



SCHOOL OF ECONOMICS  
AND MANAGEMENT  
Lund University

# The Impact from Pre-M&A Resource Allocation on the Post-M&A Performance

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*– A study of target and acquirer dissimilarities*

Master thesis in Business Administration, Finance

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## Abstract

Title	The Impact from Pre-M&A Resource Allocation on the Post-M&A Performance: A study of target and acquirer dissimilarities
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Background	When firms grow through acquisitions it is commonly debated whether the two entities ought to be better off as standalone companies rather than as a merged company. This thesis aims at discussing this issue of M&As advantages and disadvantages in terms of source of synergies from the perspective of resource allocation.
Purpose	The purpose of this thesis is to describe and analyze to what extent pre-M&A differences (against similarities) in resource allocation and corporate culture between the acquiring and target firm have an impact on the post-M&A performance.
Theoretical framework	Efficient market hypothesis, resource based view, strategic fit.
Methodology	A longitudinal study is conducted on the EU market during 1992 to 2002 based on balance sheet and income statement data. Thereafter a multiple regression analysis was used to find which, how and to what extent different pre-M&A resource allocation differences impact the post-M&A performance.
Conclusion	This thesis presents a more nuanced view upon resource allocation than previous research. Namely, it indicates that it is favorable to have similarities in some and dissimilarities in some aspects of resource allocation in order to generate positive impacts on post-M&A ROA. Also the different allocation aspects relative importance is an additional contribution by this thesis.

## Table of Contents

<b>I. Introduction</b> .....	<b>1</b>
M&A background .....	1
Problem.....	1
This thesis purpose .....	2
Definitions of key concepts .....	2
Limitations of the study .....	3
<b>II. Theoretical framework</b> .....	<b>4</b>
Efficient Market Hypothesis .....	4
Vertical, Horizontal and Conglomerate.....	4
Rationale for M&As .....	5
Value creation through Synergies .....	6
RBV, Strategic Fit and Corporate Culture .....	6
Operational Synergies .....	1
Financial Synergies .....	1
Publications on M&As and Previous Quantifications of Synergies .....	8
<b>III. Methodology</b> .....	<b>10</b>
A Deductive Approach .....	10
Quantitative Longitudinal Data .....	10
Reliable Secondary Data.....	10
Multiple Linear Regression .....	11
Process of Work .....	12
Data collection .....	12
Regression background .....	13
Regression Variables and Hypothesizes .....	14
The regression.....	18
Methodology criticism.....	20

<b>IV. Empirical findings .....</b>	<b>21</b>
Empirical Background.....	21
The Result .....	22
Descriptive Diagnostics .....	25
<b>V. Analysis .....</b>	<b>27</b>
Analyzing the Results .....	27
The variables impact and importance .....	27
The Hypothesizes .....	27
Expected results .....	30
Interdependent analysis of unexpected hypothesizes results .....	31
Factors excluded from the regression model .....	32
Different Conditions for the Studies .....	33
Merger waves and the dotcom boom.....	33
Corporate Governance Systems .....	33
Generalizing hypothesizes .....	34
<b>VI. Conclusion .....</b>	<b>35</b>
Further research.....	36
<b>VII. References.....</b>	<b>A</b>
<b>VIII. Appendices .....</b>	<b>D</b>

## Table of Figures

Equation III:1 – Multiple Linear Regression .....	1
Equation III:2 – Harrison et al.'s (1991) regressions .....	1
Equation III:3 – COS.....	1
Equation III:4 – SGA.....	1
Equation III:5 – FIN .....	1
Equation III:6 – INV.....	1
Equation III:7 – CA .....	1
Equation III:8 – WC .....	1
Equation III:9 – PPE.....	1
Equation III:10 – LTD.....	1
Equation III:11 – EMP .....	1
Equation III:12 – CI.....	1
Equation III:13 – The Regression.....	1
Equation III:14 – $\Delta$ ROA.....	1
Equation III:15 – Variable example .....	1
Equation IV:1 – Standardization formula.....	1
Figure V:1 – Resource allocation favorability .....	1
Table II:1 – Sources of synergies summarized by the authors .....	1
Table IV:1 – P-value and significance probabilities .....	1
Table IV:2 – The Jarque-Berra test .....	1
Table IV:3 – Correlation Matrix.....	1
Table IV:4 – Regression output.....	1
Table IV:5 – Regression output details .....	1
Table IV:6 – Variables ranked according to their standardized impact on $\Delta$ ROA .....	1
Table IV:7 – Variables standardized ranked according to dissimilarity and similarity .....	1
Table IV:8 – Significant variables ranked according to their standardized impact on $\Delta$ ROA.....	1
Table IV:9 – Significant variables standardized ranked according to dissimilarity and similarity .....	1
Table IV:10 – Ramsey RESET test for linearity.....	1
Table IV:11 – White's test for heteroskedasticity .....	1
Table VIII:1 – List of the M&A observations alphabetically order by the target.....	D

# I. Introduction

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*The following chapter outlines the background to the study. Issues and problems of mergers and acquisitions are highlighted. Last, the chapter gives the reader the purpose of this study together with its limitation.*

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## M&A background

The constantly changing business environment and increasing competition forces companies to expand beyond their national borders (Grant, 2005), which increase the global competition further. This results in a spiral which increases the globalization. In addition, organizations like the North American Free Trade Agreement (NAFTA) and the European Union (EU) stimulates this development. Since growth through mergers and acquisitions (M&A) is faster and less troublesome than growing organically (Ansoff, 1965), M&A plays an important role in the globalization.

In pace with business cycles, companies have invested its excess cash in M&As, thus pattern of M&A waves can be recognized in the worlds industries. Furthermore certain historical time periods have to a greater extent been more pledged by M&As than others. As an example, the amount of dollar spent in M&As during the dotcom boom in the 1990s was five times higher than ten years before and almost fifty times higher than twenty years prior (Koller et al. 2005).

As a result the academic discussion has for long tried to sort out the rational and fundamental drivers for M&As. This has led to extensive theories, trying to explain successful and unsuccessful M&As and their characteristics. When firms grow through acquisitions it is commonly debated (e.g. Jensen, 1988) whether the two entities ought to be better off as standalone companies rather than as a merged company. Some debate that synergies is a myth always mentioned and incorporated when valuing M&As thus motivating it, but is seldom experienced or achieved by the post M&A company (e.g. Loderer and Martin, 1992; Jensen, 1988). Dyer, Kale and Singh (2004) argues that as many as 60% to 80% of all mergers, in number, fail to create value for the shareholders of the post-M&A firm which is empirically shown and accepted in the academic discussion.

However, some researchers (Landetieg, 1978; Bradley, Desai & Kim, 1983; Halpern, 1973; Asquith, 1983) suggest that the companies' combined wealth of increases significantly by the announcement effect of a M&A, thus M&A is value creating for the owners. Additionally, some organizations finds M&As as s superior way to invest its corporate resources to others (Pablo, 1994). E.g. instead of distributing generated funds to the owners as dividends, companies tries to create value for the shareholders through M&As.

## Problem

The academic world is divided in terms of M&As successfulness and the conditions for it. It is important to make a distinction between successful M&As in terms of shareholder value, both to the acquiring and target owners, and the company performance.

Porter (1987) suggests that companies should focus on its core competences and stick to a set strategy. This idea supports the underlying success criteria of M&As called alignment or similarity where the acquirer and target ought to be alike in terms of strategy in order for the M&A to be lucrative.

This approach is also favored by Chatterjee (1986), Salter and Weinhold (1979) as well as Singh and Montgomery (1987). On the other hand, a contradicting idea (Harrison et al., 1991) suggest that differences between the acquirer and the target enables the two firms to better learn from each other, thus creating greater synergies and better performance. This approach suggests an optimal objective for M&As based on complementarities where the two firms add to each other's competences and strengths.

It is argued (Beard & Dess, 1981; Galbraith & Kazanjian) that similarities in strategy may indicate similarities in resource allocation. Since companies' strategies not always are publicly available, in order to cope with the problem addressed in this thesis, this study, similarly to Harrison et al. (1991), focuses on resource allocation rather than strategy.

In their article synergies and post-acquisition performance Harrison et al. (1991) suggest that dissimilarities (in contrast to similarities) in resource allocation between the target and the acquirer results in a better post merger performance. Finding this perspective interesting since it is one of very few that contradicts Porter (1996) among others (e.g. Ramaswamy, 1997), the current study relates to Harrison et al.'s article and its methodology. Also, since this article considers synergies from an alternative resource allocation perspective and measure performance by return on assets, in contrast to a vast majority of the research focusing on return on equity, it attracted the authors' attention. Picturing this method as a clear and efficient way to identify and illustrate synergy effects, it was carefully examined.

Finding their approach interesting, logical and feasible, the current study aimed at developing Harrison et al.'s findings further. Testing their idea on another market, the EU instead of the US, on a different time period and more in-depth appeared appealing and unique. Realizing that their study (1991) only covers a few areas of resource allocation as sources of synergies, some additional parameters was developed to further test their result. From this point, the logical question was if this study of the 1990s on the EU market would yield a similar result as Harrison et al.'s study (1991) on the US market in the 1970s and 1980s?

In addition to the resource allocation discussion this thesis deals with M&As in terms of source of synergies from complementarity in industry and country. These extra measurements were added since they explain how pre-M&A cultural differences impacts on the post-M&A performance.

## **This thesis purpose**

The purpose of this thesis is to describe and analyze to what extent pre-M&A differences (against similarities) in resource allocation and corporate culture between the acquiring and target firm have an impact on the post-M&A performance.

## **Definitions of key concepts**

Throughout this thesis some key issues and concepts will be used and therefore the following section defines these concepts as they are used and should be interpreted in this study.

**M&As** are events when an acquirer purchases a significant stake (resulting in an ownership above 50%) in a target company thus controlling it, or if two companies merge into one entity (Reuters Cobra, 2006).

**Return on Assets (ROA)**, or company performance as it is used in this study, is a company's net income a given year relative to its total assets at the end of that same period.

**Post-M&A performance change** is the difference between the ROA of the post-M&A firm and the ROA of the sum of the separate companies stand alone values at fiscal yearend before the M&A announcement (the sum of pre-M&A firm) (see *Equation III:14*).

**Resource-allocation** is the way the company utilize resources. First, to what extent costs are spent on cost of sales (COS), selling general & administrative costs (SGA) and financial items (FIN). Second, how assets are allocated is illustrated by inventories (INV), current assets (CA), working capital (WC) and property, plant & equipment (PPE). Third, to what extent these assets are financed by long-term debt (LTD). Lastly the capital intensity (CI) and employee efficiency (EMP) are compared between the target and the acquirer.

**Corporate culture** is in this thesis defined by the company's industry belonging and country of registration to allow a quantification and measure corporate culture.

