could be operating cash flow, net income, EBITDA or book value. This method is applicable only to companies with positive, stable earnings and cash flows. (DePamphilis 2014, 260.)

The market value of a target company can be estimated by the following equation:

$$MV_T = (MV_C / VI_C) \times VI_T$$

In which:

MV_C = market value of comparable company C

VI_C = value indicator for comparable company C

VI_T = value indicator for firm T

(MV_C/VI_C) = market value multiple for the comparable company

Comparable companies are chosen such that they are equally profitable and risky as the valued company. One way to select the comparable companies is to calculate the correlation between the operating income or revenue of the target firm and those of the comparable firms. If the correlation is positive, the firms are comparable. (Rosenbaum and Pearl 2013, 17.)

It is suggested that certain issues should be paid attention to when applying relative-valuation methods. First, the multiples (e.g., MV_C/VIC) must be defined in the same way for all comparable firms. Second, outliers – those companies with substantially different value than others, should be eliminated from the sample, by careful observing the distribution of the multiples of the firms being compared. (Rosenbaum and Pearl 2013, 50.)

Regarded as another form of relative valuation method, the precedent transactions method uses the multiples which are based on purchase prices of comparable companies that were recently acquired. Ratios such as price-to-earnings, price-to-sales, price-to-cash flow, and price-to-EBITDA are calculated for the target companies in precedent transactions. The ratios are then in turn multiplied again to the respective components of the target company to obtain an estimate of the market value of the target company. (Rosenbaum and Pearl 2013, 85.)

3.4 Asset-oriented methods

Those methods typically value firms based on tangible book, breakup or liquidation values. As book values do not always match the actual market values, analysts often have to readjust the balance sheet to obtain reliable data. Although the method has an advantage of being simple without heavy requirement for guesswork or assumption, disadvantages include the inability to account for synergy effect among different assets and the requirement of full internal information. (Das, Raskhit & Debasish 2009, 168.)

Breakup value is calculated by estimating each business segment or operation of a company separately, then adding up altogether. Diversified companies with large cap stocks often are valued by investors in this way, especially if the synergy

between each business segment of the parent company is considered to be uncertain. (DePamphilis 2014, 271.)

4 APPLYING FINANCIAL MODELS TO VALUE IN MERGERS AND ACQUISITIONS

4.1 Acquisition deal description

The thesis will take an example of a pending merger as a case for the thesis. The acquirer company is Intel Corporation (NASDAQ:INTC) and it is said to look to acquire Altera Corporation (NASDAQ:ALTR). Intel Corp. is regarded as the world's largest chipmaker and wholesales semiconductor. The recent slowdown in the worldwide PC market has caused a plummet in Intel's sales forecast and huge losses in Intel's mobile division. Therefore, it seeks to expand beyond the traditional personal-computer market and it has seen the potential synergy in acquiring Altera Corp. (Sherman & Clark 2015.) Intel's products portfolio ranges from silicon-based semiconductors, retail network and communications products, computer parts such as processors, server boards, motherboards, chipsets to desktops, notebooks and storage systems. Intel is also a big player in the data-center business, which accounts for over 20% of its annual revenue in 2014, as an ever-increasing amount of data is generated and kept in data centers around the world. (Intel Corporation 2015.)

Meanwhile, Altera Corp. is also a semiconductors manufacturer, producing high performance, high density programmable logic devices, intellectual property cores and associated development tools. Its logic devices, also known as field-programmable gate arrays (FPGA) are more efficient than other chips and highly programmable in a way that they can operate on personal computers and engineering workstations that can be tailored - programmed by customers. (Rigby 2015.) Intellectual property cores are hardware description languages or design files used in logic functions. Altera's wide range of products are employed in various markets such as telecommunication (installed in cell phone towers stations), data communication, electronic data processing and other industrial applications, even for military purpose. (Altera Corporation 2015.)

Intel intends to acquire Altera with the aim of growing into new chip market segments while also reducing its dependence on the traditional computer industry.

If the acquisition is successful, Intel could diversify its market into automotive, industrial and communication applications, and the combined company will become a leading semiconductor manufacturer for data centers. (Williams 2015.) On the other side, Altera will benefit from Intel's ample resources and leading expertise.

This chapter illustrates a process for building a financial model addressing valuation issues in the Intel – Altera acquisition deal and how they may be used in the deal-negotiating process. The advantages of building a financial model is that alternative valuation scenarios, deal structures and financing arrangements are easy to analyze and assess. Especially in during an M&A process, it is much easier to deal with continuously updated and changing key assumptions underlying valuation with a built-on financial model.

The logic underlying the Excel-based M&A model is explained in details step by step. The model has three steps. First, calculate the value of the acquirer and target companies as stand-alone businesses. After that, value the newly combined firm, including the effects of synergy. Third, determine the initial offer price for the target firm.

In this case study, the term “Acquirer” or “acquiring company” refers to Intel Corporation; the term “Target” or “target company” refers to Altera Corporation.

4.2 Step 1: Acquirer and target companies are valued separately

The acquirer's shareholders only allow an acquisition if the combined value of the target and acquiring firm is larger than the sum of their standalone values. To validate this assertion, the first step of the model-building process is to value each firm on a stand-alone basis.

4.2.1 Normalize Historical Data

Intel Corp. and Altera Corp. are U.S. public companies, hence they follow Generally Accepted Accounting Principles (GAAP) when formulating their financial statements. The income statement, balance sheet and cash flow

statements of Intel Corp. can be seen in Appendix 1, 2 and 3 respectively. Similarly, those of Altera Corp. can be seen in Appendix 12, 13 and 14 respectively.

In order to limit the assumptions for better financial projection, the simplified financial statements of both companies are made, which can be seen in Appendix 4 (Intel Corp.) and Appendix 15 (Altera Corp.).

In the acquirer's simplified income statement (Appendix 4), the account "Other expense (income), net" represents the accounts "amortization of acquisition-related intangible assets" and "Restructuring and asset impairment charges", both of which in the original income statement (Appendix 1).

In the target's simplified income statement (Appendix 15), the account "Other expense (income), net" represents the accounts "amortization of acquisition-related intangible assets" and "Gain reclassified from other comprehensive income", both of which in the original income statement (Appendix 12). Moreover, depreciation and amortization are also explicitly stated in the simplified income statements of both companies, instead of being included as part of cost of sales as in the original income statements.

Meanwhile, in order to limit the assumptions which in large amount can result in inaccuracy, many accounts in the original balance sheet are grouped into "Others" accounts in the simplified balance sheet. For example, in the acquirer's financial statements, account receivables, inventories, deferred taxes, trading assets and short-term investments (from the original balance sheet – Appendix 2) are grouped into "Other operating assets" (in the simplified balance sheet - Appendix 4); marketable equity securities and other long-term investments (Appendix 2) are grouped into "Investment" (Appendix 4); goodwill, identified intangible assets, and other long-term assets (Appendix 2) are grouped into "Other Assets" (Appendix 4); long-term deferred tax liabilities and other long-term liabilities (Appendix 2) are grouped into "Other Liabilities" (Appendix 4). Meanwhile, for the Target, account receivables, inventories, deferred taxes and short-term investments (Appendix 13) are grouped into "Other operating assets" (Appendix 15); long-term investments, goodwill, non-current deferred income taxes and

others (Appendix 13) are grouped into “Other Assets” (Appendix 15); non-current liabilities (Appendix 13) are grouped into “Other Liabilities” (Appendix 15).

4.2.2 Projected normalized cash flow

According to Ehrhardt & Brigham (2009), the projected financial data should factor in information gathered from the previous due diligence process, such as market share, product demand, pricing, increasing costs, competitors and their product portfolio and potential supply disruptions. Projections should also reflect the effect of new products on the revenue and costs associated, as well as capital expenditures and other expenses. Normalized data should be projected for at least five years, until they turn positive or the growth rate turns into what is believed to be sustainable.

To make the financial assumptions employed in the model reliable, the author uses data collected from consensus estimate for projection of the first 3 years, then makes the rest of the assumptions for the next 2 years by himself using arithmetic calculation methods. In this model, figures of net sales (revenue), gross margin, earnings before interest and tax, income tax, depreciation and amortization in 2015 – 2017 are taken from the projected consensus estimate, which can be seen in Appendix 7 and Appendix 18. The author collects the consensus estimate figures from Thomson One, which gathers the data from major brokers and financial analysts such as Credit Suisse, JMP Securities, Wells Fargo Securities and so on. The author believes in the reliability and validity of these projected figures because they are widely used by major analysts all over the world to assess the performance of any stock.

To project the financial statements, i.e. the income statement and balance sheet of companies in this case study, key financial ratios are calculated and presented as percentage value in Appendix 8 (for Intel Corp.) and Appendix 19 (for Altera Corp.). Then, by multiplying each of the above ratio (in percentage value) to its corresponding consequent (or denominator), we obtain the forecasted value of each components in the income statement and balance sheet, thus have the complete projected financial statements (in numerical value), which can be seen in

Appendix 9 (Intel Corp.) and Appendix 20 (Altera Corp.). The detailed process is explained as follow:

- The first key ratio to be calculated is sales (revenue) growth. Using input from simplified income statements (Appendix 1 & 12) and the consensus estimate (Appendix 7 and 18), the author computes the sale growth of both companies from 2010 to 2017. For the years 2018 and 2019, the sale growth is assumed to be an average of those in the previous 5 years. For example, in Appendix 8, net sales growth rate of the Acquirer is estimated to be 2,7% in 2018, which is the average growth rates of the last 5 years, from 2013 to 2017. Repeat the process and the author obtains net sales growth for the Acquirer and the Target companies in 2018 - 2019 as presented in Appendix 8 and Appendix 19 respectively. Using these sales growth ratios, net sales in value for the Acquirer and the Target in 2018-2019 are calculated as in Appendix 9 and Appendix 20.
- Secondly, the ratios of each income statement components (cost of sales, R&D, G&A expenses, operating expense) to revenue are calculated for the years 2010 to 2017, using input from simplified income statements (Appendix 4 & 15) and consensus estimate (Appendix 7 and 18). The author again forecasts the figures of these ratios in 2018-2019 by computing the average of these ratios in the previous 5 years period. Multiplying these ratios to net sales figures obtained from above, each of those income statement components are obtained and presented in the projected income statement as in Appendix 9 and Appendix 20.
- Thirdly, balance sheet components to revenue ratios are calculated in the same manner. Those ratios are cash balance to sales, other operation assets to sales, net fixed assets to sales, other assets to sales, and current liabilities to sales and so on. The ratio percentage values are presented in Appendix 8 and 19, and the components' values are presented in Appendix 9 and 20 for Acquirer and Target companies respectively.
- After all of the income statement and balance sheet components are projected, the author checks his developed work by adding the row "Addendum: Check" which can be seen in the last line of Appendix 9 and

20. The balance sheet is balanced, and we have the projected financial statements for both companies, which can be used to calculating free cash flow in the next process.

