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Valuing synergies

Methods and their application in the M&A industry

Bachelor thesis
Industrial and financial management
Gothenburg School of business, economics and law
Spring of 2011
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ABSTRACT

What drives the price of a merger and acquisition deal? What enables some buyers to outbid others when competing over the same target? The objective of this thesis is to determine which synergies that different market actors consider as **key synergies**, how the actors **quantify and value synergies** and how the synergies **impact the acquisition premium**.

The topic has been investigated through semi structured interviews and a survey with eight different market actors in the merger and acquisition industry.

Our conclusions indicate that the assessment of what are key synergies depends on the reason to acquire and the time horizon of the buyer. Most actors find cost reducing synergies the easiest to quantify and common industry practice seems to be to only account for these in the acquisition business case. The most preferred method when valuing synergies related to mergers and acquisition is to use a discounted cash flow model and to utilize different comparable multiples as benchmarks. The value of the synergies creates a range for the acquisition premium, but since there is significant uncertainty related to the realization of them, the buyer is seldom willing to pay for more than fifty percent of the discounted value of the synergies.

Contents

ABSTRACT 2
1. INTRODUCTION 1
1.1 Relevance of the thesis 1
1.2 Objectives 2
1.3 Research questions 3
2. METHODOLOGY 4
2.1 Structure 4
2.2 The interview 4
2.3 The Interviewees 5
2.4 The execution of the interviews 6
2.5 Reliability and validity of findings 6
2.6 Empirical work and conclusion 7
3. THEORETICAL FRAMEWORK 8
3.1 Synergies 8
3.2 Types of M&A 9
3.3 Capital budgeting and valuation methods 9
3.4 The Valuation 11
3.5 Other reasons to acquire 13
4. EMPIRICAL WORK 14
4.1 Qualitative empirical work 14
Investment banks 14
Accountancy firms 15
Management consultancies 17
Private equity firms 18
4.2 Overview of aggregated quantitative and qualitative empirical work 22
Key synergies 22
Quantifying synergies and methods used for valuing synergies 24
Synergies' impact on acquisition premium 27
5. ANALYSIS AND DISCUSSION 30
5.1 Analysis 30
5.2 Discussion 31
Key synergies 31
Quantifying synergies and methods used for valuing synergies 33

Synergies' impact on acquisition premium 35
6. CONCLUSION 36
REFEERENCES 38
APPENDICIES 40
Summary of quantitative questionnaire 40
Key synergies 40
Quantifying synergies and methods used for valuing synergies 41
Synergies' impact on acquisition premium 43
Qualitative interview 45
What types of synergies are most important 45
How to quantify value of synergies 45
How to technically value synergies 46
How is value of synergies taken into account when deciding the acquisition premium 46
Quantitative interview 47
What types of synergies are most important 47
Revenue increasing activities 47
Cost saving activities 47
Capital increasing activities 47
How to quantify value of synergies 48
How to technically value synergies 49
How is value of synergies taken into account when deciding the acquisition premium 49

Tables

TABLE 1: Which operational synergetic effects are most important? 22

TABLE 2: Which of the following revenue increasing synergies do the actors deem most important/feasible to realize? 23

TABLE 3: Which of the following cost reducing synergies do the actors deem most important/feasible to realize? 24

TABLE 4: Which valuation method is the most appropriate to determine the value of the synergies? 26

TABLE 5: When using a discounted cash flow model, what risk should be used when discounting the synergies cash flows? 27

TABLE 6: Which considerations are most important when determining the acquisition premium? 27

TABLE 7: How large impact do the computed value of synergies impact the acquisition premium? 28

TABLE 8: An increase of 1 in the discounted value of the synergies would result in an increase of what in the acquisition premium? 29

Figures

FIGURE 1: 2x2 Matrix explaining what synergies that will be of importance in relation to time horizon and reason to acquire. 32

1. INTRODUCTION

Mergers and acquisitions (M&A), *"…the strategic and operational procedure of acquiring, and in some cases merging with, a target firm"* Damodaran (2002), has shaped the global economy for centuries. Lipton (2007) identifies five different M&A waves starting with the 1893 creation of the U.S. railroad and ending in the fifth wave waning with the bursting of the millennium bubble. Dicken (2007) concludes that between the years 1990 and 1996, seven of the world's top banks were reduced to three through cross-border M&A. M&A has played and still plays a major role in the globalization of the world economy. The M&A market had a turnover globally of almost 3 trillion US dollars in 2010 and it peaked with over 4 trillion US dollars just before the credit crunch of 2008, Thomson Reuters (2011).

But what drives the price of an M&A deal? During the fall of 2010 a Swedish industrial buyer, Alfa Laval, and a private equity house, Nordic Capital, were engaged in a bid war over the humidity control firm Munters. Both potential buyers expected to be able to release different synergies when acquiring the target but in the end it was Nordic Capital who took Munters of the market with a bid of SEK 77 per share. Even though the target was the same Nordic Capital was able to outbid Alfa Laval and pay a larger purchase sum. The central issue was which synergies the two competitors were convinced that they could realize. Alfa Laval and Nordic Capital expected to be able to realize different synergies and this gave Nordic Capital the possibility to outbid their competitor. Clearly there is a link between the value of synergies and the acquisition premium and different actors seem to have different perspective on which synergies that are important.

1.1 Relevance of the thesis

Corporate finance literature is full of models of different levels of integration, reasons behind acquisition and steps in the acquisition process. Yet the very core of the business transaction, how the acquisition premium is determined, is vague at best. According to World Finance (2010) the M&A advisory is still in large intertwined with the investment banks, mainly because these institutions provide the means necessary to complete the transaction, but recent times have seen a rise of M&A teams outside of the investment banking sphere. Examples of these are accountancy firms, management consultants and independent M&A boutiques. Therefore a comparison between the different actors and

their approach in these matters would provide an interesting insight in the bolts and nuts of the M&A world.

We have studied how different market actors approach synergies, this has been done through interviews complemented by a survey. Our main findings concern which synergies that are considered important, which methods to apply in the valuation process and how the acquisition premium is linked to the value of synergies.

1.2 Objectives

The acquisition premium is directly dependent upon the value of the synergies obtained from acquiring the target. This makes the valuation process crucial in understanding why firms pay over market value to acquire targets.

The objective of this thesis is to determine which synergies that different market actors consider as **key synergies**, how the actors **quantify and value synergies** and how the synergies **impact the acquisition premium**[1].

Given the assumptions of no agency effects and no information asymmetries the only reason to acquire a target would be to increase the value of the firm and thus create shareholder value (either through dividends or through increased value of assets). This would indicate that the only legit reasons for paying above market capitalization for a target would be:

1) Synergy realization[2]
2) Strategic considerations[3]

The value that exceeds the market capitalization would have to be motivated by either the value of the synergies, the value of implementing the strategy or a combination of the two. Reality, of course, is a different matter. Roll (1986) argues that over confidence on the part of the acquirer often drives the price and therefore destroys shareholder value and Eun and Resnick (2009) site managerial empire building as one of the main reasons behind M&A. In theory though, when effects like these can be disregarded, the acquisition premium will, given that all cash flows are riskless, be valued as follows:

[1] Where acquisition premium is defined as: Acquisition premium= value paid – market value stand alone
[2] Sirower (1997) defines synergies as: *"…increases in competitiveness and resulting cash flows beyond what the two companies are expected to accomplish independently"*
[3] For example when acquiring a target to ensure that a competitor cannot acquire it.

$$Acqusition\ premium = Value\ of\ synergy + Value\ of\ strategy$$

A firm would be willing to pay a price up until the acquisition premium equals the discounted value of the cash flows related to the synergies. Given the case of no strategic value of acquiring the target this would indicate:

$$Acqusition\ premium = Value\ of\ synergy$$

1.3 Research questions

Different actors expect to release different synergies when acquiring the same target. But if different actors expect different synergies from the same target, which synergies are considered most important and sought after? Will the different actor's perspectives affect how they value and quantify synergies or is there an industry praxis that all actors follow? How does the computed value of the synergies affect the acquisition premium?

These issues have been our initial research questions when performing the interviews and surveys that form the basis of this thesis. We expect to find differences between how the actors emphasize different synergies; mainly due to their different roles and incentives when valuing synergies.

2. METHODOLOGY

2.1 Structure

The objectives of our thesis, to examine how synergies are quantified, valued and impact the acquisition premium, will be met by analyzing the methods used by actors in the M&A market. To evaluate the different actor's procedures, where they converge and how they differ, we decided to use both qualitative and quantitative research methods. Our data have been obtained through qualitative interviews and followed up by a quantitative survey to gain higher comparability. Further the empirical findings have been compared with relevant literature and then allowed us to draw conclusions about the differences. As our thesis originates from literature studies and then is applied in real business, it is best described as deductively explanatory according to Yin (2003).

2.2 The interview

According to Bryman (2007) there are two interview methods normally used when conducting an interview, a quantitative or a qualitative method. When using the quantitative method, data is collected either through surveys or structured interviews. The survey consists of closed questions, with a limited choice of answer alternatives. This approach facilitates the compilation of the data and the comparison between the respondents. The disadvantages of this method are that a large sample is necessary to obtain significance and that there is no way to determine if the "right" questions are asked. There are two types of qualitative interviews, the unstructured and the semi-structured interview. When conducting a semi-structured interview a question sheet is used as starting-point and depending on the answers from the interviewee, side steps can be made and additional questions can be asked to further explore and clarify aspects derived from the answers.