**Industry** is a segment or a field of business which a firm operates in. Reuters classifies all companies into a four level industry tree. As an example, one of the observed targets, MedQuist Inc, is classified into the following: Information Technology/Software Services/IT-services/Data processing & outsourced services.

## Limitations of the study

This study incorporates M&As carried out between 1992 and 2002 by an acquirer registered in an European Union (EU) member country during the studied period. That is Finland, Sweden, Denmark, Great Britain, Ireland, Belgium, Netherlands, Luxembourg, Germany, France, Austria, Spain, Portugal, Italy and Greece, all other M&As are neglected.

Also, since this thesis focuses on the effect on the performance change from pre-M&A resource allocation differences between the target and the acquirer, the variables used in the regression only explains potential for synergies from economies of scope and not from economies of scale.

This study deals with M&As from a manager's point of view and not with the focus from the shareholders, thus focusing on the companies' performances rather than value distribution. Being aware of the fact that no M&A would be interesting unless it adds value to the owners, this issue is rather looked upon from a more long-term perspective where future profits are more important than short-term stock price improvements. Also, this study gives a clearer understanding for the specific potential synergies (and dissynergies) that a M&A can imply and not other influencing.



## II. Theoretical framework

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*This chapter starts by introducing some general theories of M&As in order to give the reader a better and deeper understanding for M&As and then more relevant and specific theories dealing with advantages and disadvantages of similarity and dissimilarity between the target and acquirer.*

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### Efficient Market Hypothesis

As long as there are no information asymmetries on the financial market, the market is considered to be efficient and all assets i.e. stocks, commodities, derivatives and so on are regarded as to be priced at its fair and true value. This assumption is based upon Fama's article from 1970. The *efficient market hypothesis* (EMH) (Fama, 1970) does however not state that the price of an asset is going to be the same tomorrow as it is today. EMH rather states the fact that the price today is correct given today's information available on the market and if (or when) new information is available tomorrow the price of the asset should be based upon that information.

Fama (1970) divides the market in three different kinds of efficiency, these are; strong, semi-strong and weak efficiency. In its weakest form the market reflects all historical information, in the semi-strong all public available information is incorporated in the price and in the strong form of market efficiency all, both public and private, information is incorporated in the market price. The question regarding which form of market efficiency that exists on the market is not very relevant in this study, the importance is that all assets is priced at its true value and M&As do not occur by speculation but rather because the acquiring firm expects positive synergies or need the strategic position from the target which are explained below. (Fama, 1970)

### Vertical, Horizontal and Conglomerate

M&As are divided in to three categories; *vertical* M&As is when the acquirer and target are part of the same value chain, *horizontal* is when the firms are competitors on the same market and conglomerate is when the acquirer engages in pure diversification (Arzac, 2007). All three different strategies have many examples of both successful and unsuccessful corporate strategies.

*Conglomerates*, however, are often argued (e.g. Arzac, 2005) by dominant finance, management and economic point of view to be unnecessary since the investors easily can diversify and hedge on their own if they want.

This classification is important in this study since the horizontal M&As are defined to be in the same industry when conglomerates are not. Vertical M&As however can take form within the same industry, such as automobile producers acquiring an automobile part producer and across industries such as a steel producer (raw material) acquiring one of its energy supplier (utilities).

## Rationale for M&As

According to Manne (1965), unsuccessful firms will be absorbed by successful companies on a free market through M&As before these companies face bankruptcy. Here, the acquirer sees a value above the assets stand alone market value based on potential synergies. Thus, M&As generates fewer bankruptcies and value creation for all actors on the market. However, this suggests that acquirers search for less successful targets, but according to Arnold (2005) target firms ought to be as successful as acquirers and there is no reason to believe that they perform poorer. I.e. acquirers do not seek to buy companies that are on their way on going bankrupt; they seek to buy companies that generate possible synergies. This is further supported by (Gaughan, 2002) that acquiring firms seek targets with potential and features the acquirer lacks such as products, patents and competences. Bain (1956) also argues that when the market is pledged by high entry barriers, growing through M&As might be a much cheaper and better option than growing organically.

The implications from EMH states that M&As should not be driven by speculation or because one company possesses information about potential targets that the rest of the market do not. Additionally, Barney (1988) suggest that industrial M&As are driven by unique and private synergies which creates a higher value to a single acquirer than to other potential bidders, thus industrial buyers may see a higher value in some targets than private equity investors. This does not imply any information asymmetry on the market in line with EMH but different targets are unequal valuable to different acquirers.

A more traditional view recognizes four different categories and reasons for M&As; bargain buying, pressure from third party, managerial motives and synergy effect (Aron, 2005). Since the target companies in this study are either listed or very large companies with much public information, EMH suggest that the *bargain buying* should not be systematic. For smaller private companies it can be argued that much information is only available to a few and that it would be possible to buy at a significantly lower price than the target's net present value (NPV) to the acquirer. In this study with larger companies, it is rather an issue of private and unique synergies (Barney, 1988) that can be differently realized by the different acquirers and therefore there should be little support for M&As based on bargain power in this study. The *managerial reasons* for M&As are often seen as negative. Either, that the management suffers from hubris and over estimates their own skills (e.g. Koller, 2005; Gaughan, 2002) or status and power of the individual managers, also mentioned in this category. All of these managerial reasons are corporate governance issues impossible to account for (Fama & Jensen, 1983) in this thesis. The *third party motives* implies that a customer, supplier or another outside party puts pressure on an acquirer to carry out a M&A in order to fulfill certain demands. Historically there have been such situations (Aron, 2005) however in a sample size like this study this rationale should have a very small impact on the result. Therefore, the *synergy* motive is considered to be the most common, reasonable and important rationale for M&As and is further elaborated on below.

## Value creation through Synergies

Koller et al. describes synergies as “*better revenue growth, higher margins, more efficient capital utilization or a lower cost of capital*” (2005, p 183). Furthermore, if the acquirer is efficient, the value will likely arise from improving the target company whereas if two small companies merge, risk reduction benefits can be expected and cost of capital i.e. interest rates might decrease. On the other hand if a large and inefficient company buys a smaller and efficient company, only limited improvement of the larger company’s scope can be expected. (Koller et al., 2005).

However, synergies are an expected outcome from a M&A but are rarely a fact (Johnson et al., 2005) states that 70% of all M&As generates negative NPVs. It is important to notice that these circumstances have hit the unsuccessful 70% of all M&As, i.e. in relation to the number of M&As and not their value change. The reason why the expected synergies did not materialize is often divided in subgroups as follow; the winners curse, hubris and the free rider problem. This is what causes potential good deals to become inadequate and generate negative NPV. The *winners curse* is when several acquires believes that a M&A will generate synergies and the bidder that estimates the greatest potential synergies will win a price bidding war; hence it over pays and the M&A generate a negative NPV. *Hubris* is when acquiring management overestimates their own expertise, thus expecting higher managerial synergies than realized. The *free-rider problem*, arises if the targets minority shareholders are difficult to “squeeze out” after a takeover, the minority shareholders then tend to free ride on the expected synergies arising from the consolidation. These free riders will subsequent take a large portion of the expected synergies, since the price of getting rid of them is much higher than the other shareholders and expected synergies could be demolished. (Johnson et al., 2005).

Lubatkin (1983) develops this issue and discusses why firms continue to merge even though the M&As do no generate benefits according to extensive empirical findings. He suggest that either mergers do not provide real benefits since managers make mistakes and maximizes their own wealth or that mergers are beneficial but the benefits are canceled out by administrative problems accompanying the merger. Furthermore, Lubatkin pin points that methodical problems in quantifying synergies may have prevented previous empirical studies from detecting benefits. He also states that only some mergers have benefits to the acquirer’s stockholders.

Potential synergies, based on Gaughan (2002) but edited and expanded by the authors, are summarized and mapped in *Table II:1* on next page for further understanding of the different kinds of synergies.

## RBV, Strategic Fit and Corporate Culture

Barney (1991) introduced the *resource based view* (RBV), where he describes that a firm’s competitive advantage lies in its resources. Some resources are difficult or impossible to imitate and is therefore more valuable to the firm, thus creating competitive advantage. These valuable and inimitable resources, e.g. patents, specific knowledge and networks, may be acquired by companies through M&As. RBV motivates M&As in another perspective than the classical synergy arguments. However, such gains from M&As are still troublesome to quantify in a pre-M&A situation.

Table II:1 – Sources of synergies summarized by the authors

## Operational Synergies

### *Revenue enhancer*

Output market power	Increased influence on customers (price setter $\neq$ taker)
Increased sales	Offer “new” products and services to existing customer
New markets	Acquire into or become large enough to new markets
R&D	Economies of scale and scope advantages speeding up and expanding the capacity

### *Cost reduction*

Input market power	Increased influence on suppliers (price bidder $\neq$ taker)
Procurement	Volume, pooled orders & standardized products
Manufacturing	Volume, flexibility
Sales and marketing	Common sales staff offering more products and services, efficiency & flexibility
Distribution	Share distribution networks & volume
Sharing fixed costs	Better utilization
Sharing technology	Standardized processes and techniques
Capacity utilization	Reduced activities and resources on hold
Required inventories	Reduced need for large stocks
Transaction cost	Reduced if deals are conducted within a firm

## Financial Synergies

### *Risk*

Reduce distress risk	Decreased cash flow volatility
Debt capacity	Better rating

### *Value*

Tax loss carry forward	Tax loss carry forward
Fair priced	Increased liquidity eases exit
Internal capital market	More efficient capital expenditure allocation

*The examples given are subject to industrial and national contexts and intend to help the reader better*

Porter (1996) further explains how value creation and competitive advantage can be obtained, in a somewhat consistent manner to RBV. He argues that strategic positioning (*variety based, need based and segmentation [or access] based* positioning) is no longer a sustainable competitive advantage, since the strategic position is easily copied by rivalry firms. These three strategic positions clearly state the essence of alignment in business processes. Porter states that strategic position is all about being diversified from your competitors in your business strategy. However, the strategic positioning requires tradeoffs since it is impossible to gain advantage on all areas at the same time. The strategy guru further argues that positioning is something that emerges from the company's resources, in accordance with Barney (1988), and can therefore be altered with the resources. He also states that operational efficiency is important but nor is this criteria sufficient enough to achieve sustainable competitive advantages since benchmarking and copying corporate strategy is equally simple as with the resources. Porter (1996).

Instead, Porter (1996) states that the key to obtain a competitive advantage is by achieving operational strategic fit. The first-order strategic fit is to have *consistency* between activities in a firm, the second-order fit ensures that activities are *reinforcing* and the third-order fit ensures *optimization* of effort (leanness). These three types of fit describe, in a quintessence, the importance of having activities that matches the overall corporate strategy and culture. These criteria are set for all activities inside a firm and are therefore applicable to all activities, such as those gained from M&As.

The general hypothesis in management, and finance, is that strategic fit and alignment is a criterion for synergies. However many scholars differ and suggest a reversed hypothesis. These hypotheses are described below.