4.2.3 Calculate free cash flow, cost of capital and equity value

After completing the projected financial statements, we can calculate the free cash flows for estimating the equity value of each company. The components for calculating the free cash flows are the after-tax earnings before interest and tax, depreciation and amortization, gross capital expenditures, and change in working capital. The calculation of FCF and each components are shown in Appendix 10 (Intel Corp.) and Appendix 21 (Altera Corp.). After-tax earnings before interest and tax (designated by $EBIT(1-t)$) are calculated by multiplying operating profits ($EBIT$ – found in income statement) to after-tax rates (designated by “ $1 - t$ ”, in which t is the effective tax rate). Depreciation and amortization are already projected in the balance sheet (appendix 9 and 20). Gross capital expenditures represent the capital a company spends on fixed assets in a fiscal year, and in this model they are calculated as the difference of total fixed assets year over year with adjustment of depreciation being taken into account. Change in Working Capitals is the different of working capitals year over year, and working capital is the difference between current liabilities and current operating asset excluding cash. All of the input data for those components are taken from the projected income statement and balance sheet in Appendix 9 and 20. Applying the formula in chapter 3.2.2, the free cash flows of both companies are calculated and presented in Appendix 10 and 21.

To apply the discounted cash flow method, we also need to calculate the cost of capital for each companies. Using formula presented in chapter 3.2.1, the author calculates the cost of capital for each companies as in Appendix 6 and 17 respectively. The components of cost of capital are cost of debt and cost of equity. Cost of debt is estimated by dividing interest expense in the most recent year (2014) by the average long-term debt in the last two years. Cost of equity is calculated using capital asset pricing model, whose input data include companies' beta, the risk free rate and expected return of market portfolio. The author used

the US Treasury bond yield (Appendix 27) as the risk free rate of return, and S&P Composite 1500 as the expected return of market portfolio (Appendix 28). The Acquirer's beta can be found in Appendix 5, while the Target's beta can be seen in Appendix 16.

After free cash flow and WACC are calculated, the market values of the companies are ready to be estimated using the discounted cash flow formulas stated in chapter 3.2.3. According to the theory also stated in chapter 3.2.3, equity value of company is calculated by deducting the market value of long-term debt and adding the excess investment cash from the market value of company. Therefore, we have the market value and equity value of the Acquirer presented in Appendix 11, and those of the Target presented in Appendix 22.

4.3 Step 2. Value the combined firm including the synergy

According to Moeller and Brady (2014), synergy is calculated as sources of value (factors increase the free cash flow of the new company) less destroyers of value (factors decrease the free cash flow of the new company). Sources of value could be cost savings from decreasing fixed costs such as the elimination of duplicate facilities and overlapping distribution channels. Sources of value may also emerge from new technologies and processes created or new customer groups.

On the other hand, factors that destroy value also should be taken into account in estimating value of the newly combined firm. The common destroyers of value may include excessive wage and benefit levels, low productivity resulting from conflicts of culture, and high employee turnover.

The integration plan is always a major part of every merger or acquisition. The cost to implement the integration plan is also regarded as one of the major destroyers of value. Implementation costs originate from recruiting and training, transferring the resources to new facilities, realizing new production plans, achieving productivity improvements, and exploiting revenue opportunities. (DePamphilis 2014, 314.)

Table 4 below provides synergy estimation for the combined company (which can also be seen in Appendix 23)

TABLE 4. Synergy estimation

Synergy Estimation										
Forecast Assumptions 2015 - 2019						2015	2016	2017	2018	2019
Net sales Synergy						1725,28	1810,55	1888,53	1940,30	2009,01
Cost of Sales Synergy / Target's CoS (%)						30 %	30 %	30 %	30 %	30 %
R&D Synergy / Target's CoS (%)						20 %	20 %	20 %	20 %	20 %
G&A Expenses Synergy / Target's CoS (%)						50 %	50 %	50 %	50 %	50 %
Integration Expenses						(20,0)	(20,0)	(10,0)	(10,0)	(10,0)
Cost of Capital: 2013 - 2017 (%)						8,87 %	1)			
Cost of Capital: Terminal Period (%)						8,87 %	1)			
Sustainable Cash Flow Growth Rate (%)						2,0%				
Market Value of Long-Term Debt						\$15 664				

In this model, we assume that after merger, Intel will utilize Altera's current diversified products and expand into new markets, thus improve its combined sales by 3% annually. This forecasted figure of 3% already takes into account the fact that the chip market is rapidly maturing, hence the long-term industry growth is limited.

Intel is also expected to save parts of Altera's current cost of sales, R&D, and G&A costs, which are expected to be 30%, 20% and 50% respectively. The integration expense will be \$20 million in the first 2 years, and expected to be reduced to \$10 million in the next 3 years.

With the figures above, we can project the financial statements for the newly combined firm, as in Appendix 24. Each of the values for income statement and balance sheet components in Appendix 24 is obtained by adding together the values of corresponding components of the two companies in Appendix 9 and 20. To illustrate in a simple way, for example, the cash balance of the combined firm is equal to the sum of cash balances of the two companies together. Then the synergy estimation figures are added on top of these additions. For example, net sales of the combined company is equal to the sum of that of the Acquirer and the Target, plus the net sales synergy forecasted above in Appendix 23. The result of this process is forecasted financial statements of the combined company (Appendix 24).

Repeat the same process in step 1, free cash flows of the combined company are calculated in Appendix 25. It is noted that the Acquirer's cost of capital has been

used in the valuation of the combined companies. The reasons are that the acquisition is expected to make up only a minor part of the Acquirer's total value and that the Acquirer's ratio debt-to-equity will remain unchanged.

Finally, the market value and equity value of the combined firm are presented in Appendix 26, which is also shown in table 5 below:

TABLE 5. Combined Firm's equity value

PV: 2013 - 2017	\$45,155
PV: Terminal Value	\$133,247
Total PV (Market Value of the Firm)	\$178,402
Less: Market Value of Long-Term Debt	\$15,664
Plus: Excess Cash (Investments)	\$6,900
Equity Value	\$169,637

The incremental value of the acquisition, or the net value of synergy can be calculated by subtracting the sum of the two companies valued as stand-alone businesses from the combined firm's value with synergy. This net value of synergy is calculated in a later step.

4.4 Step 3. Determine the Magnitude of the price

So far the author has conducted several calculations for estimating the value of the target company, taking into account both financial data and non-financial factors. However, it should be noted that the value of a company is different from the price at which the company is sold. Price represents the figure at which a willing buyer and a willing seller would agree and the deal can be transacted. The value of a company is thought of as a factor affecting the pricing perception of the seller and the buyer. (Moeller & Brady 2014, 244.) There are also many other factors affecting the price, which will be discussed in the next section.

However, it should be noted that price and value are both company-specific and deal-specific. There is no single value or single price for a specific company. (Moeller & Brady 2014, 245.) Take Altera Corp. for example, assume that there are also different interested potential buyers, such as Samsung Electronics, Qualcomm and Micron Technology. Each of those leaders in the semiconductor

manufacturing industry will have different plans and motivations for the post-deal company and different ways to realize the synergies. As such, price of Altera will be different from each of those buyers' perspective.

4.4.1 Factors affecting the offer price

Many factors affect the amount and form of payment of the initial offer price. Both acquirer's and target's own considerations can make an impact on the initial price and the final price. Table 6 presents various factors that affect the offer price.

TABLE 6. Factors affecting purchase price (DePamphilis 2014, 316)

Factors Affecting		Magnitude
Acquirer's Perspective		Estimated net synergy Perceived contribution of target to net synergy Willingness to share net synergy with target shareholders Relative attractiveness of alternative investment opportunities Number of potential bidders Effectiveness of target's defenses Public disclosure requirements (may result in preemptive bid) Degree of management's risk aversion Perceived value of control (to be continued)

Target's Perspective		Number of potential bidders Perceived contribution of target to net synergy Perception of bidder as friendly or hostile Effectiveness of defenses Size of potential tax liability (may require increase in purchase price) Stand-alone valuation Availability of recent comparable transactions Relative attractiveness of investment opportunities
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These factors in some cases can be quantified, for instance, the synergy between Intel and Altera is estimated above. However it is difficult to gauge accurately the impact that most of the other factors have on the price. For example, the acquirer can pay a premium (higher price) to control and gain better position in the competition if it is better for the decision making and the implementation of a more effective strategy.

4.4.2 Determining the offer price range

From the buy-side perspective, it is advisable to establish the range of the offer prices, which includes the minimum and maximum offer price. The formulas for building the offer price range is presented in table 7 as follow.

TABLE 7. Determining the price range (DePamphilis 2014, 216)

$PV_{MIN} = PV_T$ or MV_T , whichever is greater. MV_T is equal to the multiply of the target firm's current share price with the number of shares outstanding.
$PV_{MAX} = PV_{MIN} + PV_{NS}$, where $PV_{NS} = PV$ (combined firm with synergy) – PV (combined firm without synergy).
$PV_{OP} = PV_{MIN} + \alpha PV_{NS}$, where $0 \leq \alpha \leq 1$. (α percentage of net synergy shared with target shareholders)
Offer price range for the target firm: $(PV_T$ or $MV_T) < PV_{OP} < (PV_T$ or $MV_T) + PV_{NS}$.

In which:

PV_T : the target's stand-alone present value

MV_T : the target's current market value

PV_{NS} : present value of net synergy

PV_{OP} : offer price

In the case of Intel – Altera acquisition, the price range is determined in table 8 as follow:

TABLE 8. Price Range Determination

	Standalone Value		Consolidated Acquirer + Target		Value of Synergy
	Acquirer	Target	Without Synergy (1)	With Synergy (2)	PV_{NS} (1) - (2)
Discounted Cash Flow Valuations (\$Mil)	\$ 148 313	\$ 13 855	\$ 162 168	\$ 169 637	\$ 7 469
Minimum Offer Price (PVMIN) (\$Mil)	\$ 14 174	or \$ 13 855			
Maximum Offer Price (PVMAX) (\$Mil)	\$ 21 643				
Initial Offer Price (\$Mil)	\$ 16 415				
Initial Offer Price Per Share (\$)	\$ 52.99				

In the table, the market capitalization of Altera (MV_T), calculated by multiplying the share price to the number of shares outstanding, is \$14174. The standalone values (the market values of the companies obtained from step 1) of the Acquirer and Target are \$148313 million and \$13855 million respectively. The sum of

these two values of the two companies is \$162168 million, which is also the value of the combined firm without synergy. The value of the combined firm with synergy is \$169637 million, which is calculated in step 2. The difference between these two values of the combined firm is considered as the value of synergy, which is \$7469 million.

Assuming that Intel is willing to share 30% this synergy with Altera and includes it in the offer price (which also means $\alpha = 0,3$), the initial offer price would be \$16415 million.

In general, Intel can consider offering the purchase price at the minimum of \$13885 million and at the maximum of \$21643 million. In reality, it is unlikely that Altera can be purchased at the minimum price, because Altera's target shareholders will have no incentive to sell their shares at market value. On the other hand, at the maximum price, Intel would have to give up all of the synergy value created by the future combined firm, which makes the acquisition meaningless. Thus, the offer price should fall between the minimum and maximum prices.