We decided that the qualitative approach, with a semi-structured interview, was a good instrument to explore the valuation of synergies and the unique methods of each actor in the M&A market. We have also used a survey to compliment the answers on the semi-structured answer sheet. This made the different actors' answers distinctively comparable to each other, something that would not be possible in a strict qualitative interview. This combination of the two research methods has given us the flexibility to

analyze how each interviewee conduct his or her quantification and valuation without losing the overall comparability.

2.3 The Interviewees

When deciding who to interview for our research, it was important to reflect the whole range of different actors involved in the valuation process and to speak to associates that participate in many different transactions, preferably across different industries. In this thesis we have defined the M&A market actors as follows;

1) Banks – include all M&A advisors linked to banks, investment banks and commercial banks
2) M&A advisories – actors that purely provide knowledge and expertise and are not involved in the transaction as a lender of money or as a buying part. This includes M&A boutiques, corporate finance branches of accountancy firms and management consultancies
3) Private equity firms – firms that engage in M&A with own and borrowed funds. For this reason, both a venture capitalist and a hedge fund would be classified as private equity
4) In-house M&A teams - all of the major industrial corporations have in-house competence to perform the valuation of financial and operational synergies relating to an M&A transaction

Since we wanted to target firms that see several cross industry transactions we decided to neglect the subgroup of in-house M&A teams, since their experiences are limited to only one industry. Instead we chose to focus on the other three subgroups, private equity firms, M&A advisories and banks. We concluded that all banks work with the same basic perspective and therefore choose not to further stratify this subgroup, the same applies for private equity firms. The subgroup M&A advisories though are a different matter. Since the M&A advisories usually are a complement or a branch of a larger operation, we decided that it was important to further stratify. For our sample we have used two private equity firms, operating in the acquisition range of SEK 400 million to SEK 3 billion, one of the major Swedish banks, two top tier management consultancies and three top tier accountancy firms.

The sample consisted of eight participants of which all were men. The management consultants were both managers, two of the accountancy firm associates were partners and one was senior manager. Both of the private equity firm employees were associates and the investment banker was an analyst. Although relatively limited, we believe that this sample well represents the M&A market.

2.4 The execution of the interviews

All of the interviews were done in person, the conversations were recorded and transcripted. The interviewees first completed the qualitative semi-structured interview and then answered the survey.

2.5 Reliability and validity of findings

The two research methods in this thesis contain their own pitfalls and shortcomings. For the result of a quantitative survey of the type that we have used the sample needs to be large to be significant. Further shortcomings are that even though the multiple choice questions asked are the same, the interpretation of them might differ from interviewee to interviewee. It is difficult to know whether the questions asked are the right questions. All participants might for example consider B to be the best choice, but if B is not a choice option, the question is fundamentally flawed and any conclusion based on the findings are useless. The qualitative method suffers from the drawback that the result obtained from one interview might be on a completely different subject than the one obtained in the next, this as a result of the lack of structure. Participants in a qualitative interview might view the same issues differently, which will be reflected in their answers and take the conversation and interview in an entirely different direction.

Our research has utilized both a quantitative survey and a semi-structured qualitative interview to navigate around these problems. Our sample is quite small, both as a result of actors in the M&A market being indeed busy men and women, but also because the population in its entirety is limited. To ensure validity in our findings we have chosen to interview market leading actors in private equity, accountancy and management consultancy. To ensure that the interpretation of the survey questions was all the same we conducted the quantitative questionnaire in person with the interviewees so that any ambiguities could be clarified.

The qualitative interviews we conducted were all semi-structured and build around a prepared questionnaire. The interviewees were asked when the questions were unclear or the answers were complicated to further develop their thoughts to provide us with a thorough description of their approach to the issue of the thesis. Neither method is on itself reliable or valid, but the combination of the two nullifies many of the weaknesses. The qualitative interview ensured that the questions we asked in the survey were the right and it also gave us context to understand and further analyze our findings.

2.6 Empirical work and conclusion

The empirical work obtained through our interviews has been the cornerstone of our analysis. The latter will integrate the empirical work with our theory, it will especially highlight when methods correlate and when they differ. Finally, in our conclusion, we will sum up the most interesting findings regarding the differences and correlations between different actors and how their applications compare with our literature studies.

3. THEORETICAL FRAMEWORK

3.1 Synergies

Sirower (1997) defines synergies as: *"…increases in competitiveness and resulting cash flows beyond what the two companies are expected to accomplish independently"*, this indicates that the following equation should hold true:

The combined value of the standalone value of firm A and firm B should be less than the value of the new merged entity. According to Damodaran (2002) synergies comes in two forms; operational synergies, effects are derived from benefits related to the operational side of the business, and financial synergies, effects related to the financial side of the business. Pike and Neale (2009) define eight reasons for takeover that all can be referred to as operational synergies:

1) Economies of scale – advantages of size regarding production.

2) Cost savings – reduced costs, through combining support functions.

3) Entrance to new markets

4) Reaching critical mass – obtaining the size needed to survive in an increasingly competitive environment.

5) Improved growth

6) Market and/or pricing power – increased power when it comes to steering markets or setting prices.

7) Reduced dependency on existing activities – when the merger results in dropping of unprofitable activities.

8) Obtain stock market listing

Damodaran (2002) defines the financial synergetic effects as:

1) Excess cash/lack of excess cash – better cash management as a result of combing two firms.

2) Increased debt capacity – either as a result of the new entity being larger than the former or the new entity being considered less volatile and therefore enabled better terms regarding debt.

3) Tax benefits – benefits related to the new capital structure of the new entity.

Some of the synergies are overlapping, for instance economies of scales could be both cost saving, improved growth and market power.

3.2 Types of M&A

According to Arnold (2002) there are three different types of M&A. Berk and DeMarzo (2007) use the same definition labeling the M&A either as horizontal, vertical or as a conglomerate deal. Different synergies will be obtained depending on the type of M&A. A horizontal M&A is when two firms in the same line of business merger, for instance if an automobile manufacturer buys another automobile manufacturer. In the case of a horizontal M&A, synergies can be realized in many different forms. For instance, growth can be obtained as new market shares are gained, entry to new markets, economies of scales or cost savings. A vertical M&A, up- or downstream M&A, is when one company buys a supplier or a customer. This would e.g. be when the automobile manufacturer buys the firm that supplies them with specific engine parts. In the vertical M&A synergies in the form of cost savings and economies of scales are often crucial. The third and final level of M&A, the conglomerate, is when one firm buys a firm in an entirely different field of business. This would e.g. be if the automobile manufacturer buys a couple of dairy farms and involves in large scale butter production. In the conglomerate M&A the goal is diversification and it can be considered a synergy in its own right.

3.3 Capital budgeting and valuation methods

Capital budgeting techniques are investment decision rules according to Copeland, Weston and Shastri (2005). When deciding which project to invest in and which not to

different firms apply different methods. To analyze these methods Copeland, Weston and Shastri (2005) have put forth the following four criteria of good capital budgeting.

1) All cash flows a project generates should be taken into consideration when the project is evaluated.
2) The cash flows related to a project should be discounted with the opportunity cost of capital to ensure that the time value of money and the investors required return is considered.
3) From a set of mutually exclusive projects the one that generates the maximum amount of shareholder value should be identifiable.
4) The techniques should enable value-additivity; that is that different projects should be measured in the "same" units, so that if the values of all projects are combined the value of the entire firm is obtained.

According to Graham and Harvey (2001) the six most common methods of capital budgeting are;

Internal rate of return (IRR) – the internal rate of return method uses all cash flows from a project and computes the internal rate of return that a project will generate. This IRR is then used to evaluate how profitable a certain project is.

Discounted cash flow models (DCF) – sometimes referred to as the net present value method. The free cash flows are discounted using the weighted average cost of capital (WACC), derived from the firms required return on equity and the required yield on new debt. The value of the company is derived from the free cash flow occurring in the forecast period and the terminal value which is estimated under a steady state assumption.

Hurdle rate – the hurdle rate is the minimum accepted return that a project could generate for a firm to take on a project, the hurdle rate is preset by the firm.

Payback method – the payback method refers to a method where the amount of profit a project will generate is put in relation to the required initial investments. It measures how much time it will take until a project has repaid the initial investment and does not consider the time value of money.

Sensitivity analysis – the sensitivity analysis simulates different outcomes and evaluates how robust a certain project is under different scenarios.

P/E multiples (comparable valuation) – the comparable valuation puts different projects or assets in relation to their peers. Multiples are computed from income statements and balance sheets and used to benchmark how successful a certain project or investment is compared to other.

Bruner, Eades and Schill (2010) discuss four other valuation techniques;

Book value method – uses the target firm's balance sheet to determine the value of its assets. The book value method is applied easily and is appropriate when firms have a large amount of tangible assets.

Liquidation value at a point of time – the liquidation value method is appropriate for firm in financial distress.

Replacement and Cost Value – the method considers how much it would cost to replace a certain asset today and computes the value of a firm or a project based on these. These values are not market values but rather a value computed based on depreciation of the asset.