## Publications on M&As and Previous Quantifications of Synergies

In the 1980's, the academic discussion on the subject M&As was in style and trendy (e.g. Jensen, 1988), various articles were written in the subject and theories that both acknowledged and contradicted each other emerged. A significant amount of articles supports Porter's idea of strategic fit (1996) and only a few contradicts his argumentation.

Salter & and Weinhold (1979), Hopkins (1987) and Swaminathan et al. (2008), all suggest that strategic alignment allows the greatest synergy effects. These studies, measures the market reactions impact due to strategic alignment, in line with Porter's strategic fit.

Kusewitt, (1985) determines that it exist a connection between similarities in industry and increased financial performance.

Sing and Montgomery (1987) finds a relationship between product, market and technical relatedness and post merger abnormal returns. Their empirical evidence shows that related acquisitions generate higher stock returns than acquisitions of an unrelated nature.

Lubatkin (1987) discusses if mergers generate permanent wealth for the owners of the acquiring and acquired firm and if management literature is to generalizing in its assumptions regarding that similar, apart from unrelated, mergers generates higher expectations. The study shows that permanent stockholder gains can be drawn from mergers in general, to both the owners of the acquirer and target. He does however contradict Sing and Montgomery's suggestion, and states that product and market relatedness was not necessary better than unrelatedness.

Shelton (1988), also studies stock returns and determines the relationship between value creation from M&As and when the bidder gains access to a new market. Shelton tests the hypothesis that strategic business fit can be ranked as followed; (1) identical, (2) related-supplementary, (3) related-complementary and (4) unrelated. The results of the study shows that the M&As in identical or in related-supplementary industries generates the greatest synergy effects, which implies that M&As with high strategic alignment in new markets are the ones generating the greatest synergies.

Harrison et al. (1991) suggest an idea that contradicts classic management theories of alignment that Porter so vividly suggest as the most important factor to gain competitive advantage. They propose that dissimilarities in resources allocation generates positive outcome from M&As. This idea has its foundation in Barney's RBV. The study investigates the US market and measured resource allocation dissimilarities in a pre-M&A situation and its impacts to the post merger performance (ROA). The study concludes that difference in resource allocation between target and the acquiring company, creates better conditions to achieve synergies, thus resulting in better post-M&A performance. The study is extended by splitting up the M&As, in industry related and unrelated M&As. This generated a higher insightfulness to the regression and pinpointed where and how synergies can be obtained by dissimilarities. At the same time this underlined the first findings. Harrison et al., followed-up their original study from 1991 with some logical statements in 2001. By referring to previous studies, their own and others, they once again states the essence of resource complementarity and argues that their previous result have gained support over time.

Ramaswamy (1997) is one of the few authors, accompanied by Harrison et al (1991), that instead of measuring the market reaction and stock price affect on M&As, measures its impact to ROA. Ramaswamy examined M&As in the banking industry and how strategic similarities between targets and bidders, impacted the post-M&A ROA. Based on the idea that strategy is reflected in a firm's resource allocation, Ramaswamy however, contradicts Harrison et al. (1991) by concluding that M&As in the banking sector emphasizing strategic fit experienced greater synergies than those with strategic diversification.

Van Oudenhoven and Van Der Zee (2002) argues that as a result of the increased globalization, companies tend to seek outside their national borders and merge with companies with different corporate culture as well as nationality and these international corporations have a high risk of defaulting. Their article states that there is a strong correlation between cultural and national similarities and the positive effect of a M&A.

### **III. Methodology**

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*In the following chapter the chosen methodology is discussed. The work process, in order to fulfill the purpose, is presented and the decisions made throughout the study are explained. Finally the operationalization of the purpose is explained in hypothesizes.*

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#### **A Deductive Approach**

This thesis has its foundation in Harrison et al.'s article from 1991. The market, timeframe and some parameters have been altered, however still testing the same result in a similar manner as Harrison et al. (1991). This study tests some dominant theories and previous studies on the issue of M&As and resource allocation, hence it has a deductive approach.

#### **Quantitative Longitudinal Data**

The quantitative dataset used in this study is cross sectional where a set of companies' performance is measured at two points in time thus the dataset is longitudinal (Wooldridge, 2003). To determine the exact relationship among the variables a regression analysis is performed.

#### **Reliable Secondary Data**

The fact that this study is carried out based on similar assumptions and methodology as the study conducted by the well acknowledged authors Harrison et al. (1991) should ensure that this thesis is conducted with fair and valid economic assumptions. The methodology should be considered as reliable and valid since it is based on common, and carefully explained, economic and econometric assumptions.

The data used in this thesis is collected through Reuters 3000 Cobra (2006) and Datastream Advance (2005). These data sources are broadly used by both academic researchers and by professional investors. Therefore the secondary information has a high reliability and credibility and can be trusted.

Processing of the raw data was done in Microsoft Office Excel (2007) where there is room for human errors. To avoid this, highest precautions and measurements have been taken. The data has continuously been checked and double checked to mitigate the risk of human errors. But still, the risk of human errors can never be totally diminished. However being aware of this fact and actively work for reducing it should improve this study's reliability.

The input data from Excel was then used in the regressions conducted in EViews 5.0 (2006). EViews enables corrections of the data free from devious errors, such as heteroskedasticity and autocorrelation among other. It also ensures that miscalculations and other human errors do not occur when processing the data.



## Multiple Linear Regression

The multiple linear regression (MLR) analysis is a function where the dependent variable is a product of two or more independent variables and an error term including other factors not included in the variables (see *Equation III:1*).

Equation III:1 – Multiple Linear Regression

$$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_k x_k + \varepsilon$$

The best regression estimator should be the linear unbiased estimator (BLUE) (Gujarati, 2006). If the regression holds under the Gauss-Markov theorem assumptions MLR 1-5 it is considered to be BLUE (Wooldridge, 2003). An additional assumption of normality completes the classical linear model (CLM) which is called MLR 1-6 for cross sectional data (Wooldridge, 2003). The data is therefore tested under the CLM assumptions as follows:

**Assumption MLR 1 – Linear in parameters.** The multilinear econometric model can be written as *Equation III:13* above. The true regression model implies that there is linearity among the parameters, and the properties can be written as a straight line.

According to Brooks (2003) a Ramsey RESET test can be used to detect nonlinearity among the parameters. If this test is not sufficient, further investigations can be done with the White test for heteroskedasticity including cross terms (Brooks, 2003). The data is therefore tested for linearity in the parameters

**Assumption MLR 2 – Random sample in the regression.** I.e. the regression is based upon a random sample of N observations from the population.

Cross sectional data is often a nonrandom sample selection, rather the part of population that selected to answer a survey question asked etcetera (Wooldridge, 2003). Of such nature is the case with the dataset in this thesis, where all M&As in the EU region during a specific time period is selected. However, some irrelevant M&As (as elaborated below in section *Data collection*) were excluded. Also, all M&As with the insufficient information from either acquirer or target is omitted in the regressions dataset. Even though there are extensive econometric models that deal with such problems, these intricacies is however often ignored when dealing with such longitudinal econometric data as in the present study (Wooldridge, 2003).

**Assumption MLR 3 – Zero conditional mean.** The error term has an expected value of zero given any independent variable. If assumption MLR 3 holds the variables can usually be considered as exogenous explanatory variables. This criterion is never violated as long as the regression holds an intercept (Brooks, 2003).

The variables used in the study can be assumed to be exogenous variables since there are no theories suggesting that the dependent variable should explain the independent ones but extensive theories explaining the other way around (Harrison et al., 1991; Krishnan, Miller & Judge, 1997; Bruton, Oviatt & White, 1994; Ramaswamy, 1997).



**Assumption MLR 4 – No perfect collinearity.** This assumption implies that none of the independent variables is constant and in an exact linear relationship towards any other independent variable. This assumption do not imply that the variables cannot be correlated, just not perfectly correlated. Perfect collinearity is often referred to as multicollinearity and is always present in some degree according to Gujarati (2006).

If the independent variables have a strong correlation towards each other, multicollinearity might be high in the regression contributing to a much greater R-squared value even in cases where explanatory variables are not significant per se (Woolridge, 2003; Gujarati, 2006). To detect multicollinearity adding and/ or deducting variables to the regression model is an option and if this generates high changes in the coefficients multicollinearity is likely to be present. Another way of detecting multicollinearity is to conduct a correlation matrix, and check for high correlation among the independent variables.

**Assumption MLR 5 – Homoskedasticity.** The variance in the error term is the same for all combination of outcomes for the explanatory variables. This implies that if the variance in the total error terms changes and is not consistent, when any of the independent variables changes there is no homoskedasticity but heteroskedasticity.

White's test for heteroskedasticity test this phenomenon, and if heteroskedasticity is present then White's correction for heteroskedasticity can be used to correct the regression for this.

**Assumption MLR 6 – Normality.** In order to determine whether the residuals are normally distributed a Jarque-Berra test is conducted. This test generates the regression distributions kurtosis and skewness. However, economic data is rather often not normally distributed, this assumption holds anyway as long the sample data is sufficiently large (Brooks, 2003). This regression incorporates 62 observations and that should be sufficient to overcome this problem and thus the data set can be treated as normally distributed.

## Process of Work

### Data collection

In order to find appropriate data of M&As Reuters 3000 Cobra (2006) was used to find M&As that was completed during the period from 1992 and 2002. The data was then filtered so all the M&As had an acquirer registered in any of the EU member countries and both the target and acquiring companies were industry classified by Reuters.

Reuters' classification of industries was used in order to eliminate very small targets from the sample. All listed companies belong to different indices which easily can be related to an industry and different sub categories within that industry. Other than those, Reuters has classified several of the companies even though they are not listed companies. It has been interpreted that these, since Reuters has classified them, firms have a significant size and importance and thus will influence the counterpart. A large number of M&As have been expelled by this criteria but again these targets should not have a major impact on the acquirer.

Thereafter all M&As listed as investments are excluded leaving (based on the definition of M&As in section *Definitions of key concepts* page 2) a population of 322 observations. Out of these, several M&As have been excluded from this study due to the reasons listed below.

Initially, since the improvement of the firms' performance is measured, M&As characterized by a reorganization within a corporate group has been taken out of the sample. As an example Colt Telecom Europe Ltd was acquired by Colt Telecom Group PLC, here no significant synergy effects are expected. Second, acquirers that have purchased several companies during the studied time period could not be included since it would be difficult to allocate the performance change to the different M&As. In other words, the companies in this study's sample has not purchased any other company than the one(s) incorporated in the study five years before or after the M&A and thus a potential performance improvement can be at least partly explained by the M&A and the synergies subsequent of it. This should eliminate capital funds and other non-industrial buyers since they are unlikely to only invest in one company over a ten years period. Third, companies who have been purchased several times by different acquirers have also been expelled since it would be difficult to allocate the change in performance to a specific M&A. Fourth, companies who soon after acquiring a target becomes a target of another firms acquisition where excluded due to the same reasons as above. Last, M&As where either the acquirer or target were part of an alliance or joint venture which also hinders the allocation of a potential performance improvement have been expelled.