5 SUMMARY

In this chapter, the author will conclude the thesis and summarize it. The author will also use the theory collected and the results obtained in the research to answer the main research questions of the thesis. Furthermore, recommendations for further research will be included.

5.1 Conclusions

After many calculating steps, the financial model shows the calculated stand-alone value of Altera Corp – the target company, and suggests the price range for the purchase. Thus the results and the thesis as a whole answer the research questions as follow:

- What factors affect the valuation of the company and the final transacted price within M&A context?

Mergers and acquisitions are generally defined as another form of corporate restructuring, with the ultimate purpose of seeking growth, better organization and improving core competencies. Companies are driven by various factors to make an acquisition of another business or to sell part or the whole of its business to another company. The author found out that such factors, such as synergy or operating diversification, often play a role in affecting the purchase price of the target company later if the acquirer decides to aim for an acquisition. Secondly, any merger or acquisition transaction is a complex multi-phase process requiring both parties commit a great deal of effort in planning, searching, particularly in deal structuring and due diligence phases, which involve many details and considerations. Especially from the buy-side perspective, such details and considerations continuously explored in due diligence phase can be factored in the financial model when the valuation is repeatedly refined. As such, the offer price during an acquisition situation can be subject to change according to the data uncovered. For the sell-side, the form in which the searching process happens also influences the negotiation leverage and consequently the bidding price for acquisition. For example, in a competitive auction, some bidder may be willing to pay a significantly higher

price for a premium control, in cases it believes the acquisition fits its strategic purpose and makes way for its better decision making in a later process. In contrast, a negotiated sale may put the seller in a weaker negotiation position, particularly in regard to the purchase price.

- What are the valuation methods widely used in valuing company and how can they be applied in practice?

The thesis introduces three major valuation methods based on three different approaches, which are currently universally used in any valuation task.

Details of applying those methods are presented step by step in chapter 3, based on which a financial model is built and introduced later.

- How can such factors be incorporated into a financial model?

A case study sample is presented in Chapter 4 in order to illustrate the process of building a financial model. Chapter 4 also presents a list of factors that affect the purchase price throughout the negotiation process. Notable factors include the synergy and the growth of the target, which are reflected in the model as part of the financial projections for the combined firm. It should be noticed that neither single price nor the final result is established. Instead, a range of price is determined: the minimum price for the target company is \$13855 million and the maximum price is \$21643 million. The main reason for not being able to establish a final price is because there are so many remaining factors that cannot be quantified or assumed due to lack of information.

5.2 Summary

The practical purpose of this thesis is to give a comprehensive understanding of merger and acquisition from both the acquiring company's and the target company's perspectives, in order to figure out the best valuation methods and practices in any M&A situation. Theoretically, the thesis lays a framework for any business executive, financial advisor or investment banker who have to make a decision on any merger or acquisition issue, particularly valuation-related problems. Moreover, the basic step by step of a typical merger or acquisition is examined from both sides of the deal, in order to give the readers a whole picture

with many factors and determinants which affect the later valuation and purchase price negotiation phase. The valuation methods are also introduced and explained in a later chapter. After that, the author applied that knowledge and those considerations together into building a financial model for effectively and correctly appraising a business in an acquisition situation.

5.3 Validity and Reliability

Validity and reliability are important aspects of a study using quantitative method. Regarding the validity, the thesis follows the deductive approach. Starting with a basic definition of merger and acquisition, the study continues with the theoretical explanation of a typical M&A process, moving on with the valuation methods and finally applies all of the theories together to build a financial model for valuation. The approach is logical and based on a comprehensive structure. All the definitions and theories are collected from multiple sources such as books, academic websites and published journals. The empirical study is based on data collected from renowned and prestigious financial sources, such as Thomson One, Bloomberg, and the case companies' 10K SEC filings reports, or the so-called annual reports. The financial model is built on Excel program. As a result, the thesis is considered highly valid.

Regarding the reliability of the study, figures from the two case companies are collected during the 5 year periods 2010-2014. The underlying assumptions of the model are predicted based on exhaustive analysis of the two case companies, especially in regard to their industry sector and the competition in the market. However, it should be noted that the main purpose of the model is to effectively adapt to changing assumptions, which frequently happen during any merger or acquisition transaction due to the ongoing due diligence process. In general, the author believes that this thesis is reliable.

5.4 Recommendations for further studies

As mentioned in chapter 4, a financial model is employed in analyzing how the value of the company changes in accordance with changing underlying

assumptions, with the ultimate purpose of estimating the outcome of a merger or acquisition decision. The use of financial model, however, can be exploited to serve other purposes, such as study the financial impact of a corporate policy, and of covenants or restrictions imposed by investors. The author believes that there are many opportunities for other researchers to conduct a study using a financial model.

On the other hand, as mentioned in chapter one, the financial model built in the thesis is subject to the limitation of information. As an outsider, the author can only gather information collected from public sources. Therefore, the current model still lacks considerations for some other factors affecting the purchase price which can be quantified and incorporated into the model if more information about the two companies is available. As such, the author recommends that researchers should attempt to collect more information from informal sources in order to build a more adaptive model suitable for more merger or acquisition situations.

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APPENDICES

APPENDIX 1. The Acquirer's income statement 2010 - 2014

INTEL CORPORATION					
CONSOLIDATED STATEMENTS OF INCOME					
Fiscal Period	2010	2011	2012	2013	2014
Period End Date:	25/12/2010	31/12/2011	29/12/2012	28/12/2013	27/12/2014
Period Length:	52 Weeks	52 Weeks	52 Weeks	53 Weeks	52 Weeks
Accounting Standard:	U.S. GAAP	U.S. GAAP	U.S. GAAP	U.S. GAAP	U.S. GAAP
Originally Reported Unit (except par value):	Millions	Millions	Millions	Millions	Millions
Reporting Currency:	USD	USD	USD	USD	USD
Source	10-K	10-K	10-K	10-K	10-K
Source Date:	18/02/2011	23/02/2012	19/02/2013	14/02/2014	13/02/2015
Consolidated:	Yes	Yes	Yes	Yes	Yes
Auditor Name:	Ernst & Young LLP	Ernst & Young LLP	Ernst & Young LLP	Ernst & Young LLP	Ernst & Young LLP
Net revenue	43623.00	53999.00	53341.00	52708.00	55870.00
Cost of sales	15132.00	20242.00	20190.00	21187.00	20261.00
Gross margin	28491.00	33757.00	33151.00	31521.00	35609.00
Research and development	6576.00	8350.00	10148.00	10611.00	11537.00
Marketing, general and administrative	6309.00	7670.00	8057.00	8088.00	8136.00
Restructuring and asset impairment charges	0.00	0.00	0.00	240.00	295.00
Amortization of acquisition-related intangibles	18.00	260.00	308.00	291.00	294.00
Operating expenses	12903.00	16280.00	18513.00	19230.00	20262.00
Operating income	15588.00	17477.00	14638.00	12291.00	15347.00
Gains (losses) on equity investments, net	348.00	112.00	141.00	471.00	411.00
Interest and other, net	109.00	192.00	94.00	-151.00	43.00
Income before taxes	16045.00	17781.00	14873.00	12611.00	15801.00
Provision for taxes	4581.00	4839.00	3868.00	2991.00	4097.00
Net income	11464.00	12942.00	11005.00	9620.00	11704.00
Basic earnings per share of common stock	2.06	2.46	2.20	1.94	2.39
Diluted earnings per share of common stock	2.01	2.39	2.13	1.89	2.31
Weighted average shares of common stock outstanding:					
Basic	5555.00	5256.00	4996.00	4970.00	4901.00
Diluted	5696.00	5411.00	5160.00	5097.00	5056.00
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME					
Fiscal Period	2010	2011	2012	2013	2014
Net income	11464.00	12942.00	11005.00	9620.00	11704.00
Other comprehensive income, net of tax:					
Change in net unrealized holding gains (losses) on available-for-sale investments	140.00	-170.00	470.00	1181.00	577.00
Change in deferred tax asset valuation allowance	57.00	-99.00	-11.00	-26.00	-41.00
Change in net unrealized holding gains (losses) on derivatives	-13.00	-119.00	85.00	-89.00	-427.00
Change in net prior service costs (credits)	-39.00	4.00	0.00	18.00	-33.00
Change in actuarial valuation	-205.00	-588.00	-172.00	520.00	-402.00
Change in net foreign currency translation adjustment	0.00	-142.00	10.00	38.00	-251.00
Other comprehensive income (loss)	-60.00	-1114.00	382.00	1642.00	-577.00
Total comprehensive income	11404.00	11828.00	11387.00	11262.00	11127.00

APPENDIX 2. The Acquirer's Balance Sheet 2010- 2014

INTEL CORPORATION					
CONSOLIDATED BALANCE SHEETS					
Fiscal period	2010	2011	2012	2013	2014
Period End Date:	25/12/2010	31/12/2011	29/12/2012	28/12/2013	27/12/2014
Period Length:	52 Weeks	52 Weeks	52 Weeks	53 Weeks	52 Weeks
Accounting Standard:	U.S. GAAP	U.S. GAAP	U.S. GAAP	U.S. GAAP	U.S. GAAP
Originally Reported Unit (except par value):	Millions	Millions	Millions	Millions	Millions
Reporting Currency:	USD	USD	USD	USD	USD
Source	10-K	10-K	10-K	10-K	10-K
Source Date:	18/02/2011	23/02/2012	19/02/2013	14/02/2014	13/02/2015
Consolidated:	Yes	Yes	Yes	Yes	Yes
Auditor Name:	Ernst & Young LLP	Ernst & Young LLP	Ernst & Young LLP	Ernst & Young LLP	Ernst & Young LLP
Assets					
Cash and cash equivalents	5498.00	5065.00	8478.00	5674.00	2561.00
Short-term investments	11294.00	5181.00	3999.00	5972.00	2430.00
Trading assets	5093.00	4591.00	5685.00	8441.00	9063.00
Accounts receivable, net	2867.00	3650.00	3833.00	3582.00	4427.00
Inventories	3757.00	4096.00	4734.00	4172.00	4273.00
Deferred tax assets	1488.00	1700.00	2117.00	2594.00	1958.00
Other current assets	1614.00	1589.00	2512.00	1649.00	3018.00
Total current assets	31611.00	25872.00	31358.00	32084.00	27730.00
Property, plant and equipment, net	17899.00	23627.00	27983.00	31428.00	33238.00
Marketable equity securities	1008.00	562.00	4424.00	6221.00	7097.00
Other long-term investments	3026.00	889.00	493.00	1473.00	2023.00
Goodwill	4531.00	9254.00	9710.00	10513.00	10861.00
Identified intangible assets, net	860.00	6267.00	6235.00	5150.00	4446.00
Other long-term assets	4251.00	4648.00	4148.00	5489.00	6561.00
Total assets	63186.00	71119.00	84351.00	92358.00	91956.00
Liabilities, temporary equity, and stockholders' equity					
Short-term debt	38.00	247.00	312.00	281.00	1604.00
Accounts payable	2290.00	2956.00	3023.00	2969.00	2748.00
Accrued compensation and benefits	2888.00	2948.00	2972.00	3123.00	3475.00
Accrued advertising	1007.00	1134.00	1015.00	1021.00	1092.00
Deferred income	747.00	1929.00	1932.00	2096.00	2205.00
Other accrued liabilities	2357.00	2814.00	3644.00	4078.00	4895.00
Total current liabilities	9327.00	12028.00	12898.00	13568.00	16019.00
Long-term debt	2077.00	7084.00	13136.00	13165.00	12107.00
Long-term deferred tax liabilities	926.00	2617.00	3412.00	4397.00	3775.00
Other long-term liabilities	1426.00	3479.00	3702.00	2972.00	3278.00
Commitments and contingencies (Notes 17 and 25)					
Temporary equity	0.00	0.00	0.00	0.00	912.00
Total liabilities	13756.00	25208.00	33148.00	34102.00	36091.00
Preferred stock			0.00	0.00	0.00
Common stock, par value and capital in excess of par value	16178.00	17036.00	19464.00	21536.00	21781.00
Accumulated other comprehensive income (loss)	333.00	-781.00	-399.00	1243.00	666.00
Retained earnings	32919.00	29656.00	32138.00	35477.00	33418.00
Total stockholders' equity	49430.00	45911.00	51203.00	58256.00	55865.00
Total liabilities, temporary equity, and stockholders' equity	63186.00	71119.00	84351.00	92358.00	91956.00