Market value of traded securities - derives the value of a firm from the market value of its stock. The market value of traded securities is useful when valuing a firm that is traded actively on the stock market.

The DCF method is considered superior and often used when valuing M&A because it adheres all of the four criteria's of good capital budgeting and allows expected operating strategy and private information to be incorporated into the calculations. Despite the DCF methods utility other methods are frequently used to provide complementary information.

3.4 The Valuation

Damodaran (2002) describes the process of valuing the benefits related to an M&A as follows. The first step in the valuation is to perform a standalone valuation. A standalone valuation is a valuation of the current entities, the acquiring firm and the target firm, **by themselves**. When the standalone valuations have been conducted a new valuation can

be performed, this time consisting of the new combined entity, incorporating the synergies.

According to Evans and Bishop (2001) three variables are essential when assessing potential savings or benefits due to synergies. First, the members of the M&A team should focus on the accuracy of the estimated benefits of the synergies. Second, the likelihood of achievement should be considered and therefore probabilities of different outcomes should be calculated. Finally, it is important that the team members are not over optimistic when forecasting the expected revenues. These three variables are of course important no matter what kind of valuation that is performed but the cash flows related to synergies are of a volatile nature and extra care and consideration should be adhered when estimating the accuracy, the likelihood and optimism of the forecast.

Any delay reduces the present value of the future benefits and initially reduces the net present value of the synergetic effects. When valuing synergies, **the kind of synergy expected** and **its timing** are important to estimate. Once these two facts have been determined, a DCF-model of the merged firms can be constructed.

If the axiom $V(AB) > V(A) + V(B)$ holds true, then the present value of the cash flows of the combined entity will exceed those of the separate firms combined. Making the value of synergies:

$$Value\ of\ synergies = V(AB) - (V(A) + V(B))$$

When making a comparative valuation of the new entity it should be compared with its "equals". For instance if comparable valuation is used the new entity should be compared with firms of equal size and conditions; since the new entity will operate under different circumstances than the two separate firms.

According to Damodaran (2002) it is important to distinguish between the value of control and the value of synergies. The value of control is defined as the possible increase in value in the target firm from new management. Benefits related to the value of control are not synergies according to Damodaran and the gains from new strategies, changes in dividend policy and more effective management must therefore be computed and excluded in the valuation of synergies. The value of control can be estimated with a

DCF model of the optimal structure of the target firm in comparison with the current. This approach however stands in contrast with the definitions of operational synergies put forth by Pike and Neale (2009) in which the benefits from control are included in synergetic gains. The theories in this field are not congruent and one could speculate that in the real world there is no distinction between control and synergies. How do you e.g. separate the value of control from the value of financial synergies? The answer goes beyond the scope of this thesis, but since the two are intertwined it is in large a task for the analyst in charge of the valuation to define which part of enlarged debt capacity that is a result of control and which is a result of financial synergetic effects.

3.5 Other reasons to acquire

In a perfect capital market with no market imperfections, such as information asymmetry and agency problems, the only reasons to acquire a target would be either synergies or strategy. This however is not the case in the real world. There are several different explanation models to why an acquisition would take place, e.g. information asymmetry (the target firm is undervalued), managerial empire building and the greater fool justification. The latter reason, somewhat cynical, was suggested by Roberts (2009) and it concludes that what matters is not what you paid to acquire a target but what someone else is willing to pay you to obtain that very target from you.

As a result of market competiveness, increased revenues and bankers bonuses, M&A advisors may have an incentive to propose suboptimal acquisitions to their clients. This agency problem is according to Plaksen (2010) due to investment banks (the paper only deals with investment banks but it is presumably the same for M&A-advisors) mainly are concerned with their own profit. As a result the longtime shareholder value of their clients is not the investment banks' number one priority.

All of these other reasons for the acquisition to take place stem from market imperfections, be it in regards of information asymmetry, such as undervalued target, or the greater fool justification or principal agent related issues, such as managerial empire building and advisors suggesting suboptimal acquisitions.

4. EMPIRICAL WORK

4.1 Qualitative empirical work

Investment banks

An investment banks role in the M&A process is to be an advisor and a provider of resources. Every major bank supports a branch that solely manages this type of work. The interview was conducted with an associate at one of the major Swedish actors in the M&A-field and investment banking sphere. According to our interviewee the most common type of M&A deal that banks are involved in is as an advisor to a private equity firm when they buy a nonpublic firm to which they usually apply heavy leverage. The most common level of integration in the deals is vertical and the M&A teams consist of employees in both the target and the acquiring firm who, forecast the future cash flows, and bankers, who break down and analyze these cash flows.

Key synergies

Our interviewee stated that the reason driving the acquisitions is almost always revenue increasing, be it to gain entrance to new markets or through increased growth rate. These revenue synergies are, however, seldom included in the valuation. What is included though are cost synergies, since these are easy to identify and easy to quantify. It is easier to determine the gains from laying-off thirty employees compared to the potential gains from new market shares. When including these cost reducing synergies it is important to know when they will occur, for instance, cost reducing synergies due to layoffs may take time to fully realize.

Quantifying synergies and methods used for valuing synergies

The synergies that are quantified are almost always the cost reducing synergies, because of the unsecure nature of the revenue increasing synergies. Different firms will have different cost reducing synergies and different approaches of how to quantify them. For instance, if an industrial buyer is competing with a private equity firm over a target the industrial buyer will be able to utilize and quantify certain synergies, often related to the business side of their operations. The private equity firm will utilize high leverage, tax related effects and a more aggressive strategy for the targets future management. In conclusion, different buyers will quantify different synergies, but it is almost exclusively cost reducing synergies that becomes a part of the valuation. When determining the

value of the synergies the most important method according to the interviewee is comparable valuation. This is because the DCF model is founded on assumptions and estimations while the comparable valuation is founded on comparisons with other transactions and businesses. When using the comparable valuation it is important to consider what lies behind the multiples. Factors such as potential synergies for the acquirer (when using transaction multiples) and macro factors such as economic cycle must be corrected for before applying the multiples.

Synergies' impact on the acquisition premium

A buyer is seldom prepared to pay close to the full value of the synergies, since the buyer is the one who has to realize the synergies, instead the synergies create a sort of range within which the acquisition premium should end up. Still the price of a target is not solely determined by factors that the buyer can control. What it all comes down to is how important it is for the acquirer to own the asset. When deciding the range of the acquisition premium, comparable transaction multiples are often used, although with precaution, since these multiples are based on historical data and historical synergies (the acquirer in the transaction might have paid an acquisition premium based on the synergies he assumed to obtain). The theory that some acquisitions are the results of principal agent related motives is sound, but as an important note, no one would pay more than the target is actually worth. But how this "worth" is calculated is an entirely different matter. For instance, if a manager changes the underlying assumptions of a DCF model this could severely change the value of a target, justifying a larger acquisition premium and this would lead to paying "more" than the target actually is worth. To summarize, the quantification of synergies create a range for the acquisition premium and depending on the buyer's preferences and strategy he will decide how much, if at all, above market value he is willing to pay.

Accountancy firms

An accountancy firm is a firm that provides corporate finance expertise purely as an advisor to the acquirer. The most common type of deal that they experience is a combination of a merger and acquisition of assets according to one of our interviewees. Their M&A teams consist of consultants from the M&A advisory, combined with employees from the acquirer and preferably the target as well. Sometimes outside complementary competence is used. The team members should have a thorough

understanding of the business that is being evaluated and the M&A advisory will provide the financial skills necessary for the valuation.

Key synergies

According to one of our interviewees, synergies is to broad a definition. There are usually three different M&A cases, the first case being a revenue case, the second a cost reducing case and the third a strategy case. These different cases brings different synergies depending on their nature, the revenue case usually focus on growth, the cost cast on creating a leaner organization and the strategy case is solely about blocking or disadvantaging a competitor.

Quantifying synergies and methods used for valuing synergies

It is easier to quantify cost reducing synergies than revenue increasing synergies, since they are easier to realize and measure. To measure how much will be saved by using one sales force instead of two is easy, but to quantify how much revenues will increase as a result of the merger is difficult. It is even more difficult to determine how much strategy is worth. Common practice is that cost reducing synergies can be a part of the valuation and that revenue increasing synergies cannot. An even more conservative view is that synergies should not be a part of the valuation at all.

The preferred model when valuing synergies is discounted cash flow, because multiples are unreliable since they are based on historic data and historic synergies. If company A acquires company B they will have an overall DCF model for all cash flows and this model will include synergies.

Given that synergies depend on different variables they should be discounted with the appropriate risk. For instance a synergy that depended on exogenous factors such as economic climate or crude resource prices might be discounted with a greater risk than synergies that depend on in-house factors. This is one of the reasons why cost reducing synergies are included in the valuation while revenue increasing synergies are not. Distinguishing between different cash flows and the risk associated with them is, however, seldom done. In many cases when the acquirer makes multiple acquisitions the WACC is given and not at all related to the specific target.

Synergies' impact on the acquisition premium

The acquisition premium is decided by three things: 1) The standalone value of the target firm 2) The synergies discounted with the risk associated to them 3) A strategic component. For instance, if the reason behind the acquisition is to block a competitor from achieving entrance to a market it might be worth to pay more than the standalone value of the target and the synergies. The synergies determine how much above market value that the acquirer is prepared to pay. It is common to use transactions multiples to obtain the value of similar transactions but in some cases also to determine the acquisition premium. To exemplify this; an industrial buyer that has acquired ten suppliers similar to the target can get a pretty good estimate of how the acquisition premium should be priced by comparing his previous transactions to the current.