In other words, the sample in this study fulfilled the following criteria: (1) the acquirer is registered in EU (2) who acquired at least a majority of the control (3) in a, by Reuters Cobra, industry classified target like the acquirer, where there is no sign of (4) company reorganization, (5) other M&As five years before or after the studied M&A or (6) any other factors that could disturb the performance change allocation. Based on these criteria a list of 62 M&As remained. Here from, the data from the incorporated companies' annual reports was collected using Datastream Advance.

## Regression background

Below, Harrison et al.'s (1991) regressions are presented in *Equation III:2* below. They used the industry mean-adjusted ROA three to five years after the M&A as the dependent variable and mean adjusted ROA the year before the deal and one of the following at the time; capital intensity, administration, intensity, innovativeness and indebtedness as the independent variables.

## Regression adaption

Although alterations have been conducted to the original regression, the basics are still the same. First, the regression is altered, by simply subtracting the pre-M&A ROA from both sides of the equation, so that the change in ROA is the dependent variable in order to better illustrate the improvement (or worsening) of the ROA. This alteration does not imply a change in the expected results from the regression, but rather seek to indentify more variables relevant for the  $\Delta$ ROA.

Equation III:2 – Harrison et al.'s (1991) regressions

$$ROA_{t+3to t+5}^{Adj} = ROA_{t-1}^{Adj} + \beta \frac{Assets}{Revenue} + \varepsilon$$

$$ROA_{t+3to t+5}^{Adj} = ROA_{t-1}^{Adj} + \beta \frac{Selling, General \& Administrative expenses^1}{Revenue} + \varepsilon$$

$$ROA_{t+3to t+5}^{Adj} = ROA_{t-1}^{Adj} + \beta \frac{Research \& Development expenses}{Revenue} + \varepsilon$$

$$ROA_{t+3to t+5}^{Adj} = ROA_{t-1}^{Adj} + \beta \frac{Interest expenses}{Revenue} + \varepsilon$$

The independent variables have also been altered. Due to the lack of information about the companies' SG&A<sup>1</sup> and R&D this thesis has chosen to approach the resource allocation matter somewhat different as explained below.

Apart from changing some independent variables, some six variables and three discriminating control variables, commonly referred to as dummy variables have been added to the regression. The dummy variables measures differences in country and industry between the target and the acquirer. Adding these variables test theories from van Oudenhoven and van Der Zee (2002) and Shelton (1988). These dummy variables adds to the idea that dissimilarities between the target and the acquirer, not only in resource allocation but also, in terms of country and industry could have a positive effect on the post-M&A performance.

## Regression Variables and Hypothesizes

In order to operationalize the hypothesizes of this thesis, the related variables are explained, defined as well as motivated for together with its related hypothesis and finally the regression is elaborated on below. The following parameters have been chosen since they reflect the management strategic intention, at least to some extent, because they can decide upon their size and should examine resource allocation as a source of synergies more thoroughly than Harrison et al.'s study.

One variable that is not included to the otherwise complete coverage of the income statement is taxes. This is motivated by the fact that managers cannot easily affect the amount of tax paid and since possible tax synergies cannot easily be derived from the pre-M&A companies differences. Factors not included from the otherwise well covered asset-side of the balance sheet are deferred taxes, other short and long-term assets and intangible assets such as goodwill based on the same reasoning as before.

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<sup>1</sup> Not the same definition as for SGA in this study

**COS** (Cost of Sales), or cost of goods sold (COGS) as it is commonly referred to in producing companies, are costs related to the production of the service or goods sold and is a measure of the firm's production efficiency (Palepu et al., 2007). Differences between the target and the acquirer's COS values implies that one firm is able to bargain better production factor input if they offer similar products and services. However, also vertical or conglomerate M&As with dissimilar products and services, can expect synergies as economies of scope (Chandler, 1990).

Equation III:3 – COS

$$COS = \frac{Revenue - GrossProfit}{Revenue}$$

Hypothesis 1: Dissimilarities in resource allocation in *COS* between acquiring and target firm, implies greater synergies and better performance (ROA) than similarities.

**SGA** (Selling, General & Administrative expenses) is according to Palepu et al. (2007), costs for overhead activities such as marketing and administrative work. This thesis however extends this definition somewhat since it includes all items between the gross profit and EBIT (see *Equation III:4*). Differences indicate different degrees of overhead efficiency given similar value chain positions as well as products and services offered.

Equation III:4 – SGA

$$SGA = \frac{GrossProfit - EarningsBeforeInterest \& Tax}{Revenue}$$

Hypothesis 2: Dissimilarities in resource allocation in *SGA* between acquiring and target firm, implies greater synergies and better performance (ROA) than similarities.

**FIN** (Financial items) are the non-operating income and expenses such as asset sales and gains and losses from investment activities added with the cost of financing,

Equation III:5 – FIN

$$FIN = \frac{EarningsBeforeInterest \& Tax - EarningsBeforeTax}{Revenue}$$

interest expense or income (Palepu et al., 2007). Here synergies can be expected if there are great differences since the post-M&A company can adapt its financial items in the most favorable way.

Hypothesis 3: Dissimilarities in resource allocation in *FIN* between acquiring and target firm, implies greater synergies and better performance (ROA) than similarities.

**INV** (Inventories) is the value of raw material, work in progress and finished goods the company possesses (Palepu et al., 2007). The amount of capital tied-up in inventories should be minimized (Stevenson, 2006). Dissimilarities in inventories suggest that the acquirer or target is more efficient than the other and skill and efficiency transfer might be expected from the deal.

$$\text{Equation III:6 – INV} \\ \text{INV} = \frac{\text{Inventories}}{\text{Assets}}$$

Hypothesis 4: Dissimilarities in resource allocation in *INV* between acquiring and target firm, implies greater synergies and better performance (ROA) than similarities.

**CA** (Current Assets) is according to Palepu et al. (2007), the sum of cash holdings, accounts receivables, inventory and other short-term assets which are expected to be liquidated within a year's time. Differences in CA imply that a company with more CA ought to be able to learn from a company with less and implement the leanness and effectiveness from the other company.

$$\text{Equation III:7 – CA} \\ \text{CA} = \frac{\text{CurrentAsse}}{\text{Assets}}$$

Hypothesis 5: Dissimilarities in resource allocation in *CA* between acquiring and target firm, implies greater synergies and better performance (ROA) than similarities.

**WC** (Working Capital) represents the amount a firm must invest in current assets exceeding the current liabilities, i.e. the amount not financed by short-term liabilities (Palepu et al., 2007). According to (Palepu et al., 2007) this is an investment area in which many companies fail to plan and some even fail to recognize when calculating with growth. As for CA, the same conditions for resource allocation differences hold here.

$$\text{Equation III:8 – WC} \\ \text{WC} = \frac{\text{WorkingCapital}}{\text{Assets}}$$

Hypothesis 6: Dissimilarities in resource allocation in *WC* between acquiring and target firm, implies greater synergies and better performance (ROA) than similarities.

**PPE** (Property, Plant & Equipment) are fixed long-term assets that indicate to what degree the assets are tied up in illiquid but normally low risk assets (Palepu et al., 2007). PPE is associated with low risk but much tied-up capital and should therefore be as slimmed as possible to achieve the best ROA. It is important to notice that this variable only incorporates PPE owned and controlled by the firm, thus off-balance financing such as leasing is not encountered for.

$$\text{Equation III:9 – PPE} \\ \text{PPE} = \frac{\text{Plant, Property \& Equipm}}{\text{Assets}}$$

Differences imply that the most ineffective company should be able to learn and adopt practices from the other and downsize these assets.

Hypothesis 7: Dissimilarities in resource allocation in *PPE* between acquiring and target firm, implies greater synergies and better performance (ROA) than similarities.

**LTD** (Long-Term Debt), or term loan, are according to Palepu et al. (2007) often secured with long-term assets like PPE and reveals to what extent the firm finances its operation with bank loans, i.e. the firms leverage. LTD is often the cheapest way of financing an organization (Pike & Neale, 1993) and differences suggest that the firms can allocate the debt in the most favorably way.

Equation III:10 – LTD

$$LTD = \frac{LongTermDebt}{Assets}$$

Hypothesis 8: Dissimilarities in resource allocation in *LTD* between acquiring and target firm, implies greater synergies and better performance (ROA) than similarities.

**CI** (Capital Intensity) indicates the capital intensity of the firm, basically how much assets that is needed to allow the current revenue. Assets are economic resources controlled and owned by a company that will generate future income (Palepu et al. 2007). According to Bartels et al. (2006) this ratio is heavily correlated with the industry. As for PPE, for example leasing is not encountered for and a corporate wide preference of off-balance financing has a large impact on this variable. A large difference between the target and acquirer could allow for great efficiency improvements with better utilized assets.

Equation III:12 – CI

$$CI = \frac{Assets}{Revenue}$$

Hypothesis 9: Dissimilarities in resource allocation in *CI* between acquiring and target firm, implies greater synergies and better performance (ROA) than similarities.

**EMP** (Employees) refers to the number of employees and their ability to generate revenue. The more commonly used inverse indicates more clearly how much revenue each employee contributes with on average. The more efficient company generates revenues with its staff is considered here and obviously the more efficient company could be able to develop practices in less efficient firm.

Equation III:11 – EMP

$$EMP = \frac{NumberOfEmployee}{Revenue}$$

Hypothesis 10: Dissimilarities in resource allocation in *EMP* between acquiring and target firm, implies greater synergies and better performance (ROA) than similarities.

The control variables IND and COU are added to the regression, in order to determine whether there is a connection between resource allocation, corporate culture and post-M&A performance. To quantify and measure the strategic fit (or dissimilarities) between the acquirer and target in a pre-M&A situation is hard. However, this thesis suggests that the variables country and industry describes how well the companies align with each other. Therefore, these variables are described as corporate culture measurement and tested on the post-M&A performance and can easily be related to Porter's first and second order fit (1996).

**IND** (Industry) (Dummy variable) determines whether the acquirer and target operates in different [1] (or similar [0]) industries according to Reuters classifications.

Hypothesis 11: Dissimilarities in *industry* belonging between the acquiring and target firm, implies greater synergies and better performance (ROA) than similarities.

**COU** (Country) (Dummy variable) determines whether the acquirer and target are registered in different [1] (or the same [0]) country. Based on the suggestion by van Oudenhoven and van Der Zee (2002), but in line with Harrison et al.'s dissimilarity idea, cross country M&As should improve performance. Therefore this suggestion adds the impact of cultural and national differences between the target and the acquirer to try to explain the difference in the pre and post-M&A company.