APPENDIX 3. The Acquirer's Cash Flow Statements 2010- 2014

INTEL CORPORATION					
CONSOLIDATED STATEMENTS OF CASH FLOWS					
Fiscal Period	2010	2011	2012	2013	2014
Period End Date:	25/12/2010	31/12/2011	29/12/2012	28/12/2013	27/12/2014
Period Length:	52 Weeks	52 Weeks	52 Weeks	53 Weeks	52 Weeks
Accounting Standard:	U.S. GAAP	U.S. GAAP	U.S. GAAP	U.S. GAAP	U.S. GAAP
Originally Reported Unit (except par value):	Millions	Millions	Millions	Millions	Millions
Reporting Currency:	USD	USD	USD	USD	USD
Source	10-K	10-K	10-K	10-K	10-K
Source Date:	18/02/2011	23/02/2012	19/02/2013	14/02/2014	13/02/2015
Consolidated:	Yes	Yes	Yes	Yes	Yes
Auditor Name:	Ernst & Young LLP	Ernst & Young LLP	Ernst & Young LLP	Ernst & Young LLP	Ernst & Young LLP
Cash and cash equivalents, beginning of year	3987.00	5498.00	5065.00	8478.00	5674.00
Cash flows provided by (used for) operating activities:					
Net income	11464.00	12942.00	11005.00	9620.00	11704.00
Adjustments to reconcile net income to net cash provided by operating activities:					
Depreciation	4398.00	5141.00	6357.00	6790.00	7380.00
Share-based compensation	917.00	1053.00	1102.00	1118.00	1148.00
Restructuring and asset impairment charges	67.00	96.00	0.00	240.00	295.00
Excess tax benefit from share-based payment arrangements	-65.00	-37.00	-142.00	-49.00	-122.00
Amortization of intangibles	240.00	923.00	1165.00	1242.00	1169.00
(Gains) losses on equity investments, net	-348.00	-112.00	-141.00	-425.00	-354.00
(Gains) losses on divestitures	0.00	-164.00	0.00	0.00	0.00
Deferred taxes	-46.00	790.00	-242.00	-900.00	-703.00
Changes in assets and liabilities:					
Accounts receivable	-584.00	-678.00	-176.00	271.00	-861.00
Inventories	-806.00	-243.00	-626.00	563.00	-98.00
Accounts payable	407.00	596.00	67.00	267.00	-249.00
Accrued compensation and benefits	161.00	-95.00	192.00	155.00	4.00
Income taxes payable and receivable	53.00	660.00	229.00	1019.00	-286.00
Other assets and liabilities	834.00	91.00	94.00	865.00	1391.00
Total adjustments	5228.00	8021.00	7879.00	11156.00	8714.00
Net cash provided by operating activities	16692.00	20963.00	18884.00	20776.00	20418.00
Cash flows provided by (used for) investing activities:					
Additions to property, plant and equipment	-5207.00	-10764.00	-11027.00	-10711.00	-10105.00
Acquisitions, net of cash acquired	-218.00	-8721.00	-638.00	-925.00	-934.00
Purchases of available-for-sale investments	-17675.00	-11230.00	-8694.00	-12493.00	-7007.00
Sales of available-for-sale investments	506.00	9076.00	2282.00	934.00	1227.00
Maturities of available-for-sale investments	12627.00	11029.00	5369.00	8336.00	8944.00
Purchases of trading assets	-8944.00	-11314.00	-16892.00	-16718.00	-14397.00
Maturities and sales of trading assets	8846.00	11771.00	15786.00	13677.00	13165.00
Origination of loans receivable	-498.00	-206.00	-216.00	-200.00	0.00
Collection of loans receivable	0.00	134.00			
Investments in non-marketable equity investments	-393.00	-693.00	-475.00	-440.00	-1377.00
Return of equity method investments	199.00	263.00			
Proceeds from divestitures	0.00	50.00	605.00	0.00	0.00
Purchases of licensed technology and patents			-815.00	-36.00	-92.00
Other investing	218.00	304.00	655.00	503.00	671.00
Net cash used for investing activities	-10539.00	-10301.00	-14060.00	-18073.00	-9905.00
Cash flows provided by (used for) financing activities:					
Increase (decrease) in short-term debt, net	23.00	209.00	65.00	-31.00	235.00
Proceeds from government grants	79.00	124.00	63.00	129.00	104.00
Excess tax benefit from share-based payment arrangements	65.00	37.00	142.00	49.00	122.00
Issuance of long-term debt, net of issuance costs	0.00	4962.00	6124.00	0.00	0.00
Repayment of debt	-157.00	0.00			
Proceeds from sales of common stock through employee equity incentive plans	587.00	2045.00	2111.00	1588.00	1660.00
Repurchase of common stock	-1736.00	-14340.00	-4765.00	-2147.00	-10792.00
Restricted stock unit withholdings			-345.00	-293.00	-332.00
Payment of dividends to stockholders	-3503.00	-4127.00	-4350.00	-4479.00	-4409.00
Collateral associated with repurchase of common stock	0.00	0.00	0.00	0.00	-325.00
Increase in liability due to collateral associated with repurchase of common stock	0.00	0.00	0.00	0.00	325.00
Other financing		-10.00	-453.00	-314.00	-199.00
Net cash used for financing activities	-4642.00	-11100.00	-1408.00	-5498.00	-13611.00
Effect of exchange rate fluctuations on cash and cash equivalents		5.00	-3.00	-9.00	-15.00
Net increase (decrease) in cash and cash equivalents	1511.00	-433.00	3413.00	-2804.00	-3113.00
Cash and cash equivalents, end of year	5498.00	5065.00	8478.00	5674.00	2561.00
Supplemental disclosures of cash flow information:					
Cash paid during the year for:					
Interest, net of capitalized interest	0.00	0.00	71.00	204.00	167.00
Income taxes, net of refunds	4627.00	3338.00	3930.00	2874.00	4639.00

APPENDIX 4. The Acquirer's simple financial statements (income statement & balance sheet) 2010-2014

	Historical Financials				
	2010	2011	2012	2013	2014
Income Statement (\$mil)					
Net Sales	43623.00	53999.00	53341.00	52708.00	55870.00
Less:					
Cost of Sales excluding D&A	10494.00	14178.00	12668.00	13155.00	11712.00
Depreciation & Amortization	4638.00	6064.00	7522.00	8032.00	8549.00
Total Cost of Sales	15132.00	20242.00	20190.00	21187.00	20261.00
Gross Profit	28491.00	33757.00	33151.00	31521.00	35609.00
Less:					
Research and development	6576.00	8350.00	10148.00	10611.00	11537.00
G&A Expense	6309.00	7670.00	8057.00	8088.00	8136.00
Other expense (income), net	18.00	260.00	308.00	531.00	589.00
Operating Expense	12903.00	16280.00	18513.00	19230.00	20262.00
Operating Profits (EBIT)	15588.00	17477.00	14638.00	12291.00	15347.00
Gains (losses) on equity investments & interest	457.00	304.00	235.00	320.00	454.00
Net Profits Before Taxes	16045.00	17781.00	14873.00	12611.00	15801.00
Less: Taxes	4581.00	4839.00	3868.00	2991.00	4097.00
Net Profits After Taxes	11464.00	12942.00	11005.00	9620.00	11704.00
Balance Sheet (as of 12/31)					
Current Assets					
Cash	5498.00	5065.00	8478.00	5674.00	2561.00
Other Operating Assets	26113.00	20807.00	22880.00	26410.00	25169.00
Total Current Assets	31611.00	25872.00	31358.00	32084.00	27730.00
Investments	4034.00	1451.00	4917.00	7694.00	9120.00
Net Fixed Assets	17899.00	23627.00	27983.00	31428.00	33238.00
Other Assets	9642.00	20169.00	20093.00	21152.00	21868.00
Total Assets	63186.00	71119.00	84351.00	92358.00	91956.00
Current Liabilities					
Long-Term Debt	2077.00	7084.00	13136.00	13165.00	12107.00
Other Liabilities	2352.00	6096.00	7114.00	7369.00	7965.00
Total Liabilities	13756.00	25208.00	33148.00	34102.00	36091.00
Common Stock	16178.00	17036.00	19464.00	21536.00	21781.00
Retained Earnings	33252.00	28875.00	31739.00	36720.00	34084.00
Shareholders' Equity	49430.00	45911.00	51203.00	58256.00	55865.00
Total Liabilities & Shareholders' Equity	63186.00	71119.00	84351.00	92358.00	91956.00
Addendum: Check	0.00	0.00	0.00	0.00	0.00

APPENDIX 5. The Acquirer's stock price and beta (Source: finance.yahoo.com)



APPENDIX 6. The Acquirer's Cost of Equity and Capital Calculations 2010-2014

Financial Benchmarks as of April 30, 2015	
Weights	
Current stock price	33.42
Share outstanding (in millions)	4901.00
Market Capitalization (in millions)	163791.42
Debt value (in millions)	12636.00
Acquirer's D/(D+E) ratio	0.07
Acquirer's E/(D+E) ratio	0.93
Cost of Equity	9.56%
Risk free rate (= U.S Treasury 10 year Bond yields)	2.11%
Acquirer's Beta	0.77
Expected Return of the Market (= S&P 1500 return)	11.78%
Cost of Debt	0.00%
Tax rate	24.82%
WACC (Cost of Capital)	8.87%
WACC (terminal period)	8.87%