Management consultancies

Management consultancies provide advice to their customers concerning M&A deals in a similar way to accountancy firms. The main difference is that management consultants also can be brought in to improve efficiency in the business after the acquisition is done. This gives them a combinational perspective, both operational and financial.

Key synergies

It is easier to quantify and measure cost reducing synergies, which are present in most cases, than revenue increasing synergies. Here there are several levers in cost of goods sold (COGS), distribution and general and administrative (G&A) functions. In some cases the efficiency of sales forces can be improved. However, revenue synergies are most common and often of the largest value. Examples of these are cross-selling of products and access to new markets. Cross-selling is valuable if the customer wants the "whole package", company A's products to company B's customers. If the acquirer's motive is to gain access to a market in a different geographical area, then acquiring a firm in this area gives access to infrastructure and distribution channels.

If capital synergies are present, which does not occur often, a merger could improve capacity utilization by improved production planning or utilization of free capacity. There could be capital synergies if the merger e.g. reduces overall risk through diversification, which would lower borrowing cost.

Quantifying synergies and methods used for valuing synergies

It is difficult to point out whether macro factors or in house factors are more important when quantifying synergies. It depends on what drives the business case, in some cases there are no synergies because the main interest is to buy growth. But in many cases cost savings are significant and these synergies are easy to quantify.

When evaluating synergies several parameters should be considered. First the synergies size is an important matter because it encompasses a perspective on what the acquirer can get in the bottom line. Second the feasibility of the synergies, i.e. the implementation risk, should be considered when quantifying the synergies. In all situations it is important that the key assumptions and estimates are challenged through sensitivity analysis.

The target is valued with a DCF model using the acquirer's WACC and the synergies are valued separately. Their value is not discounted, rather they are forecasted; *"... in X years we will achieve Y in sales from cross-selling"*. Comparable valuation is not used when valuing synergies but transaction multiples are good to compare the value of standalone business's.

Synergies' impact on the acquisition premium

The acquisition premium is determined by the standalone DCF calculation and the value of the synergies. The synergies' impact on the acquisition premium depends on what the price excluding a premium would be, they give the upper range. E.g. if the traded price is one hundred, the DCF shows a value of ninety and the synergies are valued to forty, then the acquirer may be prepared to pay one hundred and ten with a premium of ten. It is hard to make a good approximation, but generally a buyer does not want to pay a premium far off from what is normally paid in the specific industry.

Private equity firms

A private equity firm buys companies as assets in a portfolio. There are mainly two objectives for a private-equity firm when dealing with M&A. One is to diversify the business by acquiring a new firm and using it as a platform. The other is to increase the value of the platform through add-on acquisitions.

When valuing synergies and evaluating a potential acquisition the private equity firms emphasize the viewpoint of the M&A teams more operational and industrial experienced

members. Their inputs are considered crucial in determining the potential in the acquisition. The private equity firms do not estimate the value of the synergies, instead they leave this to consultants or employees in the target firms.

When acquiring a platform there are no synergies but when dealing with the second kind of acquisition, acquiring add-ons, there are plenty. Often the focus when acquiring add-ons is vertical investments, when similar smaller firms are bought and managed more effectively by experienced management in existing portfolio companies. Occasionally the conditions are the reverse; the target firm is acquired to get access of its management. The size alone of the portfolio often brings a competitive advantage to the target as well.

Key synergies

The three types of synergies, revenue, cost and capital related, are emphasized differently by the two interviewed private equity firm associates. They both agree that operational capital synergies are rare and hard to realize, mostly due to the private equity firm's time horizon, which normally is about five years. These synergies are often expensive, risky and take time to realize, for instance, to reduce or merger plants will take long time and is an uncertain enterprise.

The two interviewees held different views regarding the importance of synergies. One interviewee had the following view, *"…cost synergies are implied into the base-case because they are easily quantified, revenue increasing synergies are viewed more as opportunities"*. He referred to revenue increasing synergies as the "icing on the cake" because they are hard to quantify and associated with uncertainty and risk. Take cross-selling, the buyer cannot be sure that target's products will be demanded by the buyer's customers even though surveys indicate this. The cost reducing synergies are important when valuing the synergies and the acquisition. They are easy to quantify and implement and often of great value, for example overhead costs in businesses where personnel costs are significant. The other interviewee declared that revenue increasing synergies was more profitable and that there were great gains from cross-selling and economies of scale. The cost synergies, mostly administrative gains, were according to him easier to quantify but less valuable.

Quantifying synergies and methods used for valuating synergies

When quantifying synergies the following four parameters are important according to the interviewees. Size, cost due to synergies, timing and feasibility will all affect the value of the synergies. Of these four timing and feasibility are most critical and almost always the hardest to estimate. Different programs are initiated once the acquisition is done and the faster a synergy can be realized the greater its worth. The upfront costs related to an action are weighed against the savings it will create, e.g. attorney fees in relation to reduced staff expenses. If the merger fails the whole company will suffer.

Synergies are not valued by themselves, they are added, as well as the costs associated with them, to the earnings of the firm today and X years into the future. The value of the synergies can be estimated when comparing the change in profitability with and without synergies. To estimate the acquisition price the private equity firm associates use a multiple based on the estimated earnings in X years.

A private equity firm is not concerned with the present value of the discounted cash flows, instead they apply a model that is called the leveraged buyout model where the main focus is IRR, debt ratio and comparable valuation (comparable transaction multiples). One of the requirements to invest is that the yield and IRR fulfills the yield preset by the private equity firm both as a standalone investment and as a merge. The required yield set by the firm is high, often about thirty percent. The yield requirement is absolute and therefore is not influenced by the debt-ratio. The main focus is the return on the investment and the IRR that the investment generates combined with other portfolio companies. Since the private equity firms acquire vast amounts of targets every year synergies are seldom calculated.

Synergies' impact on the acquisition premium

When valuing the target an earnings before interest, taxes, depreciation and amortization (EBITDA) multiple is used to estimate the value of the cash flows generated by the target and the same applies to synergies. When determining how much to pay for a target an EBITDA multiple is used. To obtain these "forecasted" EBITDA multiples the firms triangulate between three data sources, historical transaction comparables, public comparables and forecasts of returns. All of these can be applied on synergies and will affect the acquisition premium. In this method the time value of money is not taken into account.

Cost reducing synergies have impact on the acquisition premium because they are easily quantified. When estimating the revenue increasing synergies' impact on the acquisition premium, economies of scale, derived from increased sales, have impact. Another aspect that affects the acquisition premium is the expected time and severity to implement the synergies. Since the value of synergies is uncertain, except cost reducing synergies, the upfront gains are rarely fulfilled. Therefor the cash flows related to the synergies are often valued less than the cash flows related to future earnings of the firm. How large impact the synergies have on the acquisition premium is hard to estimate, since strategic considerations are a part of the acquisition premium as well. In the end no one wants to pay more than necessary for synergies. If the company is worth X and because of estimated synergies valued to Y, the private equity firm will pay an amount between these values, normally the market value plus ten to twenty percent. Often when larger firms or for that sake portfolio companies acquire a smaller firm they can do so to better multiples, since the synergies they can release will improve the cash flows.

For instance, if an acquisition is made and four SEK is paid for every one SEK of profit and the correct price of the target, given the context of the buyer, would be six SEK for each one SEK of profit this will create an enormous profit. This is called multiple arbitrage and is one of the largest components in value creation for a private equity firm. To further exemplify this, if a construction firm acquires a plumbing firm and incorporates it into its business several gains will be made. The brand of the construction firm and the projects it can provide and its more effective management will multiply the value of the newly incorporated plumber.

4.2 Overview of aggregated quantitative and qualitative empirical work

Due to some of our questions being deemed either impossible to answer or complete, two of the fifteen quantitative questions have been dropped (question four and question fifteen). These questions can be found in the appendices.

Key synergies

Overall important synergies (question 1)

Four out of eight interviewees had economies of scales as the most important operational synergies, two had improved efficiency as the most important, one had entrance to new markets and one had improved growth (see table 1). The most important operational synergies are revenue increasing. Revenue increasing synergies drive the M&A according to one of the accountancy firm associates. A contrast to this is the answers given by one of the private equity firm associates, he referred to revenue synergies as an extra benefit obtained when realizing cost reducing synergies. Blanked cells have not been ranked.

TABLE 1: Which operational synergetic effects are most important?

	Economies of scale	Improved efficiencies	Entrance to markets	Critical mass	Improved growth	Market Power	Extra capacity
Accountancy firm 1	1	2					
Investment bank 1	1				2		
PE firm 1	1		2				
PE firm 2	5	1	2	6			
Management consultancy 1	1				2		
Management consultancy 2	2	1					
Accountancy firm 2	4	3	2	6	1	5	7
Accountancy firm 3	4	2	1	6	3	7	5
N = 8							

Revenue increasing synergies (question 2)

Six out of eight interviewees had improved offerings as the most important revenue increasing synergies, one had channels strategy and management and one had sales design and strategy (see table 2). One of the management consultants emphasized the value of giving the costumer "the whole package". This since purveying one firm's products to another firm's customers is easy to realize and often one of the reasons for the acquisition. One of the private equity firm associates referred to revenue increasing synergies as "opportunities", because they are hard to quantify and risky to realize; the acquirer cannot be sure that the cross-selling will be successful. Blanked cells have not been ranked.