Hypothesis 12: Dissimilarities in *country* of registration between the acquiring and target firm, implies greater synergies and better performance (ROA) than similarities.

## The regression

The regression in this study has the difference between the industry mean adjusted ROA after and before the M&A as the dependent variable. The independent variables are three cost allocation variables, four investment allocation variables, three extra variables and three dummy variables<sup>2</sup>. The *cost allocation variables* reveal how the main costs are spent. The *investment variables* reveal where previous investments have been placed and where the firm strategically aims at. The *extra variables* intend to illustrate dissimilarities in leverage, capital intensity, average sale per employee and in terms of culture. All of these variables results in the regression (see *Equation III:13*) below.

### Equation III:13 – The Regression

$$\Delta ROA = C + \beta_1 |COS| + \beta_2 |SGA| + \beta_3 |FIN| + \beta_4 |INV| + \beta_5 |CA| + \beta_6 |WC| + \beta_7 |PPE| + \beta_8 |LTD| + \beta_9 |CI| + \beta_{10} |EMP| + \beta_{11} COU + \beta_{12} IND + \varepsilon$$

Where  $\Delta ROA$  is calculated according to *Equation III:14*:

### Equation III:14 – $\Delta ROA$

$$\Delta ROA = \underset{MergedCompany}{ROA_{t+5}^{Adj}} - \underset{Acquirer+Target}{ROA_{t-1}^{Adj}} = \left[ \underset{M\&ACompany}{ROA_{t+5}} - \underset{AcquirerIndustryMean}{ROA_{t+5}} \right] - \left[ \underset{Acquirer+Target}{ROA_{t-1}} - \underset{AcquirerIndustryMean}{ROA_{t-1}} \right]$$

In order to deduct the ROA change influence from business cycle fluctuations and industry changes the pre and post-M&A performances are subtracted by the industry mean so that the change in ROA only should be subject to the firm's own actions and development.

<sup>2</sup> A dummy variable is a binary (is either 0 or 1) variable and are often referred to as discretionary variable.



Here the target, acquirer and post-M&A company's ROA is reduced by the same industry mean ROA. This variable is calculated by the market capitalization weighted ROA of all firms operating in the same industry as the acquirer. For this the London Stock Exchange's (FTSE) information on what indexes the acquiring firm was included in was used and the companies on that same list's ROA was used. Using the same industry ROA for both the acquirer and the target, even in cases of dissimilar industries, gives a biased relative performance for the target but instead the more important relative improvement becomes measurable.

Furthermore, all independent variables are the absolute difference between the acquirers value subtracted by the targets value based on last the annual report before the announcement of the M&A. In *Equation III:15* the COS is used as an example for how each variable is calculated. In the previous section the other variables equations are presented which are to replace the content within the brackets in *Equation III:15*.

**Equation III:15 – Variable example**

$$|COS| = ABS \left( COS_{Acquirer, t-1} - COS_{Target, t-1} \right) = ABS \left( \left[ \frac{Revenue_{Acquirer, t-1} - Grossprofit_{Acquirer, t-1}}{Revenue_{Acquirer, t-1}} \right] - \left[ \frac{Revenue_{Target, t-1} - Grossprofit_{Target, t-1}}{Revenue_{Target, t-1}} \right] \right)$$

Generally, a large variable indicates differences between the target and the acquirer values and therefore larger synergies can be expected than from low variable differences. In the first case, the firms can learn from each other and economies of scope ought to be the main source of these synergies, hence improving the worse of the two firms.

Since the companies might undertake several defensive actions (Coffee et al., 1988) effecting the annual reports depending on whether it is a friendly or hostile takeover, the pre-M&A performance is measured based on the latest annual report before the M&A announcement.

Some of the M&As took place in the beginning of a year however announcing the potential or intention of the deal in the end of the previous year. In that case the annual report for the year prior to the M&A could be misleading. For instance, if a company is unwilling to be acquired it might drain the company on assets and minimize the profit in order to discourage the acquirer to carry out the M&A.



Hence the pre-M&A performance is measured the fiscal yearend prior to the M&A announcement in order to avoid M&A adjustments. A time period of up to five years was suggested to be a reasonable time for the M&A to become successful and generate synergies, which also is assumed by Harrison et al. (1991). Therefore the post-M&A performance is measured at the fiscal yearend six years after the pre-M&A fiscal yearend namely between 1997 and 2007. As an example, Shire Pharmaceutical Group Plc acquired BioChem Pharma Inc in May 2001 after announcing the deal in December 2000. Here the pre-M&A performance were measured at yearend 1999 and the post-M&A performance is measured at yearend 2005.

### **Methodology criticism**

As mentioned under the PPE and CI variables, off-balance financing influences these variables but more importantly, also affects ROA. Hence it can be argued to measure performance based on ROA when it can be increased by choosing much leasing is ambiguous. Also, it is questionable to only consider the ROA at a single point in time before and after the M&A since companies possibly have some extraordinary items such as a large asset sale or huge write-off of assets. This problem would be very time consuming and difficult to overcome and since several other actions and/or events might give an impact on the ROA none of this has been encountered for. Nor have any adjustments been made for off-balance sheet financing based on the same reason as above. Lastly, this study is solely based on the data registered in Datastream Advance.

However, all of these three weaknesses ought to have an insignificant impact on the results based on the following arguments. First, the number of observations ought to prevent a single extraordinary case to have a large effect. Second, when dealing with off-balance financing such as leasing, even though it is not encountered for as far as assets concerns it still reduces the net income thus is influenced by leasing. Third, it is unlikely that the studied firms would change financing strategy dramatically during the years between the performance measurements. If the firm had significant leasing items before the M&A it is unlikely that it would not have such after the deal. Therefore this issue should not impact the change in ROA. Fourth, most of the companies in the study are listed companies and it is known (Aron, 2005) that listed companies are unwilling to report variations in the annual report. In order to attract some investors, a steady development with only small variations is preferred and thus no surprises or irregularities are favored. Finally and perhaps foremost, considering the number of observations it ought to be similarly many deviations from the firms normality at the pre-M&A point in time as in the post-M&A and therefore these irregularities will only have a diminishing effect.

## IV. Empirical findings

*This chapter outlines the result from the regression after introducing some statistical linguistic in order to help the reader interpret the results.*

### Empirical Background

#### Statistical key terms

**The P-value** states the probability of an outcome, i.e. if and to what degree a variable is statistically significant. *Table IV:1* reveals the different P-values probabilities and significances used in this thesis.

Table IV:1 – P-value and significance probabilities

$\leq 0.01$	99%	***
$\leq 0.05$	95%	**
$\leq 0.10$	90%	*
$0.10 \leq$	No significance	

**The significance** reveals to what extent the coefficient can be trusted. In statistics a probability level of less than 90% is not sufficient enough to be applied on the entire population since it only is based on the sample. Choosing this level, reduces the risk of facing type II errors, i.e. rejecting a hypothesis that should not be rejected (Wooldridge, 2005).

**R-squared and adjusted R-squared** often referred to as goodness of fit, indicates to what degree the tested variables explain the dependent variable. For each independent variable added to the regression the R-squared value increases. Therefore, in case of an MLR, the adjusted R-squared value can be a better estimator of the regressions fit since it incorporates the number of independent variables i.e. the degrees of freedom and indicates a fairer value (Wooldridge, 2005).

**F-value** can be interpreted as the *P-value* with the difference is that the *F-value* describes a multiple hypothesis used in a multiple regression model.

#### Standardizing the Variables

When the variables in a regression differ much in size, a standardization of the variables is preferred since it makes their scale irrelevant. It also eases the interpretation of the coefficient slopes. The coefficients should

Equation IV:1 – Standardization formula

$$y_{\text{standardized}} = \frac{y_i - \bar{y}}{s_y}$$

then be interpreted as a standard deviation change in an independent variable influences the dependent variables by a standard deviation times the standardized beta for the variable. Whether standardized or unstandardized variables are used, the regression's statistical significance and probabilities are unchanged (Wooldridge, 2005). Therefore no additional regression output data than the standardized beta coefficients are reported from this operation. Because the independent variables CI and EMP are significantly smaller than the others this is preferable in this study. Wooldridge (2005) do not suggest whether it is preferred to standardize some independent variables or all variables including

the dependent variable. Hence, all parameters in this study have been standardized according to *Equation IV:1*.

The data is also tested for normality with a Jarque-Berra test. The regressions skewness and kurtosis is presented in the *Table IV:2*. The Jarque-Berra test states that the dataset in not fully normally distributed but the violation of this criterion is however not a decisive problem since the data sample is sufficiently large.

**Table IV:2 – The Jarque-Berra test**

Skewness	-0.4442
Kurtosis	2.7280
Jarque-Berra	1.5109

To determine whether there exist multicollinearity among the independent variables, a correlation matrix is presented below (see *Table IV:3*). Since none of the variables show a great correlation this is not a problem.

**Table IV:3 – Correlation Matrix**

-												
0.15	-											
0.07	0.01	-										
-0.09	-0.16	-0.14	-									
0.18	-0.25	-0.51	0.37	-								
0.18	-0.29	-0.51	-0.22	0.49	-							
0.00	0.03	0.04	0.12	-0.38	-0.30	-						
0.03	0.45	0.41	-0.19	-0.51	-0.37	0.27	-					
0.40	0.01	0.32	-0.41	-0.26	0.21	-0.04	0.38	-				
0.19	0.27	0.13	0.11	-0.08	-0.17	0.19	0.25	-0.07	-			
0.17	-0.10	0.35	-0.15	-0.21	0.09	-0.05	0.13	0.29	0.10	-		
-0.24	0.02	-0.30	-0.00	-0.17	-0.13	0.18	0.09	-0.09	0.03	0.11	-	

*The matrix shows the interdependence among the explanatory variables*

## The Result

Below the regression output of the study is presented. Here, variables with a positive coefficient imply that dissimilarities in the given variable generate a positive effect on the company's post-M&A performance (ROA) and a negative coefficient implies the opposite.

The conducted regression (based on *Equation III:13*) generates the presented *Table IV:4* on next page. Here the different variables from this thesis hypothesizes are listed with their impact on  $\Delta$ ROA, their significance and probability.

The entire test has some common details presented in *Table IV:5* below. Here the F-statistic suggests that this study's joint hypothesizes result is statistically significant on a 95% level. The R-squared implies that the regression's variables explain approximately half of the post-M&A performance change. The remaining half of the  $\Delta$ ROA is not explained by the variables incorporated in the regression but by other factors.

Rearranging the regression output, irrespective to significances, the different variables impact on  $\Delta$ ROA is presented below to the left in *Table IV:7*. Here a high position implies that the variable has a large impact on the post-M&A performance and therefore should be focused upon. *Table IV:7* on

the next page to the right is in contrast to *Table IV:7* ranked according to the variables advantage of either dissimilarity or similarity between the target and the acquirer.