APPENDIX 7. The Acquirer's consensus estimates (Source: THOMSON ONE)
2015- 2017

All Measures											
INTEL CORPORATION											
SOURCE THOMSON ONE (Consensus Estimate)											
Date 20/4/15											
Fiscal Year:FY1											
Currency:USD - All units in millions except for per share data											
	Mean	FY-Dec.13	Mean	FY-Dec.14	Mean	CURRENT FY-Dec.15	Mean	FY-Dec.16	Mean	FY-Dec.17	
Income Statement											
Revenue	52604.26	52708.00	55847.89	55870.00	NA	55523.18	NA	58222.47	NA	60695.58	
Gross Margin	31336.36	31519.38	35429.90	35589.19	NA	34069.02	NA	36231.84	NA	37989.36	
Gross Margin (%)	59.57	59.80	63.44	63.70	NA	61.36	NA	62.23	NA	62.59	
Cost of Sales	21267.90	21188.62	20417.99	20280.81	NA	21454.16	NA	21990.63	NA	22706.22	
EBIT	12381.31	12291.00	15446.78	15347.00	NA	13940.22	NA	15734.79	NA	17138.70	
Operating Expense	18955.05	19228.38	19983.12	20242.19	NA	20128.80	NA	20497.05	NA	20850.66	
EBITDA	20111.21	20323.00	23624.67	23896.00	NA	22867.28	NA	24604.57	NA	26181.83	
Depreciation & Amortization	7729.90	8032.00	8177.89	8549.00	NA	8927.06	NA	8869.78	NA	9043.13	
Pre-tax Profit	12575.54	12611.00	15786.35	15801.00	NA	14076.21	NA	15912.06	NA	17265.76	
Provision for tax	2915.78	2991.00	4332.84	4097.00	NA	3408.38	NA	4180.70	NA	4591.94	
Net Income	9659.76	9620.00	11453.51	11704.00	NA	10667.83	NA	11731.36	NA	12673.82	
Reported Net Profit	9638.75	9620.00	11363.26	11704.00	NA	10647.35	NA	11708.26	NA	12991.92	
Reported Pre-tax Profit	12620.45	12611.00	15780.36	15801.00	NA	14158.82	NA	15919.57	NA	17774.22	
Per Share Data											
EPS (Options Expense Included)	1.90	1.89	2.24	2.31	NA	2.17	NA	2.40	NA	2.57	
EPS - Secondary Mean (Options Expense Excluded)	NA	NA	NA	NA	NA	NA	NA	2.75	NA	NA	
EPS - Fully Reported	1.89	1.89	2.33	2.31	NA	2.17	NA	2.41	NA	2.59	
EBITDA per Share	NA	NA	4.63	4.73	NA	4.64	NA	5.21	NA	5.52	
Dividend per Share	0.91	0.90	0.91	0.96	NA	0.95	NA	1.00	NA	0.98	
Cash Flow											
Capital Expenditure	10873.76	10711.00	10979.59	10105.00	NA	13677.10	NA	15720.18	NA	10437.68	
Per Share Data											
Cash Flow per Share	3.44	4.08	NA	3.84	NA	3.82	NA	4.34	NA	4.70	
Free Cash Flow per Share	1.62	1.97	NA	1.63	NA	2.02	NA	2.45	NA	2.15	
Balance Sheet											
Net Asset Value	56412.57	58256.00	56851.92	55865.00	NA	59058.17	NA	64659.73	NA	70651.33	
Net Debt	-1235.90	-6641.00	437.76	-343.00	NA	-2422.01	NA	-5124.37	NA	-7258.65	
Per Share Data											
Book Value per Share	10.57	11.73	11.30	11.50	NA	12.08	NA	13.27	NA	14.68	
Tangible Book Value per Share	7.77	8.58	NA	8.84	NA	9.33	NA	10.60	NA	11.18	
Valuation											
ROA (%)	11.33	10.89	13.03	12.70	NA	12.42	NA	12.40	NA	14.36	
ROE (%)	17.62	17.58	19.72	20.51	NA	18.82	NA	18.76	NA	19.38	

APPENDIX 8. The Acquirer's historical data 2010-2015 and forecast assumptions
2015- 2019 (in percentage)

Forecast Assumptions 2015 - 2019	Acquirer 5-Year Forecast and Standalone Valuation									
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Net Sales Growth Rate		24%	-1%	-1%	6%	-1%	5%	4%	2.7%	3.4%
Cost of Sales (Variable) / Sales %	35%	37%	38%	40%	36%	39%	38%	37%	38.1%	37.6%
Depreciation & Amortization / Net Fixed Assets	26%	26%	27%	26%	26%	25.9%	26.0%	26.0%	25.8%	25.9%
R&D / Sales (%)	15%	15%	19%	20%	21%	18.1%	18.7%	19.3%	19.4%	19.2%
G&A Expenses / Sales (%)	14%	14%	15%	15%	15%	14.7%	14.8%	14.9%	14.9%	14.8%
Operating Expense / Sales (%)	30%	30%	35%	36%	36%	36%	35%	34%	35.7%	35.6%
Gains (losses) on equity investments & intere	1.0%	0.6%	0.4%	0.6%	0.8%	0.2%	0.3%	0.2%	0.4%	0.4%
Marginal Tax Rate	29%	27%	26%	24%	26%	24%	26%	27%	25.3%	25.7%
Other Current Operations Assets / Sales (%)	60%	39%	43%	50%	45%	47.3%	44.8%	46.0%	46.6%	46.0%
Other Assets / Sales (%)	22%	37%	38%	40%	39%	35.3%	37.9%	38.0%	38.1%	37.7%
Net Fixed Assets / Sales (%)	41%	44%	52%	60%	59%	51.3%	53.3%	55.2%	55.8%	55.0%
Minimum Cash Balance / Sales (%)	13%	9%	16%	11%	5%	10.6%	10.3%	10.4%	9.3%	9.0%
Current Liabilities / Sales (%)	21%	22%	24%	26%	29%	24.4%	25.1%	25.6%	25.9%	25.9%
Common Shares Outstanding (Mil)	5555.00	5256.00	4996.00	4970.00	4901.00	4,901.0	4,901.0	4,901.0	4,901.0	4,901.0
Cost of Capital: 2015 - 2019 (%)		8.87%								
Cost of Capital: Terminal Period (%)		8.87%								
Sustainable Cash Flow Growth Rate (%)		2.66%								
Market Value of Long-Term Debt		\$12,107	million							

APPENDIX 9. The Acquirer's forecasted financial statements 2015- 2019 (in values)

	Projected Financials				
	2015	2016	2017	2018	2019
Income Statement (\$mil)					
Net Sales	55523.18	58222.47	60695.58	62310.19	64447.15
Less:					
Cost of Sales excluding D&A	12527.10	13120.85	13663.09	14730.98	15068.12
Depreciation & Amortization	8927.06	8869.78	9043.13	8981.97	9182.16
Total Cost of Sales	21454.16	21990.63	22706.22	23712.95	24250.28
Gross Profit	34069.02	36231.84	37989.36	38597.24	40196.87
Less:					
Research and development	10032.37	10868.76	11719.42	12066.54	12381.58
G&A Expense	8181.73	8611.30	9048.26	9264.40	9520.68
Other expense (income), net	1914.70	1016.99	82.99	921.39	1013.74
Operating Expense	20128.80	20497.05	20850.66	22252.33	22915.99
Operating Profits (EBIT)	13940.22	15734.79	17138.70	16344.91	17280.87
Gains (losses) on equity investments & interest	135.99	177.27	127.06	271.48	258.69
Net Profits Before Taxes	14076.21	15912.06	17265.76	16073.43	17022.18
Less: Taxes	3408.38	4180.70	4591.94	4073.95	4369.86
Net Profits After Taxes	10667.83	11731.36	12673.82	11999.48	12652.32
Balance Sheet (as of 12/31)					
Current Assets					
Cash	5910.56	5969.88	6329.52	5816.77	5831.97
Other Operating Assets	26256.04	26068.52	27933.53	29066.48	29617.59
Total Current Assets	32166.59	32038.40	34263.05	34883.25	35449.56
Investments	5795.50	6881.63	7372.78	7292.48	6835.60
Net Fixed Assets	33238.00	33238.00	33524.97	34762.49	35460.09
Other Assets	19587.92	22074.45	23080.48	23739.04	24291.22
Total Assets	90788.01	94232.47	98241.28	100677.25	102036.46
Current Liabilities					
Long-Term Debt	14582.10	16688.00	18586.72	19813.12	20825.23
Other Liabilities	7915.56	8300.38	8652.95	8883.13	9187.78
Total Liabilities	36073.01	39581.07	42790.80	44840.68	46732.77
Common Stock	21781.00	21781.00	21781.00	21781.00	21781.00
Retained Earnings	32934.00	32870.40	33669.48	34055.58	33522.69
Shareholders' Equity	54715.00	54651.40	55450.48	55836.58	55303.69
Total Liabilities & Shareholders' Equity	90788.01	94232.47	98241.28	100677.25	102036.46
Addendum: Check	0.00	0.00	0.00	0.00	0.00

APPENDIX 10. The Acquirer's Free Cash Flow calculation

Shares Outstanding (millions)	5555.00	5256.00	4996.00	4970.00	4901.00	4901.00	4901.00	4901.00	4901.00	4901.00
Effective Tax Rate	29%	27%	26%	24%	26%	24%	26%	27%	25%	26%
Earnings per Share	2.06	2.46	2.20	1.94	2.39	2.18	2.39	2.59	2.45	2.58
Long-Term Debt/Equity	0.04	0.15	0.26	0.23	0.22	0.27	0.31	0.34	0.35	0.38
Capital Expenditure	5207.00	10764.00	11027.00	10711.00	10105.00	13677.10	15720.18	10437.68	10956.12	11674.76
Change in Working Capital	-65.00	-331.00	220.00	-3140.00	99.00	-643.40	-759.08	-844.70	-1057.64	-641.16
Free Cash Flow										
EBIT (1-t)	11007.00	12638.00	10770.00	9300.00	11250.00	10531.84	11554.09	12546.76	12270.96	12911.01
Plus: Depreciation and Amortization	4638.00	6064.00	7522.00	8032.00	8549.00	8927.06	8869.78	9043.13	8981.97	9182.16
Less: Gross Capital Expenditures	5207.00	10764.00	11027.00	10711.00	10105.00	13677.10	15720.18	10437.68	10956.12	11674.76
Less: Change in Working Capital	-65.00	-331.00	220.00	-3140.00	99.00	-643.40	-759.08	-844.70	-1057.64	-641.16
Free Cash Flow	10,503	8,269	7,045	9,761	9,595	6,425	5,463	11,997	11,354	11,060

APPENDIX 11. The Acquirer's Equity Value calculation

PV: 2015 - 2019	\$ 35,119
PV: Terminal Value	\$ 119,505
Total PV (Market Value of the Firm)	\$ 154,624
Less: Market Value of Long-Term Debt	\$12,107
Plus: Excess Cash (Investments)	\$ 5,796
Equity Value	\$ 148,313
Equity Value per Share	\$ 30.26