TABLE 2: Which of the following revenue increasing synergies do the actors deem most important/feasible to realize?

	Improved offerings	Pricing strategy and execution	Sales: design and strategy	Channels strategy and management	Marketing spend effectiveness. brand
Accountancy firm 1	1				
Investment bank 1	1	2	3	4	
PE firm 1	1	2	3	5	4
PE firm 2	1			2	
Management consultancy 1	1	5	2	3	4
Management consultancy 2	2	4	3	1	5
Accountancy firm 2	1				
Accountancy firm 3			1		
N = 8					

Cost reducing synergies (question 3)

Seven out of eight interviewees had integrating G&A-functions as the important cost reducing synergies and one had cost of goods sold as most important (see table 3). An explanation for this was given in by one of the associates in an accountancy firm. He explained that this was an easy and quick fix, the "back office functions" are easy to migrate and the expected savings from reducing two firms finance, HR and marketing into one are easy to quantify. According to the investment banker and one of the private equity firms these are the only "secure" synergies and the only ones that should be used as inputs in the larger valuation model. The other private equity firm associate, who emphasized revenue synergies, agreed that cost reducing synergies are easy to quantify but often limited to administrative costs, which are of smaller value. The least important cost reducing synergies were R&D which all of the participants except one deemed as least important. Blanked cells have not been ranked.

TABLE 3: Which of the following cost reducing synergies do the actors deem most important/feasible to realize?

	R&D	COGS	Sales & Marketing	G&A (support functions)
Accountancy firm 1	4	2	3	1
Investment bank 1	4	3	2	1
PE firm 1	4	2	3	1
PE firm 2				1
Management consultancy 1	4	1	3	2
Management consultancy 2	2	3	4	1
Accountancy firm 2			1	
Accountancy firm 3		1		
N = 8				

Financial capital related synergies (question 5)

Five out of seven interviewees had tax benefits as the most important capital related synergies and two had increased debt capacity as most important (see table 4 appendices). One of the private equity firm associates did not answer this question. Blanked cells have not been ranked.

Quantifying synergies and methods used for valuing synergies

Quantifying synergies (question 6)

Six out of eight interviewees had reduced costs as the most quantifiable effect of synergies and two had increased revenues as the most quantifiable (see table 5 appendices). This is congruent with the findings above, the investment banker explained

it like this; *"...if the sales force consists of 50 employees in country X and 30 in country Y and the target has 30 employees in X and 30 Y it is easy to merger the two sales forces and layoff the personnel that becomes redundant."* One of the accountancy firm associates further developed this train of thoughts; *"... when laying of one CFO it is easy to estimate the amount of money a firm saves, but to have an intelligent opinion of how much revenue increasing synergies will generate is much harder, and to have an intelligent opinion of how much strategic synergies will generate is nearly impossible."*

Both the management consultants and the private equity firms agreed that parameters as size, timing and feasibility are important. One of the management consultants emphasized the size because it encompasses what there is to get in the bottom line. All agreed that feasibility should be accounted for; more specific the implementation risk, if the M&A fails the whole company suffers. Here the timing is important and also the time horizon. Blanked cells have not been ranked.

Costs of implementing an M&A (question7)

Four out of eight interviewees had employee related costs as the largest cost when implementing M&A, two had migration of business systems and two had erosion of core business (see table 6 appendices). According to one of the private equity firm associates the costs related to employee's varied. There could be large lawyer expenses related to layoffs, especially when unions have strong positions in the target firm. Blanked cells have not been ranked.

Sensitivity analysis (question 8)

Six out of eight interviewees had EBITDA margins as the most important parameter when performing sensitivity analysis, one had sales and one had WACC (see table 7 appendices). The accountancy firm associate that preferred the WACC (or components thereof) further developed his answer that the hardest part is to determine the critical variables and what impact they would have on the WACC calculation. Since factors outside of the firms control are riskier then factors within the firms control these riskier cash flows should be discounted with a greater risk factor, making WACC the most important consideration. Blanked cells have not been ranked.

Multiples of interest in comparative valuation (question 9)

Six out of eight interviewees had enterprise value multiples as the most important and two had P/E ratios (see table 8 appendices). Blanked cells have not been ranked.

Valuation method (question 10)

Five out of eight interviewees had DCF as the most appropriate method when determining the value of synergies, two had IRR and one had comparative valuation (see table 4). Overall the second most appropriate method is comparative valuation. The investment banker preferred the comparative valuation method since he considered the DCF model theoretic and based on assumptions while the multiples of similar firms were firmly grounded in reality. He did not disregard the DCF method though and would probably use both methods. In contrast one of the accountancy firm associates had a different opinion. He argued that the DCF model was built on estimates of the future and as long as these estimates were forecasted correctly the DCF method would be superior to the comparative valuation. Blanked cells have not been ranked.

TABLE 4: Which valuation method is the most appropriate to determine the value of the synergies?

	DCF	IRR	Comparable valuation	Payback	Balance sheet
Accountancy firm 1	1		2		
Investment bank 1	2	3	1	4	5
PE firm 1	2	1	3	4	5
PE firm 2		1	2		
Management consultancy 1	1			2	
Management consultancy 2	1	3	2	4	5
Accountancy firm 2	1	3	2	5	4
Accountancy firm 3	1		2		3
N = 8					

Appropriate discount rate in DCF (question 11)

Four out of eight interviewees had the acquirers WACC as the appropriate discount rate, three had the targets WACC and one had the unlevered targets WACC (see table 5). To use the targets WACC was motivated by one of the accountancy firm associates as appropriate because it reflected the risk in the business being acquired; however it is common to use either a company specific acquisition discount rate or the acquirers own WACC. The investment banker agreed on this and explained that many of the buyers are large industrial buyers who make multiple acquisitions every year and therefore do not have the time or resources to develop this kind of models for each acquisition.

TABLE 5: When using a discounted cash flow model, what risk should be used when discounting the synergies cash flows?

	Targets WACC	Acquirers WACC	Unlevered Target	Standardized acquisition discount	Dividend discount model
Accountancy firm 1	1				
Investment bank 1	1				
PE firm 1		1			
PE firm 2		1			
Management consultancy 1		1			
Management consultancy 2			1		
Accountancy firm 2	1				
Accountancy firm 3		1			
N = 8					

Synergies' impact on acquisition premium

Important considerations when determining the acquisition premium (question 12)

Seven of eight interviewees had had the possible synergies of an M&A as the most important consideration when determining the acquisition premium and one had strategy (see table 6). One of the accountancy firm associates explained that the value of comparable firms give an indication of how the market value the synergies, but ultimately the price depends on the amount of synergies the buyer believes he can realize. The investment banker explained that the possible synergies play a major role and set the upper limit for what a buyer is prepared to pay. However when acquiring a target it is still market forces and competition that determines the price. The computed value of synergies creates a range for the acquisition premium. Blanked cells have not been ranked.

TABLE 6: Which considerations are most important when determining the acquisition premium?

	Transaction value of comp. firms	The possible synergies of M&A	Strategy
Accountancy firm 1		1	
Investment bank 1		1	
PE firm 1	2	1	3
PE firm 2			1
Management consultancy 1	2	1	3
Management consultancy 2	2	1	3
Accountancy firm 2		1	
Accountancy firm 3		1	
N = 8			

Impact of the quantified synergies on the acquisition premium (question 13)

This question was impossible to answer according to the interviewees. Instead we chose to give them the opportunity to mark more than one answer to indicate between what ranges the computed value of the synergies impacted the acquisition premium. Given all of the answers the computed value of synergies seem to drive the value of the acquisition premium between thirty and seventy percent (see table 7). Over all it seems that the synergies impacts are very hard to estimate, since strategic considerations are a part of the acquisition premium as well.

TABLE 7: How large impact do the computed value of synergies' impact the acquisition premium?

	Premium = value of synergies	Valuation = 70% Other = 30%	Valuation = 50% Other = 50%	Valuation = 30% Other = 70%	Valuation = 0%
Accountancy firm 1		X	X		
Investment bank 1		X	X	X	
PE firm 1			X		
PE firm 2			X		
Management consultancy 1		X			
Management consultancy 2			X		
Accountancy firm 2			X		
Accountancy firm 3				X	

An increase of 1 in the discounted value of synergies would result in an increase of what in the acquisition premium? (question 13)

All of the participants had the value of synergies increase with between 0,25 and 0,5 (see table 8). One of the accountancy firm associates explained this with *"... a rule of thumb is that only two thirds of the computed value of synergies are realized... it is usually impossible to obtain all of the synergies"*. The investment banker reasons; *"... since the buyer is the one who has to realize the synergies he is seldom prepared to pay full price for them".*

TABLE 8: An increase of 1 in the discounted value of the synergies would result in an increase of what in the acquisition premium?