In order to be able to fully understand and interpret the meaning of the coefficients a standardization of the regression is conducted. These new standardized coefficients are the impact affected by a one standard deviation change in the independent variable to the standard deviation of the dependent variable.

**Table IV:4 – Regression output**

<b>Dependent variable <math>\Delta</math>ROA with <math>\sigma</math> 0.1056</b>				
COS	0.0725	0.0382	0.0679	*
SGA	-0.2032	0.0884	0.0289	**
FIN	0.6169	1.1389	0.5922	
INV	0.3249	0.1677	0.0624	*
CA	-0.2977	0.1661	0.0835	*
WC	0.3440	0.1364	0.0174	**
PPE	-0.2188	0.1320	0.0984	*
LTD	0.3275	0.1813	0.0813	*
CI	-0.0485	0.0281	0.0953	*
EMP	-4.7949	3.1010	0.1329	
COU	0.0010	0.0378	0.9781	
IND	-0.0549	0.0271	0.0520	*
C	-0.0176	0.0170	0.3091	

*The regression is adjusted with White's correction for heteroskedasticity*

**Table IV:5 – Regression output details**

R-squared	0.4813
Adjusted R-squared	0.2667
Probability (F-statistic)	** 0.0372

Table IV:7 – Variables ranked according to their standardized impact on  $\Delta$ ROA

SGA	-0.8070	**
FIN	0.6503	
LTD	0.4675	*
EMP	-0.4293	
INV	0.4157	*
WC	0.3472	**
CI	-0.3412	*
CA	-0.2530	*
COS	0.2179	*
PPE	-0.1658	*
IND	-0.1517	*
COU	0.1384	

*The table presents the variables indicating the greatest and slightest impact on the  $\Delta$ ROA from a M&A*

Table IV:7 – Variables standardized ranked according to dissimilarity and similarity

FIN	0.6503	
LTD	0.4675	*
INV	0.4157	*
WC	0.3472	**
COS	0.2179	*
COU	0.1384	
IND	-0.1517	*
PPE	-0.1658	*
CA	-0.2530	*
CI	-0.3412	*
EMP	-0.4293	
SGA	-0.8070	**

*The table presents the variables indicating their relative advantage of dissimilarities (in the top) and similarities (in the bottom) for the different variables*

Rearranging the regression output, this time with respect to significances, the different variables impact on  $\Delta$ ROA is presented below in *Table IV:9*. Identical to *Table IV:7*, a high position implies that the variable has a large impact on the post-M&A performance and therefore should be focused upon. Similarly is *Table IV:9* the version *Table IV:7* with only significant variables where advantages of dissimilarities are found in the top and dissimilarities in the bottom.

**Table IV:9 – Significant variables ranked according to their standardized impact on  $\Delta ROA$**

SGA	-0.8070	**
LTD	0.4675	*
INV	0.4157	*
WC	0.3472	**
CI	-0.3412	*
CA	-0.2530	*
COS	0.2179	*
PPE	-0.1658	*
IND	-0.1517	*

*The table presents the significant variables indicating the greatest and slightest impact on the  $\Delta ROA$  from a M&A*

**Table IV:9 – Significant variables standardized ranked according to dissimilarity and similarity**

LTD	0.4675	*
INV	0.4157	*
WC	0.3472	**
COS	0.2179	*
IND	-0.1517	*
PPE	-0.1658	*
CA	-0.2530	*
CI	-0.3412	*
SGA	-0.8070	**

*The table presents the significant variables indicating the greatest and slightest impact on the  $\Delta ROA$  from a M&A*

## Descriptive Diagnostics

The unstandardized dataset is tested by the above stated multiple regression analysis (*Equation III:13*) under the hypotheses stated above (see *Regression background*, page 13). To ensure the validity of the regression the Guss-Markov Theorem MLR 1-6 CLM was tested and the results are presented below.

The data is tested for linearity with the Ramsey RESET test, under the null hypothesis linear in parameters. The test shows that the hypothesis cannot be rejected and the data is therefore assumed to be linear in parameters (MLR 1).

**Table IV:10 – Ramsey RESET test for linearity**

Probability	** 0.0208
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The data shows strong evidence of heteroskedasticity in White's test for heteroskedasticity (see *Table IV:11*) and is therefore corrected for with White's correction for heteroskedasticity. This ensures homoskedasticity (MLR 5).

**Table IV:11 – White's test for heteroskedasticity**

Probability (F-statistic)	** 0.0260
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The issue of random sample (MLR 2) is aligned with Wooldridge's (2003) statement not adjusted for. This is gratified by the fact that only a few companies in relation to the regression dataset were expelled due to insufficient information and the other expelling criteria are well justified and has no impact on the randomness of the data. One should bear in mind that this thesis only deals with M&As conducted by companies who infrequently performs M&As not characterized by a company group reorganization or alliance purchases.

MLR 3 holds since the zero conditional mean assumption cannot be rejected when the regression has an intercept as in the case of this study's result (C in *Table IV:4* above). Nor is there any indication that the dependent variable  $\Delta ROA$  is influencing the independent variables COS, SGA, FIN etcetera but rather the opposite since several well acknowledged researchers has used a similar regression (Harrison et al., 1991; Krishnan, Miller & Judge, 1997; Bruton, Oviatt & White, 1994; Ramaswamy, 1997).

Thereafter the parameters were tested for multicollinearity in a correlation matrix (see *Table IV:3*). The correlation matrix reveals, unsurprisingly since scarce resources spend on one item cannot be spent elsewhere, some negative correlations. These levels of correlations are at most -0.51 and do not sign of any difficulties, hence multicollinearity is not an issue and MLR 4 holds.

## V. Analysis

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*The following chapter analyzes the results presented in chapter IV based on the theories described in chapter II. First each hypothesis is elaborated on and thereafter a broader and more general analysis is conducted. Finally, some excluded factors are presented followed by a reasoning of the different conditions for this and Harrison et al.'s study (1991).*

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### Analyzing the Results

In order for the present study to support Harrison et al.'s study (1991), the coefficients slopes ought to have positive direction for all variables. That is, suggesting pre-M&A dissimilarities generates increasing returns and positive impact to the change in ROA. However this is not always the case. In some aspects this study finds statistical evidence supporting dissimilarities in resource allocation, but in others similarities are preferred. Below, the different variables importance is presented followed by an analysis of each hypothesis per se and then the interdependence between the hypothesizes and its implication are analyzed.

### The variables impact and importance

Since the regression rejects some hypothesizes this study does not provide statistically evidence about their influence on the change in ROA, these hypothesizes (H3, H9 and H10) are below excluded from a deeper analysis. *Figure V:1* on next page illustrates *Table IV:9* graphically and clearly indicate in which hypothesizes dissimilarities and similarities is more favorable. Also, the impact of the variables, as a measure of their standard deviation, is illustrated by the height (or depth) suggesting that it is almost as important to be similar in SGA as dissimilar in LTD and INV all together.

### The Hypothesizes

H1, dealing with cost of sales, cannot be rejected on a 90% significance level. The slope of the coefficient is 0.2179 for each standard deviation difference in COS. Again, this implies that one standard deviation in differences between the target and acquirers' cost of sales, generates a positive impact on the post-M&A ROA by 0.2179 standard deviations of ROA. The straightforward interpretation of this is that a difference in COS between the target and acquirer implies scope synergies from efficiency and skill transfer in the production and procurement processes. This suggestion is further supported by Harrison et al. (1991) and Chandler (1990).

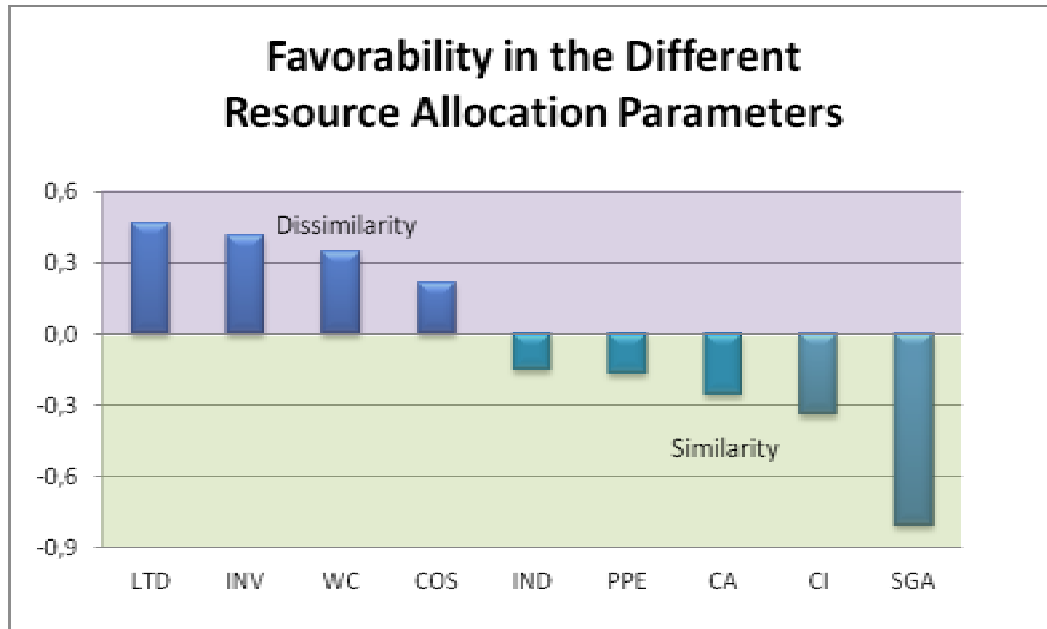
H2 holds on a 95% probability level and is not rejected. Here the coefficient however is negative (-0.8070) implying that target and acquirer differences in management, selling, marketing and administration expenses worsens the post-M&A performance greatly. SGA is even the variable with the greatest impact on  $\Delta$ ROA from a standard deviation difference between the target and acquirer (see *Table IV:9* above). According to Grant (1988), it is more important to realize synergies on the corporate level rather than on the business level and it is therefore, as indicated by this empirical finding, very important to pay attention to this hypothesis and ensure its suitability. The SGA result is contradicted by Harrison et al. (1991) who found positive slopes for both SG&A<sup>3</sup> and R&D, which both

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<sup>3</sup> Again, not the same definition as for SGA in the current study.



Figure V:1 – Resource allocation favorability



*The graph illustrates the different variables preferred relation between target and acquirer. Pre-M&A dissimilarities in LTD has a positive impact on the post-M&A performance whereas it is important to have similarities in resource allocation when it comes to SGA.*

represent the SGA in this thesis. An explanation to the deviation from the previous study could be the markets upon which the studies are conducted. In EU, with its heterogeneous corporate governance systems and national cultures, larger difficulties might arise when merging with a differently resource allocated firm than in the US. That is, the SGA difference in the US is not perhaps as large as in the EU and is therefore a sound difference allowing the economies of scope as discussed previously. However, if the difference between the parties is too large, as it could be in EU, dissynergies might occur thus hindering the possible skill and efficiency transfer. Hence, in EU, differences are negatively while they are positively impacting in US. The result is additionally supported by other studies favoring similarities and strategic fit between the pre-M&A companies (e.g. Salter & Weinholt, 1979; Ramaswamy, 1997; Swaminathan et al., 2008).