APPENDIX 12. The Target's income statement 2010 – 2014

Fiscal Period	2010	2011	2012	2013	2014	
Period End Date:	31/12/2010	31/12/2011	31/12/2012	31/12/2013	31/12/2014	
Period Length:	12 Months	12 Months	12 Months	12 Months	12 Months	
Accounting Standard:	U.S. GAAP	U.S. GAAP	U.S. GAAP	U.S. GAAP	U.S. GAAP	
Originally Reported Unit (except per share amounts):	Millions	Millions	Millions	Millions	Millions	
Reporting Currency:	USD	USD	USD	USD	USD	
Source	10-K	10-K	10-K	10-K	10-K	
Source Date:	25/11/2011	24/01/2012	23/01/2013	23/01/2014	22/01/2015	
Consolidated:	Yes	Yes	Yes	Yes	Yes	
Auditor Name:	Pricewaterhouse Coopers LLP	Pricewaterhouse Coopers LLP	Pricewaterhouse Coopers LLP	Pricewaterhouse Coopers LLP	Pricewaterhouse Coopers LLP	
Net sales	1954.43	2064.48	1783.04	1732.57	1932.09	
Cost of sales	566.94	610.33	541.52	546.74	648.45	
Gross margin	1387.48	1454.15	1241.51	1185.84	1283.64	
Research and development expense	264.65	325.73	359.57	385.19	418.17	
Selling, general, and administrative expense	254.50	279.22	289.85	320.07	312.25	
Amortization of acquisition-related intangible assets	0.00	0.00	0.85	4.82	9.86	
Compensation expense - deferred compensation plan	6.84	-1.96	7.06	10.61	6.03	
Gain on deferred compensation plan securities	-6.84	1.96	-7.06	-10.61	-6.03	
Interest income and other	-3.33	-3.54	-8.39	-11.55	-24.08	
Gain reclassified from other comprehensive income	0.00	0.02	-0.27	-0.15	-0.14	
Interest expense	3.84	3.73	7.98	16.64	43.55	
Income before income taxes	867.83	848.99	591.92	470.83	524.03	
Income tax expense	84.94	78.28	35.11	30.76	51.37	
Net income	782.88	770.71	556.81	440.07	472.66	
Other comprehensive income/(loss):						
Unrealized holding gain on investments:						
Unrealized holding gain/(loss) on investments arising during period, net of tax of (\$14), (\$1) and \$114			-0.15	5.84	-33.42	37.73
Less: Reclassification adjustments for gain on investments included in net income, net of tax of \$22, \$23 and \$25		0.02	-0.11	-0.13	-0.12	
		-0.13	5.73	-33.55	37.61	
Unrealized gain on derivatives:						
Unrealized gain on derivatives arising during period, net of tax of \$45			0.08			
Less: Reclassification adjustments for gain on derivatives included in net income, net of tax of \$45			-0.08			
Other comprehensive income/(loss):		-0.13	5.73	-33.55	37.61	
Comprehensive income	782.88	770.58	562.53	406.51	510.27	
Net income per share:						
Basic	2.55	2.39	1.74	1.37	1.53	
Diluted	2.49	2.35	1.72	1.36	1.52	
Shares used in computing per share amounts:						
Basic	307.30	321.89	320.83	320.20	309.75	
Diluted	313.91	327.61	324.50	323.02	311.90	
Dividends per common share	0.22	0.28	0.36	0.50	0.66	

APPENDIX 13. The Target's Balance Sheet 2010- 2014

Fiscal Period	2010	2011	2012	2013	2014
Period End Date:	31/12/2010	31/12/2011	31/12/2012	31/12/2013	31/12/2014
Period Length:	12 Months	12 Months	12 Months	12 Months	12 Months
Accounting Standard:	U.S. GAAP	U.S. GAAP	U.S. GAAP	U.S. GAAP	U.S. GAAP
Originally Reported Unit (except per share amounts):	Millions	Millions	Millions	Millions	Millions
Reporting Currency:	USD	USD	USD	USD	USD
Source	10-K	10-K	10-K	10-K	10-K
Source Date:	25/1/2011	24/01/2012	23/01/2013	23/01/2014	22/01/2015
Consolidated:	Yes	Yes	Yes	Yes	Yes
Auditor Name:	Pricewaterhouse Coopers LLP	Pricewaterhouse Coopers LLP	Pricewaterhouse Coopers LLP	Pricewaterhouse Coopers LLP	Pricewaterhouse Coopers LLP
Assets					
Current assets:					
Cash and cash equivalents	2765.20	3371.93	2876.63	2869.16	2426.37
Short-term investments	0.00	65.22	140.96	141.49	151.52
Total cash, cash equivalents, and short-term investments	2765.20	3437.16	3017.59	3010.65	2577.89
Accounts receivable, net	363.61	232.27	323.71	483.03	377.96
Inventories	146.52	122.28	152.72	163.88	153.39
Deferred income taxes - current	66.84	58.42	59.05	63.23	56.05
Deferred compensation plan - marketable securities	54.42	54.04	60.32	66.46	69.37
Deferred compensation plan - restricted cash equivalents	19.82	17.94	17.12	16.70	14.41
Other current assets	114.60	52.71	49.85	48.90	39.48
Total current assets	3531.01	3974.81	3680.35	3852.84	3288.54
Property and equipment, net	164.16	171.72	206.15	204.14	194.84
Long-term investments	0.00	74.03	704.76	1695.07	1942.34
Deferred income taxes - non-current	37.32	26.63	17.08	10.81	20.08
Goodwill	0.00	0.00	0.00	73.97	74.34
Acquisition-related intangible assets, net	0.00	0.00	0.00	82.15	72.29
Other assets, net	27.35	35.07	49.49	76.68	81.79
Total assets	3759.84	4282.27	4657.83	5995.65	5674.23
Liabilities and stockholders' equity					
Current liabilities:					
Accounts payable	86.06	52.15	50.04	44.16	49.14
Accrued liabilities	23.28	34.03	29.01	41.22	28.38
Accrued compensation and related liabilities	83.77	78.18	40.61	51.11	69.84
Deferred compensation plan obligations	74.24	71.98	77.44	83.15	83.78
Deferred income and allowances on sales to distributors	428.71	279.88	345.99	487.75	344.17
Credit facility		500.00			
Income taxes payable	0.43				
Total current liabilities	696.49	1016.22	543.08	707.39	575.31
Income taxes payable - non-current	231.83	263.42	272.00	276.33	313.45
Long-term debt	500.00	0.00	500.00	1491.47	1492.76
Other non-current liabilities	7.87	8.73	9.30	8.40	6.89
Total liabilities	1436.19	1288.37	1324.38	2483.58	2388.40
Commitments and contingencies					
Stockholders' equity:					
Common stock	0.32	0.32	0.32	0.32	0.30
Capital in excess of par value	908.99	1050.75	1122.56	1216.83	1165.26
Retained earnings	1414.34	1942.96	2204.98	2322.89	2110.62
Accumulated other comprehensive income/(loss)		-0.13	5.59	-27.96	9.65
Total stockholders' equity	2323.65	2993.90	3333.45	3512.07	3285.83
Total liabilities and stockholders' equity	3759.84	4282.27	4657.83	5995.65	5674.23

APPENDIX 14. The Target's Cash Flow Statements 2010- 2014

Fiscal Period	2010	2011	2012	2013	2014
Period End Date:	31/12/2010	31/12/2011	31/12/2012	31/12/2013	31/12/2014
Period Length:	12 Months	12 Months	12 Months	12 Months	12 Months
Accounting Standard:	U.S. GAAP	U.S. GAAP	U.S. GAAP	U.S. GAAP	U.S. GAAP
Originally Reported Unit (except per share amounts):	Millions	Millions	Millions	Millions	Millions
Reporting Currency:	USD	USD	USD	USD	USD
Source	10-K	10-K	10-K	10-K	10-K
Source Date:	25/1/2011	24/01/2012	23/01/2013	23/01/2014	22/01/2015
Consolidated:	Yes	Yes	Yes	Yes	Yes
Auditor Name:	Pricewaterhouse Coopers LLP	Pricewaterhouse Coopers LLP	Pricewaterhouse Coopers LLP	Pricewaterhouse Coopers LLP	Pricewaterhouse Coopers LLP
Cash Flows from Operating Activities:					
Net income	782.88	770.71	556.81	440.07	472.66
Adjustments to reconcile net income to net cash provided by operating activities:					
Depreciation and amortization	27.54	31.93	36.01	47.23	56.18
Amortization of acquisition-related intangible assets			0.85	4.82	9.86
Amortization of debt discount and debt issuance costs			0.65	1.46	3.12
Stock-based compensation	62.12	82.75	93.59	96.62	93.43
Net gain on sale of available-for-sale securities				-0.15	-0.14
Amortization of investment discount/premium				3.41	2.75
Deferred income tax (benefit) expense	34.26	15.66	8.82	3.58	-3.33
Tax effect of employee stock plans	27.44	16.16	9.81	7.01	4.95
Excess tax benefit from employee stock plans	-21.87	-17.31	-16.28	-4.72	-1.95
Changes in assets and liabilities, net of the effects of acquisitions:					
Accounts receivable, net	-145.33	131.34	-91.44	-157.84	105.07
Inventories	-76.82	24.25	-30.44	-7.93	10.49
Other assets	-52.81	54.66	-3.70	-1.31	10.09
Accounts payable and other liabilities	59.20	-32.53	-50.57	9.41	14.76
Deferred income and allowances on sales to distributors	146.83	-148.84	66.12	139.00	-143.58
Income taxes payable	15.75	31.12	8.58	14.44	37.27
Deferred compensation plan obligations	-2.49	-0.29	-1.60	-4.89	-5.40
Net cash provided by operating activities	856.70	959.60	587.21	590.21	666.22
Cash Flows from Investing Activities:					
Purchases of property and equipment	-12.44	-31.81	-60.91	-42.56	-40.24
Sales of deferred compensation plan securities, net	2.49	0.29	1.60	4.89	5.40
Purchases of available-for-sale securities		-164.41	-921.43	-1347.63	-905.28
Proceeds from sale of available-for-sale securities		25.00	105.41	136.79	489.20
Proceeds from maturity of available-for-sale securities			115.37	178.22	191.50
Acquisitions, net of cash acquired	-8.00			-145.32	
Purchases of intangible assets	-5.00		-2.28	-13.47	-1.75
Purchase of other investments			-4.94	-7.44	-10.22
Net cash used in investing activities	-22.95	-170.92	-767.18	-1236.51	-271.39
Cash Flows from Financing Activities:					
Proceeds from issuance of common stock through stock plans	453.72	119.99	49.67	58.22	47.12
Shares withheld for employee taxes	-20.16	-32.15	-31.47	-28.27	-22.89
Payment of dividends to stockholders	-67.77	-90.06	-115.51	-160.38	-204.61
Holdback payment for prior acquisition					-3.35
Payment of debt assumed in acquisitions				-22.00	
Proceeds from issuance of long-term debt			500.00	991.79	
Repayment of credit facility			-500.00		
Long-term debt and credit facility issuance costs			-5.24	-4.14	-1.32
Repurchases of common stock		-197.02	-229.06	-201.10	-654.51
Excess tax benefit from employee stock plans	21.87	17.31	16.28	4.72	1.95
Principal payments on capital lease obligation	-2.87				
Net cash (used in) provided by financing activities	384.78	-181.94	-315.34	638.84	-837.61
Net decrease in cash and cash equivalents	1218.52	606.74	-495.31	-7.47	-442.79
Cash and cash equivalents at beginning of period	1546.67	2765.20	3371.93	2876.63	2869.16
Cash and cash equivalents at end of period	2765.20	3371.93	2876.63	2869.16	2426.37
Supplemental cash flow information:					
Income taxes (refunded)/paid, net	29.89	9.86	9.80	16.30	-3.31
Interest paid	3.40	3.70	6.90	10.87	41.64