	0,25	0,5	0,75	1
Accountancy firm 1	1	1		
Investment bank 1	1			
PE firm 1	1	1		
PE firm 2	1			
Management consultancy 1		1		
Management consultancy 2		1		
Accountancy firm 2		1		
Accountancy firm 3				
N = 8				

5. ANALYSIS AND DISCUSSION

5.1 Analysis

As a first insight when we started comparing our interviews we realized that the classification used by Pike and Neale (2009) and Damodaran (2002) for different types of synergies could be simplified. The different actors do not recognize synergies as operational or financial; instead we suggest the following model of synergy classification where synergies are classified by their contribution to the acquirer rather than by on which side of the business they occur.

1) Revenue increasing synergies
2) Cost reducing synergies
3) Capital related synergies

The procedure of M&A valuation seems congruent with theory, the actors do indeed value the firms standalone first and then combine them to determine the value of the synergies. The corporate finance literature emphasizes discounted cash flow models when valuing targets something that our findings confirm. This though is not the only method applied. Comparable valuation is often used to benchmark the discounted cash flow models, something that the literature does not mention. The preference among valuation methods is congruent with the findings of Graham and Harvey (2001) which concludes that the top six methods of capital budgeting are, in descending order; IRR, NPV (discounted cash flow models), Hurdle rate, Payback method, Sensitivity analysis and P/E multiples (comparable valuation). It is interesting to note that the private equity firms seem to prefer IRR rather than DCF. The IRR method which is heavily criticized by Copeland, Weston and Shastri (2005) because it according to them breaks three of the four criteria of good capital budgeting.

Another interesting finding is that the comparative valuation method has been given so little emphasis in the corporate finance literature, it seems to be one of the cornerstones in the valuations and all of the actors mentioned it at some point or another. If this indeed is such an important method, why is it not further explained in literature? The findings will be further discussed below.

5.2 Discussion

Key synergies

The overall driving force behind M&A seems to be revenue increasing synergies, often the acquisition is a part of an overall strategy; for instance as a mean to gain growth, entrance to new markets or improve offerings. However, the actors have different views on the importance of different synergies and the key question to ask is what the underlying reason for the acquisition is. Management consultants and private equity firms tend to aspire to improve operating efficiency and thus favor cost reducing synergies since they are often easier and more feasible to realize. In contrast to this are the accountancy firms and the banks that purely advice and are not involved in the operational side of the business's being acquired. As a result the actors will have different perspectives on synergies due to what measures they can undertake.

The synergies that are the easiest to realize and quantify seem to be cost reducing synergies and thus often these end up in the valuation model. The revenue increasing synergies however are hard to calculate and to correctly estimate. The unsecure nature of the revenue increasing synergies is a result of their dependence on variables beyond the company's control. This implies a problem, if revenue increasing synergies are so hard to estimate how will they be measured and deemed a success or a failure? This measurement problem and how different buyers solve it we believe would be an interesting topic for further research. The revenue increasing synergies are simply more unsecure than the cost reducing synergies. What it all comes down to in the end is managements risk aversion.

The cost reducing synergies do not come for free and the costs related to realizing them could be hard to estimate. It is easy to quantify how much a two person reduction in staff will save the company, but it could be difficult to forecast how much it will cost to ensure that these two employee's duties are properly executed once they are gone. The key insight is that precaution must be taken when considering which cost saving measures to initiate so that the cost reductions do not reduce any resources or competences critical to the business. The cost reducing synergies vary in their ease of implementation. The easiest to realize seem to be combining G&A functions (HR, central finance or marketing and sales forces) followed by realizing savings on costs of goods sold. Both of these alternatives imply different restructuring costs but the largest cost

when implementing M&A seems to be employee related costs (in the form of layoffs and relocation one would presume) followed by migration of business systems.

Given the different actor's **time horizon** and **reason to acquire** it is only natural that they emphasize different costs. If the buyer's objectives are to improve efficiency and reintroduce the target to the market the key objectives will be to release as many cost saving synergies as possible, which often makes employee related costs the greatest source of cost savings. If instead the actors role is to advice an industrial buyer when acquiring a supplier the cost of migrating the supplier into the overall business system will likely be greater than employee related costs since the reason behind the acquisition is to incorporate the target into the buyer. Depending on the time frame of the deal the same action can be considered both value creative and value destructive. Synergies that take long time to realize and are associated with large costs might be considered value creative by a long term buyer but value destructive by a short term buyer. The same is true in the opposite situation; synergies that can be implemented quickly and are value creative in the short term are not necessarily value creative in the long term.

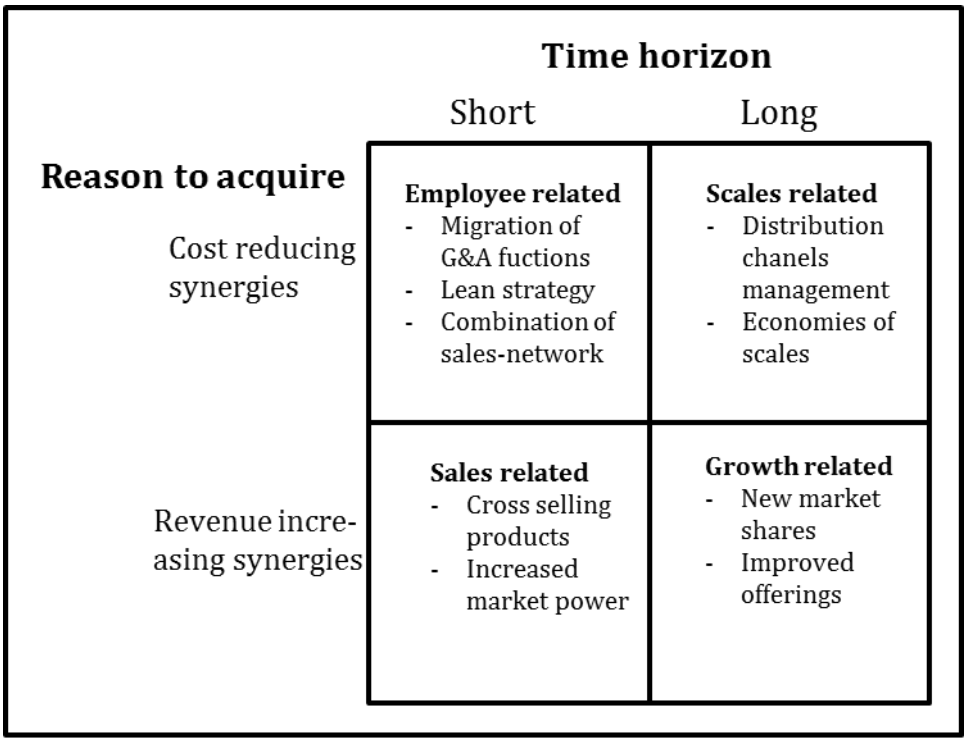

Figure 1: 2x2 Matrix to explain what synergies that will be of importance in relation to time horizon and reason to acquire.

Few actors considered capital related synergies as important. The only exception was the private equity firm associates who said that if tax optimization can be considered as capital related synergies it is important in their business. This is at the core of private equity. Small businesses often are owned by one person or a family, and rarely from a private equity professional's view, have an optimized debt structure. This is the result of partly lacking the financial tools and partly due to risk aversion of the owner. There is a feeling of safety associated with being debt free and therefore it is not uncommon that these types of firms lack leverage which creates opportunities for the private equity firms. Since their business model is to buy, improve and resell they can capitalize on the financially less well-structured businesses and enhance their profitability through better capital structure. Therefore the financial side of the capital related synergies, mainly interest tax shields, will be very important for the private equity firms but not so important for an industrial buyer.

Quantifying synergies and methods used for valuing synergies

Common practice seems to be to compose the valuation team of personnel with two different areas of expertise: Employees of the acquiring firm with reference support from the target firm to provide inputs for an accurate model of the future cash flows and personnel with corporate finance skills to value the net present value of these cash flows. It seems appropriate that the people who know the business (e.g. those who currently operate within it) should take part in providing the inputs for the valuation model. There is no single answer to which valuation method that is the most appropriate when valuing synergies, even though DCF and comparable valuation methods are ranked high by all actors. To reconnect to the analysis, why the comparable method is given little attention in the literature, we have concluded that this is because the DCF model, built on scientific thesis and propositions, is considered more "academic" than the rather more crafts like multiple valuation. Comparable valuation has many flaws largely relating to difficulties in finding good peers (comparable transactions or comparable traded companies) this said though the method is widely used because of its simplicity. The most important multiple is by far some kind of enterprise value multiple (for instance EV/EBIT) since this multiple is generic and not depending upon the leverage in the business. For instance the P/E ratio is depending on both leverage in the business and what figures that are used when calculating it. There are several other multiples that are interesting to use as comparisons, but these are all industry specific.

Different actors prefer different methods as a result of the nature of their business and the context of the acquisition. The private equity firms typically buy to resell in a few years and are therefore interested in return on investments. Their time horizon in combination with the fact that they are buying to resell makes IRR a good method since it allows them to compare their required rate of return with the project specific rate of return. The actor will use the method that is appropriate for his kind of business. All of the actors use the multiples of comparative valuation as a "reality check" to ensure that the IRR or the NPV obtained from a DCF model is in line with market opinions.