H3 is rejected since the regression cannot find any statistical evidence of a connection between the dissimilarities among financial items and the post-M&A ROA. Harrison et al. (1991) tested one of the items included in FIN (interest expenses) and found strong evidence that dissimilarities ought to generate positive synergy effects. These two different results are difficult to relate to each other since financial incomes are not included in the transatlantic study. A further parallel to Harrison et al.'s study (1991) can be drawn since their empirical evidence, as H8 below, show that differences in degree of debt financing and the costs related to it affect post-M&A ROA positively. H3 however does not support these results due to lack of statistical significance which is possibly an affect from the interest income.

H4 cannot be rejected under a 90% significance level so there is reason to believe that dissimilarity in inventory resource allocation will generate favorable synergy effects to the post-M&A ROA. Here, one standard deviation in difference between the target and acquirer implies a post-M&A ROA improvement of 0.4157 standard deviations in ROA. For a more thoroughly analysis of this hypothesis together with the two following hypothesizes, see *Industry and asset relatedness* below.

H5 cannot be rejected under a 90% significance level implying that differences in CA generates a negative impact (-0.2530) on the post-M&A performance. Harrison et al. (1991) did not test CA explicitly but suggests that pre-M&A resource allocation differences in general improves the post-M&A performance, which the current result contradicts in this hypothesis. This thesis result is further backed by other research favoring pre-M&A strategic fit (e.g. Shelton, 1988; Hopkins, 1987; Ramaswamy, 1997).

H6 cannot be rejected with a 95% significance level and show a strong relationship (0.3472) between WC dissimilarities and post-M&A ROA. In other words, dissimilarities in WC suggest that one of the firms can learn from the other and improve the post-M&A performance.

H7 cannot be rejected under the 90% significance level and indicates a negative relation (-0.1658) to the post-M&A performance. The PPE result is supported by studies favoring similarities and strategic fit (e.g. Salter & Weinhold, 1979; Ramaswamy, 1997; Swaminathan et al., 2008). For further understanding of this hypothesis, see the off-balance financing discussion in *Methodology criticism*.

H8 holds under the hypothesis that difference in LTD generates a positive impact on post-M&A ROA and cannot be rejected under a 90% significance level. One standard deviation in LTD differences implies that the post-M&A company can expect a 0.4675 standard deviation change in post-M&A ROA. This is aligned with, but not the same as, Harrison et al.'s (1991) result that interest expense differences positively impacts the post-M&A ROA. The degree of indebtedness and the interest expenses cost allocation do not necessarily imply the same thing but can very well coincide. Factors such as capital intensity and cost of debt however, influence these parameters results, thus they are not unconditionally connected. If the companies have dissimilar capital structures, they might be able to allocate the debt differently and create more favorable interest agreements whereas dissimilarities in interest expense allocation rather reflect the management's willingness to use debt financing.

H9 cannot be rejected on a 90% significance level suggesting that similarity in CI generates positive effects on the post-M&A performance since the beta is -0.3412. This contradicts Harrison et al.'s empirical result (1991) but is however aligned with the strategic fit idea (Porter, 1996). This is, in combination with H12, also enforced by Bartels et al.'s (2006) statement that firms within the same industry and value chain position do not have significantly different capital intensity. This discussion is further extended in *Industry and asset relatedness* below. This empirical suggestion is also backed by other research favoring pre-M&A strategic fit (e.g. Shelton, 1988; Hopkins, 1987; Ramaswamy, 1997).

H10 shows no statistical evidence that dissimilarities in EMP affect the post-M&A performance and the hypothesis is therefore rejected. No consistent pattern arose indicating any that different successful M&As had something in common in terms of this parameter and similarly for unsuccessful M&As

H11 is also rejected since there is no statistical evidence that post-M&A ROA is affected by differences in country of registration between the target and acquirer. Theories such as Barney's (1988), that cross border M&As should be successful since it allows a company to access new strategic resources is therefore not supported. An explanation to the current study's result could be van Oudenhoven and van Der Zee's (2002) contradicting suggestion that synergies are harder to achieve in cross border M&As and the positive effects are possibly therefore off-set by cultural integration problems and hence, no statistical significance can be found.

H12 however, cannot be rejected at a 90% level of significance, which implies that M&As within the same industry ought to generate better ROA than cross industry M&As since the coefficient is negative (-0.1517). These empirical results are in line with Shelton (1988), Kusewitt (1985) and Sing and Montgomery (1987) who also stated that there is a strong relationship between industry similarity and M&A success. Lubatkin (1987), on the other hand, could not find any significance for this variable.

## Expected results

Several of the hypothesizes both fails rejection and generates the, expectedly, same results as Harrison et al. (1991) presented. Here, the general idea that differences in pre-M&A resource allocation between the target and acquirer was favorable. However since FIN (H3), EMP (H8) and COU (H11) did not show any statistical evidence these variables cannot be further analyzed since their affect on ROA change is uncertain.

As signaled in the variable definition, differences in COS, INV, WC and LTD between the target and acquirer suggests that one of the firms have dissimilar processes, operates in different manners and/or one firm is more efficient than the other company. Here, the largest room for improvement exists, i.e. economies of scope from skill and efficiency transfer, can be expected and the current thesis results support this idea.

## Interdependent analysis of unexpected hypothesized results

### Short-term asset inconsistencies

The fact that the empirical results suggest dissimilarities between target and acquirer in pre-M&A resource allocation in INV and WC but similarities in CA is interesting. Since the three variables are closely related and includes each other, one's first thought suggests they ought to suggest the same thing, either advantages of similarities or dissimilarities, and not contradict each other.

Obviously, the other items included in CA besides INV (cash, accounts receivables and other short-term assets), which are not tested in the regression, must suggest similarities, to a greater extent than INV does for dissimilarity, since CA is favored as a similarity variable. Considering the three other items included in CA, accounts receivables ought to have the same characteristic as inventory since it also is capital tied-up in processes where a shorter lead time reduces the amount tied up. Cash and other short-term assets however, are non-operating<sup>4</sup> assets where companies accumulate their free cash for the next investment, dividend pay-out, stock repurchase or debt amortization. This ought to be the source of the confusion. If one was to test cash and other short-term assets as variables in a regression like the current, a negative beta for cash and short-term assets (suggesting an advantage of similarities) could be expected. This would in that case support the idea that the favorability of dissimilarities in INV and accounts receivables is out weighted by the similarity advantage in cash and short-term assets. Why these short-term assets deviates could depend on the fact that they are non-operational and therefore no economies of scope should be expected here.

Furthermore, since WC proclaim for dissimilarities when CA suggests similarities, the other items in WC, which are the different current liabilities, must in the same manner indicate a stronger indication of advantages from dissimilarities like above.

### Industry and asset relatedness

Aligned with previous discussions, capital intensity (H9) and industry (H12) are positively correlated and *Table IV:3* suggest an interdependence of 0.29. Rational logic also suggests this since companies in the same industry tend to need the same assets in a similar proportion because they have similar production processes.

None of the hypotheses H9 and H12, can be rejected under a 90% significance level and the variables coefficient slopes have the same negative impact on change in ROA. This indicates that M&As within the industry and with the same capital intensity is preferred over cross industry M&As with dissimilarities in capital intensity. These results are aligned with Shelton (1988) and Kusewitt (1985) who also stated that there is a strong relationship between being in the same industry and M&A performance, in this study measured in stock returns however.

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<sup>4</sup> Besides the 0.5%-2% of revenues needed to finance the operational activities (Koller et al., 2005)

The barriers arising from corporate culture, built on praxis and go abouts, when combining two companies from different industries seem difficult to overcome. For instance, if a food producer vertically invests in (or merges into a conglomerate with) a service company offering transportation of the food the different management styles can be the reasons of why the companies is hard to combine. So even if potential for synergies is a fact, the synergies are not realized due to cultural and managerial problems. This results confirms Porter's suggestion (1996) of fit at the utterly, and his suggestion that the cultural alignment is an important factor to create the best activities within a firm.

However, if two similar companies choose to finance its assets in different ways, i.e. owning versus leasing, the capital intensity will differ between the companies. For example a super market store that own its own properties and an identical store that leases or rents its properties, will have dissimilar capital intensities even though they are exactly alike. If these two stores where to merge, choosing the post-M&A financing structure (on or off the balance sheet) could be difficult. The leasing contract probably last over many years and the property may not be sellable. The problem arising here is that the price of the store in such case could be low due to the signaling effect from wanting to sell an asset that the company later on is going to be dependent on. There are many real-estate companies specialized in buying property and then renting or leasing it out to the former owner but in the example above the real-estate firms profits are the merged company's cost. This affirms that H7 (PPE) ought to indicate the same results of similarity preference as in H9 (CI) and positive synergies ought to be generated due to the same financing methods.

## Factors excluded from the regression model

The regression model of this thesis incorporates pre-M&A resource allocation differences together with some additional variables. However, these only consider economies of scope, i.e. skill and efficiency transfer. According to the *Table IV:5*, the goodness of fit indicates that the variables used in the regression explain the change in ROA by approximately 50%. The remaining half is therefore dependent upon other facts than pre-M&A resource allocation and these are here subcategorized into: success, economies of scale and time horizon.

*Success* implies that firms that have been successful, i.e. they have been efficient and effective, have a momentum and will most certainly also be successful in the future. Since M&As are expensive and requires much capital unless the deal is paid by with stocks, very few, if any, acquirers are unsuccessful, unprofitable and illiquid firms but are rather very likely to fit into the first description above, in line with Manne's suggestion (1965). The idea is that these firms are run by good management with sound sense for business and strategic choices and they will continue to extract the best out of potential opportunities. Therefore resource allocation is not equally important to these firms. If there is a perfect complementarity between the acquirer and the target synergies will be realized but on the other hand these managers are able to realize synergies other than from resource allocation complementarities. This discussion is aligned with the idea that top potential people can succeed with a low potential idea whereas low potential people never, not even with a top potential idea, will succeed equally good (Härén, 2004).

Second, *economies of scale*, which are not incorporated in the pre-M&A resource allocation focusing variables, will certainly represent a large portion of the remaining change in ROA. Based on *Table II:1*, scale advantages can be expected from numerous areas, especially for industrial buyers. Especially M&As of similar and related manufacturing firms can be expected major economies of scale, none of which are encountered for in the present regression model. In relation to *Table II:1* shared fixed costs and technology could be sources of these synergies.