APPENDIX 15. The Target's simple financial statements (income statement & balance sheet) 2010-2014

	Historical Financials				
	2010	2011	2012	2013	2014
Income Statement (\$mil)					
Net Sales	1954.43	2064.48	1783.04	1732.57	1932.09
Less:					
Cost of Sales excluding D&A	539.41	578.40	505.51	499.51	592.27
Depreciation & Amortization	27.54	31.93	36.01	47.23	56.18
Total Cost of Sales	566.94	610.33	541.52	546.74	648.45
Gross Profit	1387.48	1454.15	1241.51	1185.84	1283.64
Less:					
Research and development	264.65	325.73	359.57	385.19	418.17
G&A Expense	254.50	279.22	289.85	320.07	312.25
Other expense (income), net	0.00	0.02	0.59	4.67	9.72
Operating Expense	519.14	604.97	650.01	709.92	740.14
Operating Profits (EBIT)	868.34	849.18	591.51	475.91	543.50
Gains (losses) on equity investments & interest	-0.51	-0.19	0.41	-5.08	-19.47
Net Profits Before Taxes	867.83	848.99	591.92	470.83	524.03
Less: Taxes	84.94	78.28	35.11	30.76	51.37
Net Profits After Taxes	782.88	770.71	556.81	440.07	472.66
Balance Sheet (as of 12/31)					
Current Assets					
Cash	2765.20	3371.93	2876.63	2869.16	2426.37
Other Operating Assets	765.81	602.88	803.73	983.68	862.18
Total Current Assets	3531.01	3974.81	3680.35	3852.84	3288.54
Investments	0.00	74.03	704.76	1695.07	1942.34
Net Fixed Assets	164.16	171.72	206.15	204.14	194.84
Other Assets	64.67	61.70	66.57	243.60	248.50
Total Assets	3759.84	4282.27	4657.83	5995.65	5674.23
Current Liabilities					
Long-Term Debt	500.00	0.00	500.00	1491.47	1492.76
Other Liabilities	239.70	272.15	281.30	284.73	320.33
Total Liabilities	1436.19	1288.37	1324.38	2483.58	2388.40
Common Stock	909.31	1051.07	1122.88	1217.14	1165.56
Retained Earnings	1414.34	1942.82	2210.57	2294.92	2120.27
Shareholders' Equity	2323.65	2993.90	3333.45	3512.07	3285.83
Total Liabilities & Shareholders' Equity	3759.84	4282.27	4657.83	5995.65	5674.23
Addendum: Check	0.00	0.00	0.00	0.00	0.00

APPENDIX 16. The Target's stock price and beta (Source: finance.yahoo.com)



APPENDIX 17. The Target's Cost of Equity and Capital Calculations 2010- 2014

Financial Benchmarks as of April 30, 2015	
Weights	
Current stock price	45.76
Share outstanding (in millions)	309.75
Market Capitalization (in millions)	14174.07
Debt value (in millions)	1492.11
Target's D/(D+E) ratio	0.10
Target's E/(D+E) ratio	0.90
Cost of Equity	
Risk free rate (= U.S Treasury 10 year Bond yields)	2.11%
Target's Beta	0.77
Expected Return of the Market (= S&P 1500 return)	11.78%
Cost of Debt	
Tax rate	8.17%
WACC (Cost of Capital)	8.90%
WACC (terminal period)	8.90%

APPENDIX 18. The Target's consensus estimates (Source: THOMSON ONE)
2015- 2017

All Measures										
ALTERA CORPORATION										
SOURCE THOMSON ONE (Consensus Estimate)										
Date 20/4/15										
Fiscal Year: FY1										
Currency: USD - All units in millions except for per share data										
	Mean	FY-Dec.13	Mean	FY-Dec.14	Mean	CURRENT FY-Dec.15	Mean	FY-Dec.16	Mean	FY-Dec.17
Income Statement										
Revenue	1720.54	1732.57	1932.68	1932.09	NA	1986.14	NA	2129.25	NA	2255.51
Gross Margin	1179.09	1185.08	1291.42	1283.68	NA	1328.73	NA	1437.67	NA	1516.83
Gross Margin (%)	68.53	68.40	66.82	66.44	NA	66.90	NA	67.52	NA	67.25
Cost of Sales	541.45	547.49	641.26	648.41	NA	657.41	NA	691.58	NA	738.68
EBIT	472.00	475.76	554.67	543.36	NA	575.86	NA	661.99	NA	757.08
Operating Expense	707.09	709.32	736.75	740.32	NA	752.87	NA	775.68	NA	759.75
EBITDA	519.78	522.98	609.43	599.54	NA	634.21	NA	730.58	NA	809.28
Depreciation & Amortization	47.78	47.22	54.76	56.18	NA	58.35	NA	68.59	NA	52.20
Pre-tax Profit	466.87	470.83	536.32	524.03	NA	558.74	NA	649.13	NA	743.22
Provision for tax	28.83	30.76	60.61	51.37	NA	74.03	NA	85.88	NA	93.84
Net Income	438.04	440.07	475.71	472.66	NA	484.71	NA	563.25	NA	649.38
Reported Net Profit	439.36	440.07	473.25	472.66	NA	483.39	NA	558.06	NA	587.12
Reported Pre-tax Profit	466.89	470.83	537.07	524.03	NA	556.57	NA	642.86	NA	650.90
Per Share Data										
EPS	1.36	1.36	1.51	1.52	NA	1.63	NA	1.93	NA	2.12
EPS - Fully Reported	1.34	1.36	1.51	1.52	NA	1.63	NA	1.92	NA	2.09
EBITDA per Share	NA	NA	1.93	1.92	NA	2.05	NA	2.43	NA	NA
Dividend per Share	0.48	0.50	0.65	0.66	NA	0.71	NA	0.73	NA	0.71
Cash Flow										
Capital Expenditure	47.83	42.56	46.07	40.24	NA	30.61	NA	31.68	NA	40.00
Per Share Data										
Cash Flow per Share	1.92	1.83	2.01	2.14	NA	2.13	NA	2.42	NA	2.55
Free Cash Flow per Share	1.60	1.70	1.91	2.01	NA	1.98	NA	2.29	NA	NA
Balance Sheet										
Net Asset Value	3500.09	3512.07	3450.36	3285.83	NA	3495.18	NA	3772.04	NA	3746.32
Net Debt	-1258.72	-1519.18	-789.71	-1085.13	NA	-520.29	NA	-799.46	NA	-1573.73
Per Share Data										
Book Value per Share	11.27	11.05	10.61	10.86	NA	11.12	NA	12.08	NA	13.07
Tangible Book Value per Share	NA	NA	10.17	10.38	NA	10.79	NA	12.09	NA	NA
Valuation										
ROA (%)	8.85	8.25	8.34	8.10	NA	8.95	NA	10.23	NA	11.73
ROE (%)	12.73	12.86	13.94	13.91	NA	14.93	NA	16.36	NA	16.90

APPENDIX 19. The Target's historical data 2010-2015 and forecasted
assumptions 2015- 2019 (in percentage)

	Acquirer 5-Year Forecast and Standalone Valuation									
Forecast Assumptions 2015 - 2019	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Net Sales Growth Rate		6%	-14%	-3%	12%	3%	7%	6%	4.9%	6.5%
Cost of Sales (Variable) / Sales %	29%	30%	30%	32%	34%	33%	32%	33%	32.7%	32.9%
Depreciation & Amortization / Net Fixed Assets %	17%	19%	17%	23%	29%	21.0%	21.8%	22.4%	23.4%	23.5%
R&D / Sales (%)	14%	16%	20%	22%	22%	18.7%	19.7%	20.5%	20.5%	20.2%
G&A Expenses / Sales (%)	13%	14%	16%	18%	16%	15.5%	16.0%	16.5%	16.5%	16.1%
Operating Expense / Sales (%)	27%	29%	36%	41%	38%	38%	36%	34%	37.5%	36.8%
Gains (losses) on equity investments & interest / Sales (%)	0.0%	0.0%	0.0%	-0.3%	-1.0%	-0.9%	-0.6%	-0.6%	-0.7%	-0.8%
Marginal Tax Rate	10%	9%	6%	7%	10%	13%	13%	13%	11.1%	12.0%
Other Current Operations Assets / Sales (%)	39%	29%	45%	57%	45%	43.0%	43.7%	46.6%	46.9%	45.0%
Other Assets / Sales (%)	3%	3%	4%	14%	13%	7.4%	8.2%	9.3%	10.4%	9.6%
Net Fixed Assets / Sales (%)	8%	8%	12%	12%	10%	10.0%	10.4%	10.8%	10.6%	10.4%
Minimum Cash Balance / Sales (%)	141%	163%	161%	166%	126%	151.5%	153.5%	151.5%	149.5%	146.3%
Current Liabilities / Sales (%)	36%	49%	30%	41%	30%	37.2%	37.5%	35.1%	36.1%	35.1%
Common Shares Outstanding (Mil)	307.30	321.89	320.83	320.20	309.75	309.7	309.7	309.7	309.7	309.7
Cost of Capital: 2015 - 2019 (%)		8.90%								
Cost of Capital: Terminal Period (%)		8.90%								
Sustainable Cash Flow Growth Rate (%)		4.92%								
Market Value of Long-Term Debt		\$1,493	million							

APPENDIX 20. The Target's forecasted financial statements 2015- 2019 (in values)