When performing sensitivity analysis many different approaches can be used, either the margins can be estimated under different scenarios (for instance under waning sales) or the appropriate WACC can be estimated to discount the cash flows. Most of the interviewees preferred the method of simulating different EBITDA margins. This more "hands on" approach is a result of the difficulties in determining the risk component of the WACC. It is simply easier to test the structure under different scenarios than trying to determine an "ultimate" WACC. All of the interviewee's had the same onset concerning what to simulate when performing a sensitivity analysis, namely in-house factors. When valuing different outcomes it is important to emphasize parameters which can be affected by the acquirer, normally these are in-house activities. The main focus is on future forecasts and not historical cash flows. To obtain the forecasted cash flows the in house activities are vital and give the project credibility.

Which WACC to use when discounting the value of synergies seem to be a matter of context as well. Two of the accountancy firms and the investment banker preferred to use the targets WACC while both of the private equity firms, one of the management consultants and one of the accountancy firms preferred the acquirers WACC. However, even if the answers of which WACC to use differed, all of the actors stressed the importance of discounting the cash flows with the risk associated with them. So this comes down to the question, which risk is the appropriate? An easy answer is that it is the risk in the business being bought but in the case of a massive buyer acquiring a very small firm the risk in the cash flows related to the synergies are different to the buyer than to the acquirer (due to some synergies that a small actor has problem realizing a large might realize with ease). If the acquirer and the target is operating in the same industry and have the same leverage the risk in the two companies should be very alike.

As a final note on the subject, many firms that make multiple acquisitions every year seem to have a sort of "standardized acquisition WACC", simply a generic risk associated with acquiring targets. It could be that since the buyer's structure is so much larger than the target the buyers do not concern themselves with making risk calculations.

Synergies' impact on acquisition premium

The valued synergies create a range for the acquisition premium. If the synergies are valued at e.g. twenty and the target standalone is valued to eighty the acquirers range above market value would be twenty, the buyer would however never pay one hundred to acquire the target. This said, the range of how much the valuation impact the acquisition premium seems to differ from deal to deal and from actor to actor.

The valuation of synergies makes up between fifty and seventy percent of the acquisition premium, but an increase of 1 in the discounted value of value of synergies will affect the acquisition premium in a range from 0,25 to 0,50. Even though the synergies have been discounted they are still considered very uncertain, either as a result of the buyer having to realize the synergize himself or as a result of the synergies volatile nature, no one seems to be willing to pay close to full price for them.

There are many reasons to why the actors are hesitant when it comes to paying for the synergies but we conclude that one of the dominating reasons is as follows. When paying for example ten times EBITDA (computed from a forecasted cash flow model or a multiple obtained from the income statement of the target) for an acquisition and if synergies are included in this EBITDA this means that for every unit of synergies that the buyer does not realize he will lose tenfold. This also explains why there exists an unwillingness to include revenue increasing synergies into the business cases.

It is almost impossible to get a generic answer concerning the acquisition premium, it seems like it consists of part valuation, part strategy and part pure intuition. As a finale note, one of our interviewees provided the following somewhat depressing insight for two BA students in finance;

"... it's strikingly often that no precise valuation at all is performed, instead a group of old men sit down around the negotiating table and haggle until they can agree upon a figure that feel right in their guts."

6. CONCLUSION

Revenue increasing synergies seem to be the overall most important synergies when it comes to driving M&A, although they often are difficult to correctly estimate. However, different actors emphasize different synergies given their differences in **time horizon** and **reasons to make an acquisition**. Depending on the context, the same M&A action can be both value creative and value destructive. Cost reducing synergies seem to be easier to realize and quantify than revenue synergies and among cost synergies the easiest to implement seems to be combining G&A functions followed by savings on costs of goods sold. Our research indicates that the largest cost when implementing M&A is employee related followed by migration of business systems.

The valuation team is often composed of personnel with different expertise. It includes employees of the acquiring firm with reference support from the target firm to provide inputs to the model of future cash flows as well as personnel with corporate finance skill to value these cash flows. Which valuation method that is the most appropriate when valuing synergies seems to be a matter of context, though DCF and comparable valuation methods are highly ranked by all actors. Most actors apply more than one model and almost all use comparative valuation multiples as benchmarks to ensure that the IRR or DCF models are in line with market opinions. Different actors prefer different methods and the actor will use the method that is appropriate for his kind of business.

The most important parameter to simulate in the sensitivity analysis seems to be EBITDA margins. In such analyses it is important to emphasize parameters which can be affected by the acquirer and often the margins are driven by in-house activities. What WACC to use when discounting the value of synergies is a divided issue. However, even if the answers of which WACC to use differs, all of the actors stressed the importance of discounting the cash flows with the risk associated with them.

The value of the synergies create a range for the acquisition premium, but how much their valuation impacts the acquisition premium seems to differ from deal to deal and between actors. The value of synergies makes up between fifty and seventy percent of the acquisition premium, but an increase of 1 in the discounted value of synergies will

affect the acquisition premium in a range from 0,25 to 0,50. This is both a result of the buyer having to realize the synergies himself and the synergies' uncertain nature.

It is not surprising that the actors are careful when it comes to which synergies they include in their business case. For example, when paying ten times EBITDA to acquire a target and synergies are included, it means that for every unit of synergies that the buyer does not realize he will lose tenfold.

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APPENDICIES

Summary of quantitative questionnaire

Key synergies

TABLE 1: Which operational synergetic effects are most important?

	Economies of scale	Improved efficiencies	Entrance to markets	Critical mass	Improved growth	Market Power	Extra capacity
Accountancy firm 1	1	2					
Investment bank 1	1				2		
PE firm 1	1		2				
PE firm 2	5	1	2	6			
Management consultancy 1	1				2		
Management consultancy 2	2	1					
Accountancy firm 2	4	3	2	6	1	5	7
Accountancy firm 3	4	2	1	6	3	7	5
N = 8							Blank cell = not ranked

TABLE 2: Which of the following revenue increasing synergies do the actors deem most important/feasible to realize?

	Improved offerings	Pricing strategy and execution	Sales: design and strategy	Channels strategy and management	Marketing spend effectiveness. brand
Accountancy firm 1	1				
Investment bank 1	1	2	3	4	
PE firm 1	1	2	3	5	4
PE firm 2	1			2	
Management consultancy 1	1	5	2	3	4
Management consultancy 2	2	4	3	1	5
Accountancy firm 2	1				
Accountancy firm 3			1		
N = 8					Blank cell = not ranked

TABLE 3: Which of the following cost reducing synergies do the actors deem most important/feasible to realize?

	R&D	COGS	Sales & Marketing	G&A (support functions)
Accountancy firm 1	4	2	3	1
Investment bank 1	4	3	2	1
PE firm 1	4	2	3	1
PE firm 2				1
Management consultancy 1	4	1	3	2
Management consultancy 2	2	3	4	1
Accountancy firm 2			1	
Accountancy firm 3		1		
N = 8				Blank cell = not ranked

TABLE 4: Which capital related synergies (financial) are most important/ feasible to realize?

	Tax benefits	Increased debt capacity
Accountancy firm 1	1	2
Investment bank 1	1	2
PE firm 1	2	1
Management consultancy 1	2	1
Management consultancy 2	2	1
Accountancy firm 2	2	1
Accountancy firm 3	2	1
N = 7		

Quantifying synergies and methods used for valuing synergies

TABLE 5: Which of the effects of the synergies do the actors determine most quantifiable?

	Increased revenues	Reduced costs	Capital
Accountancy firm 1		1	
Investment bank 1		1	
PE firm 1	3	1	2
PE firm 2		1	2
Management consultancy 1	2	1	3
Management consultancy 2	1	2	3
Accountancy firm 2	1		
Accountancy firm 3		1	
N = 8			Blank cell = not ranked

TABLE 6: Which cost do the actors estimate as the largest when implementing an M&A?

	Employee-related costs	Erosion of core-business	Business system migration	Other
Accountancy firm 1	2	3	1	
Investment bank 1	1			
PE firm 1	1	3	2	
PE firm 2	1			
Management consultancy 1	3	1	2	
Management consultancy 2	2	3	1	
Accountancy firm 2	1			
Accountancy firm 3		1		

TABLE 7: When evaluating different scenarios through sensitivity analysis which parameter do the actors consider the most important?

	Sales	EBITDA margins	WACC (or components of)	Growth rate
Accountancy firm 1			1	
Investment bank 1	2	1	3	
PE firm 1		1	2	3
PE firm 2	2	1		3
Management consultancy 1	2	1	3	
Management consultancy 2	1	3	4	2
Accountancy firm 2		1		
Accountancy firm 3	3	1	4	2
N = 8				Blank cell = not ranked

TABLE 8: Which multiples do the actors consider most important/interesting?

	P/E-Ratio	Enterprise value multiple	Equity value/Net income	Other
Accountancy firm 1	3	1	2	
Investment bank 1	2	1	3	
PE firm 1	3	1	2	
PE firm 2	2	1	3	
Management consultancy 1		1		
Management consultancy 2	2	1	3	
Accountancy firm 2	1	2	3	
Accountancy firm 3	1	2		
N = 8			Blank cell = not ranked	

TABLE 9: Which of the following valuation methods is the most appropriate to determine the value of the synergies?