Lastly, the *path dependency*, as discussed by Arthur (1994), could explain some of the effects not included in the regression. As an example, events and actions inside and outside the firm other than the M&A, such as technological development and depreciating exchange rates, can also affect the post-M&A ROA. These can effect greatly and are totally unrelated to the M&A itself.

## Different Conditions for the Studies

### Merger waves and the dotcom boom

An explanation to the different result between this study and the one made by Harrison et al. (1991) is that their study is conducted on a conservative time period when companies did not overinvest in M&As. The current paper however, studied a time period pledge by a peaking M&A wave, the dotcom boom, thus less profitable investments took place and the amount of carefully selected, well planned M&As was reduced. Also since there was such a fast-moving era where it was important to not fall back and be overtaken, i.e. there was no time to wait stimulated this tendency. Therefore, the results from this thesis might be biased by bad investments that did not generate synergies nor positive NPVs.

However, the implications of what criterion, similarities or dissimilarities, which generate positive effects on the change in ROA ought to be the same and therefore this fact should have little influence on the result.

### Corporate Governance Systems

Another way of interpreting the reasons of why the two studies differ is that they are conducted in different corporate governance systems. Harrison et al.'s study is conducted in the US, where a market oriented shareholder perspective is dominant. This market is pledged by focusing in short returns and maximizing the shareholder value, the ownership is dispersed and focus lies on short-term returns. In contrast, this study is conducted in the EU, is totally in line with Clark (2007) where the market is network oriented, this market is pledged by few controlling owners with large significant shares stakes and a long-term investment perspective. Thus, of the long-term perspective in the EU market using the same time period as on the US market may be somewhat devious.

However, it is reasonable to question whether these impact from the M&A on the ROA which has not been realized within five years from the M&A, ever will be operationalized and nor should this aspect be of major importance.

## Generalizing hypothesizes

Harrison et al. (1991) finds all of their coefficients positive, implying that the more dissimilarities between target and acquirer, in any parameter, the better for the post-M&A performance. The way this result is presented should however be put into the relation of the purpose of their article. Harrison et al. (1991) aims as proving that pre-M&A dissimilarities in resource allocation improves the post-M&A performance and are therefore not interested in finding parameters where resource allocations similarities are favorable.

Not suggesting that Harrison et al. have ignored to present any variables effecting the post-M&A performance negatively, this thesis just clarifies that there might be areas where resource allocation are better off as similar between the target and acquirer even though Harrison et al. have not presented such.

## VI. Conclusion

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*In the last chapter of this thesis, the M&A synergy problem is addressed and recommendation to the application and usefulness of this study is presented. Finally, ideas for further studies are suggested.*

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This study proves significant statistical evidence on a strong relationship between pre-M&A resource allocation and the post-M&A return on assets. However, unlike much other empirical research, this study does not provide a general suggestion of either dissimilar or similar resource allocation as superior, at least not in the EU between 1992 and 2002, but identifies different preferences in different parameters. Instead, since the regression parameters have been standardized, this thesis provides the magnitudes for the different variables stressing their relative importance. Hence, this thesis provides suggestions on which areas special attention should be allocated when searching for a potential M&A candidate. This is something that could not be found in the previous research when scanning for this research.

The five most important parameters for positive post-M&A performance effects are listed below, in order of importance based on their relative impact on ROA. This thesis has empirically shown that pre-M&A similarities between the two companies in (1) selling, general and administrative resource allocation is of greatest importance. Followed by the (2) degree of debt financing, and resources allocated in (3) inventories and (4) working capital, where dissimilarities achieve the greatest synergies. The fifth most important parameter is the (5) capital intensity where similarities cause the best post-M&A ROA change.

The ambition to elaborate on whether, a simplified quantification of, corporate culture difference would stimulate the performance was not entirely successful. Due to lack of statistical significance this thesis cannot suggest that similarities or dissimilarities are favorable in terms of merging or acquiring with a company registered in another country. Nonetheless, the other part of this thesis corporate culture definition, industry relatedness, strongly advises M&As not to be cross industrial in order to generate favorable post-M&A performance effects. Hence, besides the latter proclamation, no general preference of similarity or dissimilarity in corporate culture, as it is here defined, can be recommended.

This knowledge is useful for firms interested in acquiring or merging with a target where some sources of synergies can be enlightened. Besides other factors such as economies of scale, these economies of scope related parameters can suggest reasons for success otherwise overseen. As indicated, the current regression does not include factors such as economies of scale and it is therefore important to notice that this result should be put into a context of other factors, however, still indicating a clear guidance in the mentioned parameters.



## Further research

An alternative way of testing the post-M&A performance could be to use a similar method as in this thesis but breaking down the financial information by the use of the Du Pont profitability scheme instead. Here, a more detailed pattern might be recognized where resource complementarity, contra alignment, is preferred to firms considering M&A.

To further test the result from this and Harrison et al.'s (1991) research, a case study with more thoroughly elaboration towards the implications, conditions and outcomes from pre-M&A resource allocation would be truly interesting. Even though the result from the two mentioned studies are of general nature and should not necessary be applicable to a specific M&A, however it would still be very interesting to see the accuracy of the models and to see if these parameters really affect the post-M&A performance for a specific case.

The relationship between resource allocation and M&A success has been described in this thesis. However, as mentioned before, there are several other aspects and factors influencing the post-M&A performance. Finding and clarifying these are of major importance, to gain further knowledge on how to thrive with winning M&A strategies in an optimal manner.

As mentioned, human aspects and other softer values are other factors excluded from the present model. Complimenting the insights from this study with these parameters would give a more complete picture of the pre-M&A conditions. Quantifying these softer parameters is next to impossible but in friendly, mergers the use of the balanced scorecards could be fruitful. Comparing the different areas in the balances scorecard would enlighten differences and similarities between the two parties and mark areas which needs special attention and areas where difficulties might arise. However, this information is undisclosed to other companies and this idea cannot be applicable in hostile take-overs.

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## VIII. Appendices

Table VIII:1 – List of the M&A observations alphabetically order by the target

Target	Acquirer
AB SOFT	AVANQUEST SOFTWARE SA
AGROS-HOLDINGS S.A.	PERNOD RICARD
AKTOR S.A.	HELLENIC TECHNODOMIKI TEB A E
AVESTAPOLARIT OYJ	OUTOKUMPU OYJ
BAAN CO NV	INVENSYS PLC
BANCA POPOLARE DI NOVARA SCRL	BANCO POPOLARE
BANK AUSTRIA CREDITANSTALT AG	BAYERISCHE HYPO- UND VEREINSBANK AG
BEFESA MEDIO AMBIENTE SA	ABENGOA SOCIEDAD ANONIMA
BIOCHEM PHARMA INC.	SHIRE PLC
BUDIMEX S.A.	GRUPO FERROVIAL, S.A.
CARL SCHENCK AG	DUERR AG
CEMENTOS PORTLAND VALDERRIVAS SA	FOMENTO DE CONSTRUCCIONES Y CONTRATAS SA
CHRIST AESCH	BWT AKTIENGESELLSCHAFT
CIMENTAS IZMIR CIMENTO FABRIKASI A.S.	CEMENTIR HOLDING S.P.A.
CMG PLC	LOGICACMG PLC
COLAS S.A.	BOUYGUES SA
COLLATERAL THERAPEUTICS INCORPORATED	BAYER SCHERING PHARMA AKTIENGESELLSCHAFT
DECAN GROUPE	GETRONICS NV
DEVOTE N.V.	ORDINA NV
ELF AQUITAINE SA	TOTAL SA
EUROPEENNE DE CASINOS	GROUPE PARTOUCHE SA
EXPANDA AB	RORVIK TIMBER AB
FASTIGHETS AB BALDER	FABEGE AB
FINANCIAL SECURITY ASSURANCE HOLDINGS	DEXIA
FINANSBANK A.S.	BNP PARIBAS
GOLDSCHMIDT AG	DEGUSSA AG
GRAND UNION COMPANY (THE)	KONINKLIJKE AHOLD NV
GREVIN ET COMPAGNIE	COMPAGNIE DES ALPES
INFOSOURCE	BELGACOM SA
ISIS SOCIETE ANONYME	TECHNIP
ITALCEMENTI SPA	ITALMOBILIARE SPA
JAGENBERG AG	RHEINMETALL AG
KOIKE, S.A.	SOS CUETARA SA
LEIGHTON HOLDINGS LIMITED	HOCHTIEF AG VORM. GEBR. HELFMANN
MEDQUIST INCORPORATED	KONINKLIJKE PHILIPS ELECTRONICS N.V.
METSA TISSUE CORPORATION	SVENSKA CELLULOZA AKTIEBOLAGET
NCR CORPORATION	MEDASYS SA

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<b>NIAGARA MOHAWK HOLDINGS, INC.</b>	<b>NATIONAL GRID PLC</b>
<b>OLYMPIC CATERING SA</b>	<b>EVEREST SA</b>
<b>OMSA ALIMENTACION, S.A.</b>	<b>CAMPOFRIO ALIMENTACION SA</b>
<b>PATHE S.A.</b>	<b>VIVENDI</b>
<b>PRECOAT INTERNATIONAL PLC</b>	<b>CORUS GROUP PLC</b>
<b>PRONYX AB</b>	<b>TELECA AB</b>
<b>RAUTAKIRJA OYJ</b>	<b>SANOMA-WSOY OYJ</b>
<b>SALAMANDER AKTIENGESELLSCHAFT</b>	<b>ENBW ENERGIE BADEN-WUERTTEMBERG AG</b>
<b>SITICOM GROUP</b>	<b>DEVOTEAM SA</b>
<b>SOCAMEL</b>	<b>GROUPE GUILLIN</b>
<b>SOCIETA ITALIANA PER IL GAS PA</b>	<b>ENI - ENTE NAZIONALE IDROCARBURI</b>
<b>SONERA OYJ</b>	<b>TELIASONERA AB</b>
<b>SUOMEN SPAR OYJ</b>	<b>AXFOOD AB</b>
<b>T.J. HUGHES PLC</b>	<b>JJB SPORTS PLC</b>
<b>TECIS HOLDING AG</b>	<b>AWD HOLDING AG</b>
<b>TORO ASSICURAZIONI CIA ANOMIA D'ASSICU.</b>	<b>FIAT SPA</b>
<b>TREDI ENVIRONMENT</b>	<b>SECHE ENVIRONNEMENT</b>
<b>TURK TUBORG BIRA VE MALT SANAYII A.S.</b>	<b>CARLSBERG AS</b>
<b>VALUE AND INCOME TRUST P.L.C.</b>	<b>NORCOM INFORMATION TECHNOLOGY AG</b>
<b>VERSEIDAG AG</b>	<b>GAMMA HOLDING NV</b>
<b>VESTJYSK BANK A/S</b>	<b>NORDJYSKE BANK AS</b>
<b>WORLD ONLINE INTERNATIONAL NV</b>	<b>TISCALI SPA</b>

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