	Projected Financials				
	2015	2016	2017	2018	2019
Income Statement (\$mil)					
Net Sales	1986.14	2129.25	2255.51	2366.56	2519.78
Less:					
Cost of Sales excluding D&A	599.06	622.99	686.48	714.82	768.05
Depreciation & Amortization	58.35	68.59	52.20	58.80	61.37
Total Cost of Sales	657.41	691.58	738.68	773.62	829.42
Gross Profit	1328.73	1437.67	1516.83	1592.94	1690.36
Less:					
Research and development	370.85	419.43	461.98	486.23	509.21
G&A Expense	307.60	340.27	371.52	390.84	406.27
Other expense (income), net	74.41	15.99	-73.76	9.47	10.74
Operating Expense	752.87	775.68	759.75	886.53	926.21
Operating Profits (EBIT)	575.86	661.99	757.08	706.41	764.15
Gains (losses) on equity investments & interest	-17.12	-12.86	-13.86	-16.01	-18.97
Net Profits Before Taxes	558.74	649.13	743.22	722.42	783.12
Less: Taxes	74.03	85.88	93.84	80.10	93.97
Net Profits After Taxes	484.71	563.25	649.38	642.31	689.15
Balance Sheet (as of 12/31)					
Current Assets					
Cash	3008.33	3267.61	3416.85	3538.50	3686.55
Other Operating Assets	853.49	931.13	1051.87	1111.05	1133.45
Total Current Assets	3861.83	4198.73	4468.73	4649.54	4820.00
Investments	1104.05	1361.55	1525.75	1483.43	1368.70
Net Fixed Assets	199.19	220.49	242.75	250.92	261.22
Other Assets	146.79	174.75	208.65	245.03	242.22
Total Assets	5311.86	5955.52	6445.88	6628.92	6692.14
Current Liabilities					
Long-Term Debt	1081.88	1525.56	1966.51	2082.61	2121.14
Other Liabilities	329.29	353.02	373.95	392.37	417.77
Total Liabilities	2149.71	2676.93	3133.24	3328.98	3424.31
Common Stock	1165.56	1165.56	1165.56	1165.56	1165.56
Retained Earnings	1996.59	2113.03	2147.08	2134.38	2102.27
Shareholders' Equity	3162.15	3278.59	3312.64	3299.94	3267.83
Total Liabilities & Shareholders' Equity	5311.86	5955.52	6445.88	6628.92	6692.14
Addendum: Check	0.00	0.00	0.00	0.00	0.00

APPENDIX 21. The Target's Free Cash Flow calculation

Effective Tax Rate	10%	9%	6%	7%	10%	13%	13%	13%	11%	12%
Earnings per Share	2.55	2.39	1.74	1.37	1.53	1.56	1.82	2.10	2.07	2.22
Long-Term Debt/Equity	0.22	0.00	0.15	0.42	0.45	0.34	0.47	0.59	0.63	0.65
Capital Expenditure	12.44	31.81	60.91	42.56	40.24	30.61	31.68	40.00	36.28	39.26
Change in Working Capital	55.68	-59.70	103.05	9.12	-28.69	15.89	7.93	21.46	5.14	4.35
Free Cash Flow										
EBIT (1-t)	783.40	770.90	556.40	445.15	492.13	501.83	576.11	663.24	626.31	670.18
Plus: Depreciation and Amortization	27.54	31.93	36.01	47.23	56.18	58.35	68.59	52.20	58.80	61.37
Less: Gross Capital Expenditures	12.44	31.81	60.91	42.56	40.24	30.61	31.68	40.00	36.28	39.26
Less: Change in Working Capital	55.68	-59.70	103.05	9.12	-28.69	15.89	7.93	21.46	5.14	4.35
Free Cash Flow	743	831	428	441	537	514	605	654	644	688

APPENDIX 22. The Target's Equity Value calculation

PV: 2015 - 2019	\$ 2,395
PV: Terminal Value	\$ 11,849
Total PV (Market Value of the Firm)	\$ 14,244
Less: Market Value of Long-Term Debt	\$1,493
Plus: Excess Cash (Investments)	\$ 1,104
Equity Value	\$ 13,855
Equity Value per Share	\$ 44.73

APPENDIX 23. The Combined firm's estimated synergy estimation 2010- 2019

Synergy Estimation									
Forecast Assumptions 2015 - 2019					2015	2016	2017	2018	2019
Net sales Synergy					1725,28	1810,55	1888,53	1940,30	2009,01
Cost of Sales Synergy / Target's CoS (%)					30%	30%	30%	30%	30%
R&D Synergy / Target's CoS (%)					20%	20%	20%	20%	20%
G&A Expenses Synergy / Target's CoS (%)					50%	50%	50%	50%	50%
Integration Expenses					(20,0)	(20,0)	(10,0)	(10,0)	(10,0)
Cost of Capital: 2013 - 2017 (%)		8,87%	1)						
Cost of Capital: Terminal Period (%)		8,87%	1)						
Sustainable Cash Flow Growth Rate (%)		2,0%							
Market Value of Long-Term Debt		\$15 664							

APPENDIX 24. The Combined firm's historical financial statements (2010-2014)
and projected financial statements (2015- 2019)

	Historical Financials					Projected Financials				
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Income Statement (\$mil)										
Net Sales of Combined Firms	45577.43	56063.48	55124.04	54440.57	57802.09	57509.32	60351.72	62951.09	64676.75	66966.93
Incremental Sales Due to Synergy						1725.28	1810.55	1888.53	1940.30	2009.01
Total Sales	45577.43	56063.48	55124.04	54440.57	57802.09	59234.60	62162.27	64839.62	66617.05	68975.94
Less:										
Variable Cost of Sales	11033.41	14756.40	13173.51	13654.51	12304.27	13126.16	13743.84	14349.57	15445.81	15836.17
Depreciation	4665.54	6095.93	7558.01	8079.23	8605.18	8985.41	8938.37	9095.33	9040.76	9243.53
Cost of Sales Synergy						179.72	186.90	205.94	214.45	230.42
Total Cost of Sales	15698.94	20852.33	20731.52	21733.74	20909.45	22291.29	22869.10	23650.84	24701.02	25310.12
Gross Profit	29878.48	35211.15	34392.51	32706.84	36892.64	36943.31	39293.17	41188.78	41916.03	43665.82
Less:										
R&D	6840.65	8675.73	10507.57	10996.19	11955.17	10403.23	11288.19	12181.40	12552.76	12890.79
R&D Synergy						74.17	83.89	92.40	97.25	101.84
G&A Expense	6563.50	7949.22	8346.85	8408.07	8448.25	8489.33	8951.57	9419.78	9655.23	9926.95
G&A Expense Synergy						153.80	170.13	185.76	195.42	203.14
Integration Expenses						20.00	20.00	10.00	10.00	10.00
Other expense (income), net	18.00	260.02	308.59	535.67	598.72	344.20	409.44	439.32	465.47	451.43
Total Operating Expense	13422.14	16884.97	19163.01	19939.92	21002.14	19484.73	20923.21	22328.66	22976.13	23584.14
Operating Profits (EBIT)	16456.34	18326.18	15229.51	12766.91	15890.50	17458.58	18369.95	18860.12	18939.91	20081.68
Gain (loss) from others	456.49	303.81	235.41	314.92	434.53	118.87	164.41	113.20	255.47	239.72
Net Profits Before Taxes	15999.85	18022.36	14994.09	12452.00	15455.97	17339.71	18205.54	18746.92	18684.43	19841.96
Less: Taxes	4665.94	4917.28	3903.11	3021.76	4148.37	3482.41	4266.58	4685.78	4154.06	4463.83
Net Profits After Taxes	11333.91	13105.08	11090.98	9430.23	11307.60	13857.30	13938.96	14061.14	14530.38	15378.13
Balance Sheet										
Current Assets										
Cash	8263.20	8436.93	11354.63	8543.16	4987.37	8918.89	9237.48	9746.38	9355.26	9518.52
Other Operating Assets	26878.81	21409.88	23683.73	27393.68	26031.18	27109.53	26999.64	28985.40	30177.53	30751.04
Total Current Assets	35142.01	29846.81	35038.35	35936.84	31018.54	36028.42	36237.13	38731.78	39532.79	40269.56
Investments	4034.00	1525.03	5621.76	9389.07	11062.34	6899.55	8243.18	8898.53	8775.90	8204.29
Net Fixed Assets	18063.16	23798.72	28189.15	31632.14	33432.84	33437.19	33458.49	33767.72	35013.41	35721.31
Other Assets	9706.67	20230.70	20159.57	21395.60	22116.50	19734.71	22249.20	23289.13	23984.07	24533.44
Total Assets	66945.84	75401.27	89008.83	98353.65	97630.23	96099.87	100187.99	104687.16	107306.17	108728.60
Current Liabilities										
Long-Term Debt	2577.00	7084.00	13636.00	14656.47	13599.76	15663.98	18213.56	20553.24	21895.73	22946.37
Other Liabilities	2591.70	6368.15	7395.30	7653.73	8285.33	8244.85	8653.40	9026.90	9275.50	9605.56
Total Liabilities	15192.19	26496.37	34472.38	36585.58	38479.40	38222.72	42258.00	45924.04	48169.66	50157.08
Common Stock	17087.31	18087.07	20586.88	22753.14	22946.56	22946.56	22946.56	22946.56	22946.56	22946.56
Retained Earnings	34666.34	30817.82	33949.57	39014.92	36204.27	34930.59	34983.43	35816.56	36189.95	35624.96
Shareholders' Equity	51753.65	48904.90	54536.45	61768.07	59150.83	57877.15	57929.99	58763.12	59136.51	58571.52
Total Liabilities & Shareholders' Equity	66945.84	75401.27	89008.83	98353.65	97630.23	96099.87	100187.99	104687.16	107306.17	108728.60
Addendum: Check	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

APPENDIX 25. The Combined firm's free cash flow 2010- 2019

Effective Tax Rate	0.29	0.27	0.26	0.24	0.27	0.20	0.23	0.25	0.22	0.22
Capital Expenditure	5219.44	10795.81	11087.91	10753.56	10145.24	13707.71	15751.86	10477.68	10992.40	11714.02
Change in Working Capital	-9.32	-390.70	323.05	-3130.89	70.31	-627.51	-751.15	-823.24	-1052.49	-636.82
Free Cash Flow										
EBIT (1-t)	11657.27	13326.00	11265.11	9668.73	11625.50	13952.29	14064.84	14146.04	14729.05	15563.92
Plus: Depreciation and Amort.	4665.54	6095.93	7558.01	8079.23	8605.18	8985.41	8938.37	9095.33	9040.76	9243.53
Less: Gross Capital Expenditures	5219.44	10795.81	11087.91	10753.56	10145.24	13707.71	15751.86	10477.68	10992.40	11714.02
Less: Change in Working Capital	-9.32	-390.70	323.05	-3130.89	70.31	-627.51	-751.15	-823.24	-1052.49	-636.82
Free Cash Flow	11112.69	9016.82	7412.16	10125.28	10015.14	9857.51	8002.50	13586.93	13829.91	13730.25

APPENDIX 26. The Combined firm's Equity Value 2010- 2019

PV: 2013 - 2017	\$45,155
PV: Terminal Value	\$133,247
Total PV (Market Value of the Firm)	\$178,402
Less: Market Value of Long-Term Debt	\$15,664
Plus: Excess Cash (Investments)	\$6,900
Equity Value	\$169,637

APPENDIX 27. US Treasury Yields (as of May 01 2015)



APPENDIX 28. Expected return on market portfolio (S&P Composite 1500)