	DCF	IRR	Comparable valuation	Payback	Balance sheet
Accountancy firm 1	1		2		
Investment bank 1	2	3	1	4	5
PE firm 1	2	1	3	4	5
PE firm 2		1	2		
Management consultancy 1	1			2	
Management consultancy 2	1	3	2	4	5
Accountancy firm 2	1	3	2	5	4
Accountancy firm 3	1		2		3
N = 8					Blank cell = not ranked

TABLE 10: When using a discounted cash flow model, what risk should be used when discounting the synergies cash flows?

	Targets WACC	Acquirers WACC	Unlevered Target	Standardized acquisition discount	Dividend discount model
Accountancy firm 1	1				
Investment bank 1	1				
PE firm 1		1			
PE firm 2		1			
Management consultancy 1		1			
Management consultancy 2			1		
Accountancy firm 2	1				
Accountancy firm 3		1			
N = 8					

Synergies' impact on acquisition premium

TABLE 11: Which considerations are most important when determining the acquisition premium?

	Transaction value of comp. firms	The possible synergies of M&A	Strategy
Accountancy firm 1		1	
Investment bank 1		1	
PE firm 1	2	1	3
PE firm 2			1
Management consultancy 1	2	1	3
Management consultancy 2	2	1	3
Accountancy firm 2		1	
Accountancy firm 3		1	
N = 8		Blank cell = not ranked	

TABLE 12: How large impact do the computed value of synergies' impact the acquisition premium?

	Premium = value of synergies	Valuation = 70% Other = 30%	Valuation = 50% Other = 50%	Valuation = 30% Other = 70%	Valuation = 0%
Accountancy firm 1		X	X		
Investment bank 1		X	X	X	
PE firm 1			X		
PE firm 2			X		
Management consultancy 1		X			
Management consultancy 2			X		
Accountancy firm 2			X		
Accountancy firm 3				X	

TABLE 13: An increase of 1 in the discounted value of the synergies would result in an increase of what in the acquisition premium?

	0,25	0,5	0,75	1
Accountancy firm 1	1	1		
Investment bank 1	1			
PE firm 1	1	1		
PE firm 2	1			
Management consultancy 1		1		
Management consultancy 2		1		
Accountancy firm 2		1		
Accountancy firm 3				
N = 8				

This question could not be answered, instead the participants were asked to mark all of the values within the range they believed the discounted value of synergies increased the acquisition premium. The accountancy firm 3 associate did not answer this question.

Qualitative interview

What types of acquisition do you generally see the most? Which has the largest synergies?

- Merging (buying and incorporating the business)
- Consolidating (creating a new firm out of the target and the acquirer)
- Acquiring target firms assets
- Privatizations (taking the company of the market, if traded publicly, either through MBO, LBO or other means)

If M&A is considered to come in three forms; Vertical (where one acquires a firm in the same line of business, for instance a competitor), Horizontal (where one acquires a supplier, up- or down-stream) and Conglomerate (where one acquires purely for diversification) where are the largest synergies obtained?

When constructing an M&A team, what types of background/knowledge do you consider important and critical for a successful valuation?

What types of synergies are most important

If the M&A is between two manufacturing companies of the same size, which synergies in the following areas would you deem the most important (feasible to realize). Please provide examples for each area

- Revenue synergies
- Cost synergies
- Capital synergies (e.g. combining inventory, more efficient networking capital, more efficient use of assets)

How to quantify value of synergies

When evaluating different scenarios, either through sensitivity analysis or other method, what parameters do you consider the most important? E.g. Macro factors, growth rate, in-house company factors.

When quantifying synergies, which part would you consider the most critical, e.g. size of the synergies, costs due to synergies, timing or feasibility? Why? Are the exemplified variables more or less problematic to estimate?

How to technically value synergies

How does the valuation of synergy differ from a normal valuation? E.g. when estimating different variables.

*When valuing the effects of synergies obtained through merger with a target firm in regards to a **two manufacturing companies** that are **traded publicly**, which valuation methods would you deem the most appropriate to determine the value of the synergy?*

When using a discounted cash flow model or similar models which risk should be used to discount the cash flows relatable to the merger?

Are multiples frequently used? Which multiples?

Are the synergies valued separately or altogether?

How is value of synergies taken into account when deciding the acquisition premium

Which considerations are most important when determining the acquisition premium?

When valuing the acquisition premium in comparison with similar transactions, what are the most important considerations?

How large impact do the modeled value of the synergies have upon the acquisition premium, how are they quantified?

Quantitative interview

What types of synergies are most important

1) *Which operational synergetic effects are most important and often implied? (Rank from most important to least)*
   - ☐ Economies of scales *(revenue)*
   - ☐ Improved operational efficiencies *(cost)*
   - ☐ Entrance to new markets *(revenue)*
   - ☐ Reaching critical mass *(revenue)*
   - ☐ Improved growth *(revenue)*
   - ☐ Market and/or pricing power *(revenue)*
   - ☐ Extra capacity *(capital)*

Revenue increasing activities

2) *In the case of a merger of two firms in the manufacturing industry, which of the following items of potential synergy gains due to combinational revenue synergies do you deem as the most important (feasible to realize)?*
   - ☐ Improved offerings
   - ☐ Pricing strategy and execution
   - ☐ Sales force design and strategy
   - ☐ Channels strategy and management
   - ☐ Marketing spend effectiveness. brand

Cost saving activities

3) *If the M&A is between two manufacturing companies of the same size, which of the following cost saving activities do you deem would be considered the most important (feasible to realize) ?*
   - ☐ R&D
   - ☐ COGS (I.E. supply chain management, better pricing or more effective purchasing process)
   - ☐ Sales & Marketing
   - ☐ G&A (support functions)

Capital increasing activities

4) *In the case of a merger of two firms in the manufacturing industry, which of the following items of potential synergy gains due to combinational capital synergies do you deem as the most important (feasible to realize)?*
   - ☐ Asset
   - ☐ Working Capital

- ☐ Capital structure
- ☐ Tax optimization

5) *Which financial synergetic effects are most important and often implied? (Rank from most important to least)*
   - ☐ Increased debt capacity *(capital)*
   - ☐ Tax benefits *(capital)*

How to quantify value of synergies

6) *When estimating the size of the effects of synergy, which of the following do you determine the most quantifiable?*
   - ☐ Increased revenues (Impact on EBIT)
   - ☐ Reduced costs (I.E. Buying power)
   - ☐ Capital

7) *Which of the following do you estimate as the largest cost in an implementation of an M&A?*
   - ☐ Employee-related costs (relocation, merger of support functions, layoffs)
   - ☐ Erosion of core-business (loss of customers/suppliers as result of merge)
   - ☐ Migration of business systems
   - ☐ Other

8) *When evaluating different scenarios, either through sensitivity analysis or other method, which parameter do you consider the most important? (Rank from most important to least)*
   - ☐ Sales
   - ☐ EBITDA margins
   - ☐ WACC (or components of WACC)
   - ☐ Growth rate
   - ☐ Other

9) *When the synergies related to a merge are valued through comparable valuation, in this case in regards to a **manufacturing company** that is **acquired to obtain synergy** and this is **traded publicly**, which of the following multiples would you consider most important/interesting?(Rank; 1 would indicate most favored, 5 least favored)*
   - ☐ P/E-Ratio
   - ☐ Enterprise value multiple (EV/EBITDA or EV/EBIT or EV/NOPAT)
   - ☐ Equity value/Net income
   - ☐ Other

How to technically value synergies

10) *When valuing the effects of synergies obtained through merge with a target firm in regards to a **two manufacturing companies** that are **traded publicly**, which of the following valuation methods would you deem the most appropriate to determine the value of the synergy? (Rank; 1 would indicate most favored, 5 least favored)*

- ☐ DCF
- ☐ IRR
- ☐ Comparable company analysis (Comp/Multiple)
- ☐ Payback
- ☐ Balance sheet

11) *When using a discounted cash flow model, what risk should be used when discounting the cash flows relatable to the merge? (Choose one)*

- ☐ Targets WACC
- ☐ Acquirers WACC
- ☐ Unlevered Target
- ☐ "Standardized acquisition discount"
- ☐ Cost of capital obtained through dividend discount model (Gordon/Shapiros model)
- ☐ Other

How is value of synergies taken into account when deciding the acquisition premium

12) *Which considerations are most important when determining the acquisition premium? (Choose one)*

- ☐ The transaction value of comparable firms
- ☐ The possible synergy of M&A
- ☐ Strategy

13) *How much impacts do the computed value of the synergies affect the acquisition premium? (choose one)*

- ☐ Drives the value of the premium completely (Premium = value of synergies)
- ☐ Drives the value largely (Valuation = 70% Other = 30%)
- ☐ Drives the value in part (Valuation = 50% Other = 50%)
- ☐ Drives the value in small part (Valuation = 30% Other = 70%)
- ☐ Does not drive the value at all (Valuation = 0%)

14) *An increase of 1 in the discounted value of synergy would result in an increase of what in the acquisition premium? (Choose one)*

- ☐ 0,25

- 0,50
- 0,75
- 1,00
- Other

15) *To determine how much to pay for a potential target firm, literature suggests the use of transaction-multiples as a way to judge how much the market values the potential target, if transaction-multiples are important in deciding the acquisition premium, which one of the provided would you deem the most important/interesting? (Choose which one you consider most important)*
    - Equity value/Net income
    - Enterprise value/Net sales
    - Enterprise value/Operating income
    - Enterprise value/Cash flow